**Third Generation Partnership Project (3GPP™)**

**DRAFT Meeting Report  
for  
TSG CT WG1  
meeting: 122e**

**Electronic, Electronic, 20/02/2020 to 28/02/2020**

Contents:

Code Description 3

1 Opening and welcome 3

2 Agenda & reports 4

3 Work organisation 5

3.1 Meeting schedule 5

3.2 Work plan and Other adm. Issues 5

4 Input LSs 5

5 void 19

6 void 19

7 void 19

8 void 19

9 void 19

10 void 19

11 void 19

12 void 19

13 void 19

14 void 19

15 void 19

16 Release 16 19

16.1 Tdocs on Work Items 19

16.1.1 Work Item Descriptions 19

16.1.2 CRs and Discussion Documents related to new or revised Work Items 20

16.1.3 Status of other Work Items 20

16.1.4 Release 16 documents for information 20

16.2 WIs for common and SAE/5G 20

16.2.1 ePWS 20

16.2.2 SINE\_5G 37

16.2.3 SAES16 WIs 38

16.2.3.1 SAES16 38

16.2.3.2 SAES16-CSFB 38

16.2.3.3 SAES16-non3GPP 38

16.2.4 5GProtoc16 WIs 38

16.2.4.1 5GProtoc16 38

16.2.4.2 5GProtoc16-non3GPP 40

16.2.5 ATSSS 40

16.2.6 eNS 85

16.2.7 Vertical\_LAN 163

16.2.7.1 Stand-alone NPN 163

16.2.7.2 Public network integrated NPN 207

16.2.7.3 Time sensitive communication 243

16.2.8 5G\_CIoT 253

16.2.9 5WWC 330

16.2.10 PARLOS 348

16.2.11 5G\_eLCS (CT4) 356

16.2.12 V2XAPP 358

16.2.13 eV2XARC 362

16.2.14 RACS (CT4 lead) 406

16.2.15 5G\_SRVCC (CT4 lead) 413

16.2.16 xBDT (CT3 lead) 416

16.2.17 IAB-CT (CT4 lead) 416

16.2.18 5GS\_OTAF (CT4 lead) 416

16.2.19 5G\_URLLC (CT4 lead) 416

16.2.20 SEAL 419

16.2.21 Other Rel-16 non-IMS topics 445

16.3 WIs for IMS 446

16.3.1 MCCI3 446

16.3.2 MCProtoc16 449

16.3.3 MuD 450

16.3.4 IMSProtoc16 459

16.3.5 MCSMI\_CT 461

16.3.6 eMCData2 461

16.3.7 E2E\_DELAY (CT4) 476

16.3.8 VBCLTE (CT3 lead) 476

16.3.9 ISAT-MO-WITHDRAW 476

16.3.10 MONASTERY2 476

16.3.11 eIMS5G\_SBA 485

16.3.12 enh2MCPTT-CT 485

16.3.13 eIMSVideo 495

16.3.14 Other Rel-16 IMS & MC issues 516

17 void 523

18 Output liaison statements 523

19 Late and misplaced documents 537

20 AOB 537

+21 Closing 537

Annex A: List of contribution documents 539

Annex B: List of change requests 561

Annex C: Lists of liaisons 580

C1: Incoming liaison statements 580

## Code Description

## 1 Opening and welcome

The attention of the delegates to the meeting of this Technical Specification Group was drawn to the fact that 3GPP Individual Members have the obligation under the IPR Policies of their respective Organizational Partners to inform their respective Organizational Partners of Essential IPRs they become aware of.

The delegates were asked to take note that they were thereby invited:

to investigate whether their organization or any other organization owns IPRs which were, or were likely to become Essential in respect of the work of 3GPP.

to notify their respective Organizational Partners of all potential IPRs, e.g., for ETSI, by means of the IPR Information Statement and the Licensing declaration forms.

The attention of the delegates to the meeting was drawn to the fact that 3GPP activities were subject to all applicable antitrust and competition laws and that compliance with said laws was therefore required by any participant of the meeting, including the Chairman and Vice-Chairmen and were invited to seek any clarification needed with their legal counsel. The leadership would conduct the present meeting with impartiality and in the interests of 3GPP. Delegates were reminded that timely submission of work items in advance of TSG/WG meetings was important to allow for full and fair consideration of such matters. Delegates were reminded of the fair network use rules established by the PCG:

1. Users shall not use the network to engage in illegal activities. This includes activities such as copyright violation, hacking, espionage or any other activity that may be prohibited by local laws.

2. Users shall not engage in non-work related activities that are consume excessive bandwidth or cause significant degradation of the performance of the network.

Statement Regarding Engagement with Companies Added to the U.S. Export Administration Regulations (EAR) Entity List in 3GPP Activities

2019-06-03, updated 2019-08-20, replaced 2019-10-10

1. Public Information is Not Subject to EAR

3GPP is an open platform where all contributions (including technology protected or not by patent) made by the different Individual Members under the membership of each respective Organizational Partner are publicly available. Indeed, contributions by all and any Individual Members are uploaded to a public file server when received and then the documents are effectively in the public domain.

In addition, since membership of email distribution lists is open to all, documents and emails distributed by that means are considered to be publicly available.

As a result, information contained in 3GPP contributions, documents, and emails distributed at 3GPP meetings or by 3GPP email distribution lists, because it is made available to the public without restrictions upon its further dissemination, is not subject to the export restrictions of the EAR.

Meeting minutes are maintained for 3GPP meetings. Such meeting minutes for 3GPP meetings are made available to the public without restrictions upon its further dissemination. As a result, information, including information conveyed orally, contained in 3GPP meetings is not subject to the export restriction of the EAR; this would include information conveyed during side meetings that may occur during the main meetings, if these meetings are open to any participants and the results of all said meetings are publicly available without restrictions upon their further dissemination.

2. Non-Public Information

Non-public information refers to the information not contained or not intended to be contained in 3GPP contributions, documents or emails. Such non-public information may be disclosed during informal meetings, exchanges, discussions or any form of other communication outside the 3GPP meetings and email distribution lists, and may be subject to the EAR.

3. Other Information

Certain encryption software controlled under the International Traffic in Arms Regulations (ITAR), even if publicly available, may still be subject to US export controls other than the EAR.

4. Conduct of Meetings

The situation should be considered as "business as usual" during all the meetings called by 3GPP.

5. Responsibility of Individual Members

It should be remembered that contributions, meetings, exchanges, discussions or any form of other communication in or outside the 3GPP meetings are of the accountability, integrity and the responsibility of each Individual Member. In addition, Individual Members remain responsible for ensuring their compliance with all applicable export control regulations, including but not limited to EAR.

Individual Members with questions regarding the impact of laws and regulations on their participation in 3GPP should contact their companies’ legal counsels.

## 2 Agenda & reports

**C1-200200 3GPP TSG CT1#122 – agenda for Tdoc allocation**

*Type: agenda For: Information  
 Source: CT1 chairman*

**Decision:** The document was **revised to C1-200275**.

**C1-200201 3GPP TSG CT1#122 – agenda after Tdoc allocation deadline**

*Type: agenda For: Information  
 Source: CT1 chairman*

**Decision:** The document was **noted**.

**C1-200202 3GPP TSG CT1#122 – agenda with proposed LS-actions**

*Type: agenda For: Information  
 Source: CT1 chairman*

**Decision:** The document was **noted**.

**C1-200203 3GPP TSG CT1#122 – agenda at start of meeting**

*Type: agenda For: Information  
 Source: CT1 chairman*

**Decision:** The document was **noted**.

**C1-200204 3GPP TSG CT1#122 – agenda Thursday (27th Feb) evening**

*Type: agenda For: (not specified)  
 Source: CT1 chairman*

**Decision:** The document was **noted**.

**C1-200205 3GPP TSG CT1#122 – agenda at end of meeting**

*Type: agenda For: (not specified)  
 Source: CT1 chairman*

**Decision:** The document was **noted**.

**C1-200275 3GPP TSG CT1#122 – agenda for Tdoc allocation**

*Type: agenda For: Information  
 Source: CT1 chairman*

(Replaces C1-200200)

**Decision:** The document was **noted**.

**C1-200307 draft C1-121 meeting report**

*Type: report For: (not specified)  
 Source: MCC*

**Decision:** The document was **approved**.

## 3 Work organisation

### 3.1 Meeting schedule

### 3.2 Work plan and Other adm. Issues

**C1-200306 work plan**

*Type: Work Plan For: (not specified)  
 Source: MCC*

**Decision:** The document was **noted**.

**C1-200312 CT1#122-e Electronic Meeting – Process and Scope**

*Type: other For: Information  
 Source: CT1 chairman*

**Decision:** The document was **noted**.

**C1-200481 Work plan for eIMSVideo**

*Type: discussion For: Discussion  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

**Decision:** The document was **noted**.

**C1-200487 Work plan for eIMSVideo**

*Type: discussion For: Discussion  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

**Decision:** The document was **withdrawn**.

## 4 Input LSs

**C1-200206 LS on usage of IMSI during 3GPP based authentication (C4-195574)**

*Type: LS in For: (not specified)  
 Original outgoing LS: C4-195574, to SA3, cc SA2, CT1  
 Source: CT4*

**Decision:** The document was **noted**.

**C1-200207 LS on user identity when 5G-AKA or EAP AKA’ is used for SNPN (C6-190468)**

*Type: LS in For: (not specified)  
 Original outgoing LS: C6-190468, to SA2, CT1, SA3, cc -  
 Source: CT6*

**Decision:** The document was **replied to in C1-200255**.

**C1-200208 LS on Proposal to transfer the study on service-based support for SMS in 5GC to CT WGs (CP-193301)**

*Type: LS in For: (not specified)  
 Original outgoing LS: CP-193301, to TSG SA, cc SA2, CT1, CT4  
 Source: TSG CT*

**Discussion:**

LS pertains to Rel-17

**Decision:** The document was **postponed**.

**C1-200209 Reply LS to Transfer the study on service-based support for SMS in 5GC to CT WGs (SP-191362)**

*Type: LS in For: (not specified)  
 Original outgoing LS: SP-191362, to TSG CT, cc SA2, SA3, CT1, CT4  
 Source: TSG SA*

**Discussion:**

LS pertains to Rel-17

**Decision:** The document was **postponed**.

**C1-200210 Response to 3GPP S2-1910806 and S2-1912767 on Line ID (LIAISE-353)**

*Type: LS in For: (not specified)  
 Original outgoing LS: LIAISE-353, to SA2, CT1, cc -  
 Source: Broadband Forum*

**Discussion:**

SA2 has already handled the incoming LS

**Decision:** The document was **noted**.

**C1-200211 General Status of Work (LIAISE-363)**

*Type: LS in For: (not specified)  
 Original outgoing LS: LIAISE-363, to TSG SA, SA2, CT1, RAN3, cc -  
 Source: Broadband Forum*

**Discussion:**

Proposed LS out in C1-200309

**Decision:** The document was **replied to in C1-200309**.

**C1-200212 LS on Testing and Certification of 3GPP Mission Critical features A GCF-TCCA Joint Approach to Develop and Manage MC Certification (**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to GCF SG, cc SA6, CT1, RAN5, ETSI CTI, ETSI STF 160, ETSI MCX Plugtests Team, GSMA  
 Source: TCCA*

**Decision:** The document was **noted**.

**C1-200213 Reply LS on QoE Measurement Collection (R2-1916328)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1916328, to SA5, cc RAN3, SA4, CT1, TSG RAN  
 Source: RAN2*

**Decision:** The document was **noted**.

**C1-200214 Reply LS on NID structure and length (R2-1916344)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1916344, to CT4, cc TSG CT, RAN3, CT1, CT3, SA2  
 Source: RAN2*

**Discussion:**

Related CR in C1-200334

**Decision:** The document was **noted**.

**C1-200215 CMAS/ETWS and emergency services for SNPNs (R2-1916345)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1916345, to SA1, SA2, cc CT1  
 Source: RAN2*

**Decision:** The document was **noted**.

**C1-200216 Reply LS on Sending CAG ID in NAS layer (R2-1916349)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1916349, to SA3, SA2, RAN3, cc CT1  
 Source: RAN2*

**Discussion:**

Related DP in C1-200335 and CR in C1-200337

**Decision:** The document was **noted**.

**C1-200217 Reply LS on Mobile-terminated Early Data Transmission (R2-1916368)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1916368, to SA2, CT1, cc RAN3, TSG RAN, TSG SA  
 Source: RAN2*

**Discussion:**

Proposed LS out in C1-200707

CR in C1-200368

**Decision:** The document was **replied to in C1-200707**.

**C1-200218 Reply LS on assistance indication for WUS (R2-1916440)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1916440, to SA2, CT1, RAN3, cc TSG SA  
 Source: RAN2*

**Decision:** The document was **noted**.

**C1-200219 Reply LS on PC5S and PC5 RRC unicast message protection (R2-1916461)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1916461, to SA3, cc SA2, CT1  
 Source: RAN2*

**Decision:** The document was **noted**.

**C1-200220 LS on dependencies on AS design for mobility management aspects of NTN in 5GS (R2-1916470)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1916470, to SA2, RAN3, cc CT1  
 Source: RAN2*

**Discussion:**

C1-200220 from RAN2 and C1-200269 from RAN3 are both replies to the same LS from SA2 (S2-1910786)

**Decision:** The document was **noted**.

**C1-200221 LS on RRC establishment cause value in EPS voice fallback from NR to E-UTRAN (R2-1916530)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1916530, to CT1, cc -  
 Source: RAN2*

**Discussion:**

TEI16, potentially changes to 24.301 needed

Proposed LS out in C1-200710

**Decision:** The document was **postponed**.

**C1-200222 LS on inter-RAT HO from SA to EN-DC (R2-1916600)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1916600, to RAN3, RAN4, cc SA2, CT1  
 Source: RAN2*

**Decision:** The document was **noted**.

**C1-200223 LS on LS on system level design assumptions for satellite in 5GS (R2-1916620)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1916620, to SA2, RAN3, cc CT1  
 Source: RAN2*

**Discussion:**

C1-200223 from RAN2 and C1-200269 from RAN3 are both replies to the same LS from SA2 (S2-1910787)

**Decision:** The document was **noted**.

**C1-200224 Reply LS on extended NAS timers for CE in 5GS (R2-1916623)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1916623, to CT1, cc RAN3, SA2  
 Source: RAN2*

**Discussion:**

Proposed LS out in C1-200717

Related CRs in C1-200383 - C1-200384

**Decision:** The document was **replied to in C1-200717**.

**C1-200225 Reply LS on Sending CAG ID in NAS layer (R3-197591)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R3-197591, to SA3, SA2, RAN2, cc CT1  
 Source: RAN3*

**Discussion:**

Related DP in C1-200335 and CR in C1-200337

**Decision:** The document was **noted**.

**C1-200226 LS on Concurrent Broadcasting for CMAS (R3-197749)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R3-197749, to CT1, cc -  
 Source: RAN3*

**Discussion:**

LS pertains to Rel-15

Proposed LS out in C1-200764

**Decision:** The document was **postponed**.

**C1-200227 Reply LS on UAC for NB-IOT (S1-193592)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S1-193592, to RAN2, cc CT1, SA2, RAN3  
 Source: SA1*

**Discussion:**

Is related at least to CRs in C1-200397, C1-200421, C1-200677

**Decision:** The document was **noted**.

**C1-200228 Reply LS on enhanced access control for IMS signalling (S1-193595)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S1-193595, to CT1, cc RAN2, TSG SA  
 Source: SA1*

**Decision:** The document was **noted**.

**C1-200229 Reply LS on NSI requirements (S1-193596)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S1-193596, to TSG CT, cc TSG SA, SA2, SA3, CT1, CT4, CT6  
 Source: SA1*

**Decision:** The document was **noted**.

**C1-200230 Reply LS on LS on PC5S and PC5 RRC unicast message protection (S2-1912002)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-1912002, to SA3, cc RAN2, CT1  
 Source: SA2*

**Discussion:**

Related CR in C1-200349

**Decision:** The document was **noted**.

**C1-200231 Reply LS on Enquiries on eV2XARC (S2-1912018)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-1912018, to CT1, cc -  
 Source: SA2*

**Discussion:**

Related pCR in C1-200391

Related CR in C1-200349

**Decision:** The document was **noted**.

**C1-200232 Reply LS on SUCI computation from an NSI (S2-1912417)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-1912417, to TSG CT, SA1, SA3, CT1, CT6, cc CT4, TSG SA  
 Source: SA2*

**Decision:** The document was **noted**.

**C1-200233 LS on PLMN selection solutions for satellite access (S2-1912551)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-1912551, to CT1, cc -  
 Source: SA2*

**Discussion:**

LS pertains to Rel-17 (FS\_5GSAT\_ARCH) although header of the LS incorrectly indicates Rel-16

Amer Catovic (Qualcomm):

1. The LS shows “Rel-16” and “5GS-Ph1” work item. I suspect that both is incorrect. It should beRel-17 and FS\_5GSAT\_ARCH, respectively, as per my SA2 colleagues.

2. We currently don’t have a container to perform the requested work of developing solutions for PLMN selection for satellite access.

3. If/when the work is performed in CT1, it should not be limited to evaluating solution #13 in TR 23.737 sc. 6.13.

**Decision:** The document was **postponed**.

**C1-200234 Reply LS on applicability of the notification procedure in SNPNs (S2-1912601)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-1912601, to CT1, cc -  
 Source: SA2*

**Discussion:**

Proposed LS out in C1-200718

Related CRs in C1-200504, C1-200505, C1-200333

**Decision:** The document was **noted**.

**C1-200235 LS on support of Control Plane CIoT 5GS Optimisation (S2-1912609)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-1912609, to CT1, cc -  
 Source: SA2*

**Decision:** The document was **noted**.

**C1-200236 Reply LS on sending CAG ID during resume procedure (S2-1912731)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-1912731, to CT1, cc RAN2  
 Source: SA2*

**Discussion:**

No action for CT1

**Decision:** The document was **noted**.

**C1-200237 Reply LS on Rel-16 NB-IoT enhancements (S2-1912763)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-1912763, to TSG RAN, TSG CT, RAN2, CT1, RAN3, cc TSG SA  
 Source: SA2*

**Discussion:**

Proposed LS out in C1-200499

Proposed LS out in C1-200416

Discussion paper in C1-200498

DP in C1-200417

**Decision:** The document was **noted**.

**C1-200238 Reply LS on clarification on the requirement for steering of roaming (S2-1912764)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-1912764, to CT1, CT4, cc CT6, SA3  
 Source: SA2*

**Discussion:**

CRs in CT1 likely needed, agenda item not in scope of this meeting

**Decision:** The document was **postponed**.

**C1-200239 LS on the support for ECN in 5GS (S2-1912765)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-1912765, to RAN2, SA4, cc RAN3, CT1  
 Source: SA2*

**Decision:** The document was **noted**.

**C1-200240 Reply LS on "set of configuration parameters" in the precedence of the V2X configuration parameters (S2-2000970)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2000970, to CT1, cc -  
 Source: SA2*

**Discussion:**

Related pCR in C1-200625

**Decision:** The document was **noted**.

**C1-200241 Reply LS on PC5 unicast and groupcast security protection (S2-2000971)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2000971, to SA3, CT1, cc RAN2  
 Source: SA2*

**Discussion:**

Related CR in C1-200349

**Decision:** The document was **noted**.

**C1-200242 Reply LS on Response LS on SL RLM/RLF (S2-2000973)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2000973, to RAN2, RAN1, CT1, cc -  
 Source: SA2*

**Discussion:**

Related CR in C1-200350

**Decision:** The document was **noted**.

**C1-200243 Reply LS on configured NSSAI handling (S2-2001110)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001110, to CT1, cc -  
 Source: SA2*

**Discussion:**

Proposed LS out in C1-200718

No action for CT1 identified

**Decision:** The document was **replied to in C1-200718**.

**C1-200244 Reply LS on Dual-registration requirements for EHPLMNs (S2-2001130)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001130, to CT1, cc -  
 Source: SA2*

**Discussion:**

CT1 CRs seem needed, potentially a reply LS

**Decision:** The document was **postponed**.

**C1-200245 LS on MA PDU establishment when the VPLMN does not support ATSSS (S2-2001148)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001148, to CT1, cc -  
 Source: SA2*

**Decision:** The document was **noted**.

**C1-200246 Reply LS on gPTP message delivery to DS-TT (S2-2001150)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001150, to CT1, cc -  
 Source: SA2*

**Discussion:**

Related CR in C1-200339

**Decision:** The document was **noted**.

**C1-200247 Reply LS on 5G-S-TMSI Truncation Procedure (S2-2001248)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001248, to SA3, RAN2, CT1, cc CT4  
 Source: SA2*

**Discussion:**

C1-200500 (discussion paper) and C1-200501 (related CR)

**Decision:** The document was **noted**.

**C1-200248 Reply LS on congestion during RLOS access (S2-2001335)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001335, to CT1, cc -  
 Source: SA2*

**Discussion:**

No action seems required

**Decision:** The document was **noted**.

**C1-200249 LS on Non-UE N2 Message Services Operations (S2-2001340)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001340, to CT1, cc CT4  
 Source: SA2*

**Discussion:**

Proposed LS out in C1-200721

**Decision:** The document was **replied to in C1-200721**.

**C1-200250 Reply LS on CMAS/ETWS and emergency services for SNPNs (S2-2001400)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001400, to RAN2, cc SA1, CT1  
 Source: SA2*

**Decision:** The document was **noted**.

**C1-200251 Reply LS on assistance indication for WUS (S2-2001578)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001578, to CT1, RAN2, RAN3, cc -  
 Source: SA2*

**Discussion:**

S2-2001578 was approved then further revised to S2-2001732, which is registered as C1-200274.

**Decision:** The document was **withdrawn**.

**C1-200252 LS on Sending CAG ID (S2-2001616)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001616, to CT1, RAN2, RAN3, SA3, SA, cc -  
 Source: SA2*

**Discussion:**

Reply Needed

Proposed LS out in C1-200310

Related CRs in C1-200311, C1-200467, C1-200337 (seem to contain the same solution)

Related DP in C1-200335

**Decision:** The document was **replied to in C1-200310**.

**C1-200253 LS on PC5S and PC5 RRC unicast message protection (S3-193802)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S3-193802, to RAN2, SA2, CT1, cc -  
 Source: SA3*

**Discussion:**

Proposed LS out in C1-200545

Related CR in C1-200349

**Decision:** The document was **noted**.

**C1-200254 Reply LS to LS on usage of IMSI during 3GPP based authentication (S3-194454)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S3-194454, to CT4, cc SA2, CT1  
 Source: SA3*

**Discussion:**

Reply from SA3 to CT4 (C1-200206)

**Decision:** The document was **noted**.

**C1-200255 Reply LS on SUCI computation from an NSI (S3-194455)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S3-194455, to CT6, SA2, CT1, cc -  
 Source: SA3*

**Discussion:**

Reply Needed

Proposed LS out in C1-200395

**Decision:** The document was **replied to in C1-200395**.

**C1-200256 Reply LS to SA2 on 5G-S-TMSI Truncation Procedure (S3-194482)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S3-194482, to SA2, cc RAN2, CT4, CT1, RAN3  
 Source: SA3*

**Decision:** The document was **noted**.

**C1-200257 Reply LS on SUCI computation from an NSI (S3-194548)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S3-194548, to TSG CT, SA1, SA2, CT1, CT6, CT4, cc TSG SA  
 Source: SA3*

**Decision:** The document was **noted**.

**C1-200258 Reply LS on Sending CAG ID in NAS layer (S3-194559)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S3-194559, to RAN3, SA2, RAN2, cc CT1  
 Source: SA3*

**Decision:** The document was **noted**.

**C1-200259 Reply LS on IANA assigned values for mission critical (S3-194603)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S3-194603, to CT1, cc -  
 Source: SA3*

**Discussion:**

Reply LS is needed, not provided to the meeting, SA6 meets in May, i.e. after next CT1 meeting

**Decision:** The document was **postponed**.

**C1-200260 LS to CT1 on 3rd ETSI MCX Remote Plugtest (S3-194611)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S3-194611, to CT1, cc SA6  
 Source: SA3*

**Discussion:**

Mike Dolan (Firstnet)

I agree with noting C1-200260, an SA3 reply regarding a Plugtest issue.

I will take onboard the contents of the SA3 reply regarding the Plugtest issue into C1-201006, a revision of my “C1-200382 Update on Plugtest Reported Issues”.

That revised discussion paper (C1-201006) can then also be noted – it captures current status of work on Plugtest issues.

@ Jörgen: I changed the WI code in 3GU for C1-201006 from enh2MCPTT-CT to MCProtoc16, since it is more accurately related to protocol fixes.

**Decision:** The document was **noted**.

**C1-200261 LS on Reply on QoE Measurement Collection (S5-197543)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S5-197543, to CT1, RAN2, RAN3, cc -  
 Source: SA5*

**Decision:** The document was **noted**.

**C1-200262 Reply LS on how the IWF obtains key material for interworking group and private communications (S6-192194)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S6-192194, to CT1, SA3, cc -  
 Source: SA6*

**Decision:** The document was **noted**.

**C1-200263 Reply LS (S6-192023) on clarifications regarding SEAL services (S6-192318)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S6-192318, to CT3, cc CT1  
 Source: SA6*

**Decision:** The document was **noted**.

**C1-200264 Reply LS on Unicast resource management with SIP core (S6-200163)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S6-200163, to SA1, cc -  
 Source: SA6*

**Discussion:**

related CR iC1-200616

**Decision:** The document was **noted**.

**C1-200265 LS on API additions to SEAL and V2XAPP (S6-200270)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S6-200270, to CT3; CT1, cc -  
 Source: SA6*

**Discussion:**

No CT1 CRs seem available to this meeting, commented that none are needed

**Decision:** The document was **noted**.

**C1-200266 Reply LS on Enquiries for supporting vertical applications (S6-200337)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S6-200337, to CT1, cc -  
 Source: SA6*

**Discussion:**

Related CRs in C1-200562, C1-200563, C1-200554,C1-200552, C1-200553, C1-200608 and C1-200610

**Decision:** The document was **noted**.

**C1-200267 Reply LS on clarifications regarding V2XAPP services (S6-192385)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S6-192385, to CT3, cc CT1  
 Source: SA6*

**Decision:** The document was **noted**.

**C1-200268 LS on missing cause code mapping (C3-195374)**

*Type: LS in For: (not specified)  
 Original outgoing LS: C3-195374, to CT4, cc CT1  
 Source: CT3*

**Decision:** The document was **noted**.

**C1-200269 Reply LS on LS on dependencies on AS design for mobility management aspects of NTN in 5GS / LS on system level design assumptions for satellite in 5GS (R3-197699)**

*Type: LS in For: (not specified)  
 Original outgoing LS: R3-197699, to SA2, cc RAN2, CT1  
 Source: RAN3*

**Discussion:**

C1-200220 from RAN2 and C1-200269 from RAN3 are both replies to the same LS from SA2 (S2-1910786)

C1-200223 from RAN2 and C1-200269 from RAN3 are both replies to the same LS from SA2 (S2-1910787)

**Decision:** The document was **noted**.

**C1-200270 Reply on QoE Measurement Collection (S4-200241)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S4-200241, to SA5, CT1, RAN2, cc RAN3  
 Source: SA4*

**Decision:** The document was **postponed**.

**C1-200271 Reply LS on Support for ECN in 5GS (S4-200298)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S4-200298, to SA2, cc RAN2, RAN3, CT1  
 Source: SA4*

**Decision:** The document was **noted**.

**C1-200272 LS on GSMA NG.116 Attribute Area of service and impact on PLMN selection (S2-2001726)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001726, to CT1, SA1 GSMA 5GJA, cc -  
 Source: SA2*

**Discussion:**

LS pertains to Rel-17 (FS\_eNS\_Ph2 )

**Decision:** The document was **postponed**.

**C1-200273 Questions on onboarding requirements (S2-2001729)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001729, to SA1, cc TSG SA, CT1, SA3, CT6  
 Source: SA2*

**Discussion:**

LS pertains to Rel-17 (FS\_eNPN)

**Decision:** The document was **postponed**.

**C1-200274 Reply LS on assistance indication for WUS (S2-2001732)**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-2001732, to CT1, RAN2, RAN3, cc -  
 Source: SA2*

**Discussion:**

SA2 asks CT WG1 group to take the above answers into account and update their specifications accordingly, if required. Any CRs for WUS in EPC were treated under SAES in previous meeting

**Decision:** The document was **postponed**.

**C1-200319 Specification of NAS COUNT for 5G (FSAG Doc 78\_002)**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to CT1, SA3, cc -  
 Source: GSMA FSAG*

**Discussion:**

CRs to 24.501 may be needed

Reply LS may be needed

**Decision:** The document was **postponed**.

**C1-200356 General status of WWC work (LIAISE-376)**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to SA2, CT1, CT3, CT4, RAN3, cc -  
 Source: Broadband Forum*

**Decision:** The document was **noted**.

**C1-200776 Reply LS on manual CAG selection (S1-201084)**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to CT1, cc RAN2, SA2  
 Source: SA1*

**Decision:** The document was **noted**.

**C1-200777 LS on Questions on onboarding requirements (S1-201087)**

*Type: LS in For: (not specified)  
 Original outgoing LS: -, to SA2, cc TSG SA, CT1, SA3, CT6  
 Source: SA1*

**Discussion:**

LS pertains to Rel-17

**Decision:** The document was **postponed**.

## 5 void

## 6 void

## 7 void

## 8 void

## 9 void

## 10 void

## 11 void

## 12 void

## 13 void

## 14 void

## 15 void

## 16 Release 16

### 16.1 Tdocs on Work Items

#### 16.1.1 Work Item Descriptions

**C1-200296 Stage-3 5GS NAS protocol development**

*Type: WID revised For: (not specified)  
 Source: Ericsson / Ivo*

(Replaces CP-183087)

**Decision:** The document was **agreed**.

**C1-200348 Revised WID on CT aspects of optimisations on UE radio capability signalling**

*Type: WID revised For: Endorsement  
 Source: Qualcomm Incorporated / Lena*

**Decision:** The document was **endorsed**.

**C1-200423 Revised WID on CT aspects of Cellular IoT support and evolution for the 5G System**

*Type: WID revised For: (not specified)  
 Source: Qualcomm Incorporated / Amer*

**Decision:** The document was **agreed**.

**C1-200472 Revised WID on Multi-device and multi-identity**

*Type: WID revised For: (not specified)  
 Source: Ericsson /Jörgen*

**Decision:** The document was **agreed**.

#### 16.1.2 CRs and Discussion Documents related to new or revised Work Items

#### 16.1.3 Status of other Work Items

**C1-200422 5G\_CIoT WI workplan**

*Type: Work Plan For: (not specified)  
 Source: Qualcomm Incorporated / Amer*

**Decision:** The document was **noted**.

#### 16.1.4 Release 16 documents for information

### 16.2 WIs for common and SAE/5G

#### 16.2.1 ePWS

**C1-200442 CR 23.041#0208 Addition of message identifiers for UEs with no user interface**

*Type: CR For: Approval  
 23.041 v16.2.0 CR-0208 Cat: B (Rel-16)  
  
 Source: SyncTechno Inc.*

**Abstract:**

Addition of message identifiers for UEs with no user interface

**Discussion:**

Lena Chaponnière (Qualcomm):

- ePWS WID (CP-191155) states "This work item will not introduce new functionality for US WEA and Japan ETWS." but this CR defines new message IDs for ETWS and CMAS and 23.041 states "CMAS (aka WEA)". Thus, the proposed new message IDs should be limited to KPAS and EU-Alert only.

- furthermore, if CMAS and ETWS are anyway in scope, then to follow the existing 23.041 convention, there should be two sets of message ids - one set for ETWS (in the range 4357 - 4369) and one set for non-ETWS PWS (in the range proposed in the CR).

Peter Sanders (one2many): I don't completely agree with Ivo's comment

Ivo's comments:

- ePWS WID (CP-191155) states "This work item will not introduce new functionality for US WEA and Japan ETWS." but this CR defines new message IDs for ETWS and CMAS and 23.041 states "CMAS (aka WEA)". Thus, the proposed new message IDs should be limited to KPAS and EU-Alert only.

- furthermore, if CMAS and ETWS are anyway in scope, then to follow the existing 23.041 convention, there should be two sets of message ids - one set for ETWS (in the range 4357 - 4369) and one set for non-ETWS PWS (in the range proposed in the CR).

Neither KPAS, nor EU-Alert have requirements for an ePWS service. The new message IDs should not apply to KPAS or EU-Alert. Simply removing the "CMAS/ETWS" will do. (so this remains: "CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality regardless of the type of disasters and characteristics of a disaster.")

My remarks:

- The RAN Node needs to make a choice between broadcasting as an ETWS-like service (SIB10 or SIB11 in E-UTRAN) or as a CMAS-like service (SIB12 in E-UTRAN). At this moment it is not specified which choice the RAN node should make and what this choice should be based on. Since the message contains no text, and the receiving device will use the message ID instead, I assume that it will be an ETWS-like service.

- The text in red above says there is no user interface, but all entries for the new message IDs have a sentence "(Not) Settable by MMI". This is confusing; there is no MMI says the text in red. Since we are talking about devices, I would simply remove that sentence.

Lena Chaponnière (Qualcomm)

I agree with Ivo’s comments.

Additionally, I have the following other comments:

- What is meant by “regardless of the type of disasters and characteristics of a disaster” exactly?

- There are several new message identifiers which are marked as “for UEs with no user interface” but then there are also marked as “Settable by MMI”. How can there be an MMI if there is no user interface?

- “when a volcano occurs” -> “when a volcanic eruption occurs”

--

Hyounhee

Followings are clarification on your comments.

Regarding the issue on the exclusion of US and Japan case (Ivo’s comment)

Ivo made the confusion by missing “US” and “Japan” in front of CMAS and ETWS.

I would like to remind you that WID ePWS-CT aspect has the sentence as follows.

This work item will not introduce new functionality for US WEA and Japan ETWS.

In addition, the clause 9 of TS 22.268 (clause for ePWS requirements) has the sentence as follows.

Requirements specified in the clause 9 do not apply for US WEA and Japan ETWS.

In other words, CMAS is not same as US WEA though Ivo pointed out the expression CMAS (aka WEA). Such expression should be revised as US CMAS (aka WEA). ETWS is also not same as Japan ETWS.

However, I added the sentence “This message identifier is not applicable to US WEA and Japan ETWS” because anyway such sentences may be deleted later if US and Japan governments decide to have ePWS functionality.

I haven’t heard from two governments that they didn’t want it when I double-checked it with them so I want Ericsson to be responsible for keeping the sentence “This message identifier is not applicable to US WEA and Japan ETWS” in TS 23.041.

Anyway, it will be identified after some activities in AWG, UNDRR etc. continuously.

And, 4401 – 6399 are message identifiers reversed for PWS range in future versions. ETWS is also one of PWS.

As I strongly explained at the last meeting, the same message identifiers for UEs with no user interface need to be defined for both CMAS and ETWS from the perspective of device manufacturer.

Regarding the issue on broadcasting as ETWS-like or CMAS-like, (Peter’s comment)

I would like to remind all of you that ePWS functionality is specified based on existing PWS network architecture without any change.

It means that if the legacy PWS network architecture is based on ETWS, then warning message for UEs with no user interface and with ePWS functionality need to be broadcast as legacy warning message, ETWS-like message. Same as CMAS.

Regarding the issue on the meaning of “regardless of the type of disasters and characteristics of a disaster”, (Lena’s comment)

I saw Lena’s point. That expression is too much vague. I revised it as follows as what I intended to mean.

- For disasters to be decided to be notified by authorities

Regarding the issue on MMI (Lena’s comment)

I was confused about this point when I drafted it. I deleted it.

I hope all of your comments are clarified above.

-

One thing to be mentioned,

As the Editor of AWG work item related to PWS, I plan to provide the summary of 3GPP ePWS works during upcoming AWG meeting.

I need to provide the clarification on why “This message identifier is not applicable to US WEA and Japan ETWS” for new message identifiers.” In the draft of AWG Report if CT1#122e meeting decide to keep that sentence in the agreed CR in the end.

So I would like you to take into account such potential activities because I may need to indicate what company requests to add such sentence when the representative of US/Japan governments asks me the reason in AWG etc. meetings.

--

Peter Sanders (one2many)

I still have an issue with starting the sentence with "CMAS/ETWS" (CMAS/ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality for disasters to be decided to be notified by authorities)

It says that the Message IDs are for CMAS and ETWS, but are not applicable in the US and in Japan. Does this mean that ePWS devices cannot be sold in the US or Japan? Its confusing.

My understanding is that by introducing ePWS, we shall not affect the current CMAS and ETWS services as they are used in the US and in Japan. Whatever is out there today shall not require any modification because of ePWS.

The solution seems very simple to me: we call the new service "ePWS". Hence we should not confuse anyone by adding the words "CMAS/ETWS" in the beginning of the sentence.

Furthermore, you added some text upon request from Lena. The words that you chose imply that ePWS can only be used by authorities. 3GPP shouldn't care who uses it and should not restrict the use to certain persons or certain groups. If the original words were vague, then simply leave them out.

The result would be like this:

CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality.

We've defined elsewhere in the TS what ePWS functionality is.

--

Ivo Sedlacek (Ericsson)

I raised the following comments:

- ePWS WID (CP-191155) states "This work item will not introduce new functionality for US WEA and Japan ETWS." but this CR defines new message IDs for ETWS and CMAS and 23.041 states "CMAS (aka WEA)". Thus, the proposed new message IDs should be limited to KPAS and EU-Alert only.

- furthermore, if CMAS and ETWS are anyway in scope, then to follow the existing 23.041 convention, there should be two sets of message ids - one set for ETWS (in the range 4357 - 4369) and one set for non-ETWS PWS (in the range proposed in the CR).

The updated CR addresses my 1st comment.

The updated CR does not address my 2nd comment.

--

Hyounhee:

I like Peter’s suggestion, i.e. deleting CMAS/ETWS as these new message identifiers are for UEs with ePWS functionality. Thanks, Peter for good suggestion.

Accordingly, I deleted the last sentence from each message identifier as well because I think such sentence is enough to be kept in Stage 1 TS 22.268 though I assume that it may be deleted in TS 22.268 someday according to discussions in AWG meetings etc. because that sentence was not requested by government organizations but by two companies at that time during SA1 meeting.

I want 3GPP specifications to be kept as neutral as much as possible. Then, I don’t need to provide such clarification on why such sentence was added in 3GPP CT1 technical specifications during any AWG meetings etc.

Regarding Ivo’s comment on his second comment, i.e. two sets of message ids,

I do not agree with Ivo’s interpretation, i.e. 4401 – 6399 are reserved message identifiers for CMAS only.

As I already clarified, it is described in TS 23.041 that 4401 – 6399 are intended as PWS range in future versions of the present document.

It was not described as “CMAS range”.

In addition, TS 22.268 used “General PWS Requirements” that are applied for both CMAS based warning and ETWS based warning. With such legacy usage on “PWS” terminology, it shall be interpreted that 44001 – 6399 are possible to be used for both CMAS and ETWS as well.

So, I still think the C1-200442\_r2 addresses your second comment as well.

I hope all of your comments are clarified above.

-

Ivo Sedlacek (Ericsson)

Today:

- a message with ETWS message ID is sent by RAN using ETWS specific broadcast; and

- a message with non-ETWS message ID is sent by RAN using non-ETWS (i.e. CMAS) specific broadcast.

Assuming that ePWS can be used both in countries which use the ETWS specific broadcast and in countries which use non-ETWS (CMAS) specific broadcast, we should have two sets of message IDs.

So, C1-200442\_r2 is NOT OK.

-

Peter Sanders (one2many)

What you write below is not necessarily always true. There exist RAN Node implementations that do not look at the Message ID to distinguish between CMAS and ETWS. Have a look at C1-200226, the LS from RAN3 which is postponed to the next meeting.

There are implementations that look at the presence of the Concurrent Warning Message Indicator IE. If this indicator is present, then it is CMAS, otherwise it is ETWS. The reason for this choice is that the Message ID is supposed to be transparent for the RAN Node and the Concurrent Warning Message Indicator is not, this indicator is intended to be used by the RAN Node and is not sent to the UE.

Having said that, there are indeed implementations that do look at the Message ID as you indicate in your comment below.

However, we should first discuss if we want to use ETWS-like broadcast for ePWS devices with no user interface and CMAS-like broadcast for ePWS devices that have a user interface, but cannot display the full text of a warning message. If that is the case, then we need 2 sets of Message IDs.

Furthermore, if we decide we need a set of Message IDs for ETWS-like broadcast then we also need to discuss the need for an ePWS specific value for the Warning Type IE, because without that we cannot use the ETWS Primary Notification.

-

Hyounhee

I uploaded revised version (file name: C1-200443\_r3.doc) in “Drafts” folder of “Inbox’ folder.

Thank you for providing the clarification on the current RAN network procedure. I missed that point.

Now I fully understood why Ivo proposed two sets of message identifiers.

If only single set of message identifiers are specified, it seem to need to introduce the new network procedure from the perspective of RAN networks in order to decide what SI needs to be used to broadcast a warning message.

It is not acceptable to have any network change by Rel-16 ePWS work so I think two sets of message identifiers are only solution without any RAN network change as you suggested even though device manufacturers need to take care of two sets of message identifiers.

I think this approach is much less painful at this point because it is required for new type of devices, not for legacy devices while keeping the legacy network architecture without any network change for such new type of devices.

However, I will address this ETWS case during AWG meetings to see whether there is a good way to have the single set of MIs for PWS, i.e. both ETWS and CMAS because in practical service scenario, I don’t think that 3GPP networks need to deal with both ETWS and CMAS at the same time once they are deployed in places in any country.

It may take long time until the conclusion is made out of 3GPP meetings. So I took Ivo’s suggestion.

I hope all of your comments are clarified above.

Please have a look at the revised version in the Drafts folder.

-

Peter Sanders (one2many)

There are more complications.

A new ETWS message replaces ongoing broadcast; in ETWS there is no concurrent broadcast. This implies that in networks where a mix is used of ETWS and CMAS, that the next ETWS message cancels all ongoing ETWS and CMAS broadcast and this includes all ongoing warning message broadcast to citizens (the current CMAS/EU-Alert/KPAS service). I'm pretty sure that this is not what we want.

We never specified how ETWS and CMAS can work together in a single network.

Therefore, in countries that have a PWS for citizens (like Korea with KPAS), we can't add ePWS in such networks with ETWS-like broadcast, unless we seriously modify the specifications to make it possible to broadcast ETWS Primary Notifications concurrently with CMAS messages.

If we don't want that, then the only solution is to broadcast ePWS messages as CMAS-like messages; concurrently with any other CMAS messages. This implies a few things:

- we don't need 2 sets of Message IDs and we don't need an ePWS specific value for the Warning Type IE;

- in CMAS the Warning Message Content IE is mandatory (see TS 36.331 on SystemInformationType 12). For devices that have no user interface, this IE is useless but since it is mandatory, it will have to be populated with 82 octets of (useless) padding characters. I think we should add a note somewhere to clarify this.

-

Peter Sanders (one2many)

I just saw your new version 3 of 442. It has this row:

4368 - 4359 1105 - 1107 ETWS CBS Message Identifier for future extension.

4368 to 4359??? 4359 is the upper limit for the ETWS range and 4368 is way above it. There was only room for 3 new Message IDs, not for 11 new ones

Secondly, you didn't modify the second column with values in hex.

Please, see my comment below first before fixing this.

--

Ivo Sedlacek (Ericsson)

C1-200442\_r3.docx addresses my 2nd comment.

However, somehow changes for my 1st comment were lost in C1-200442\_r3. Can we please add text "This message identifier is not applicable to US WEA and Japan ETWS." in the message ID definitions? Thank you

On:

I just saw your new version 3 of 442. It has this row:

4368 - 4359 1105 - 1107 ETWS CBS Message Identifier for future extension.

4368 to 4359??? 4359 is the upper limit for the ETWS range and 4368 is way above it. There was only room for 3 new Message IDs, not for 11 new ones

Secondly, you didn't modify the second column with values in hex.

[Ivo]

Cann't we use the message IDs in the following range?

4360 - 4369 1108 - 1111 Intended for standardization in future versions of this document. These values shall not be transmitted by networks that are compliant to this version this document. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.

-

Hyounhee

Thank you, Ivo for pointing out my mistake and suggesting alternative.

I uploaded revised version (file name: C1-200442\_r4.doc) in “Drafts” folder of “Inbox’ folder.

Considering 4401 – 6399 are MIs reserved for PWS, I added new MIs for ETWS case after the new MIs for CMAS case.

In addition, considering Ivo’s request on adding not applicable for US and Japan, I also changed my mind.

I added “Not applicable for US WEA” for new MIs specified for CMAS case and “Not applicable for Japan ETWS” for new MIs specified for ETWS case because it might be useful to make relevant stakeholders easily recognize this issue during AWG meetings etc that are out of 3GPP.

I will upload the official revision C1-200890 to the inbox in 4 hours from now on.

Regarding Peter’s comment,

I am very unhappy about his continuously repeated comments he made during CT1 meeting in August 2018 when his pCR was not selected as recommendable solution in the conclusion of TR 23.735. You should bring a new study item and work item in order to propose your new ideas.

I fail to understand why he assumed that CMAS and ETWS are running in the single network in the real deployment scenario.

ePWS is operated over the legacy PWS network systems without any change and I don’t think legacy network architecture assumes that both CMAS and ETWS are running by the single network at the same time in the same place when they are deployed in real markets.

-

Ivo

in C1-200442\_r4, given that message IDs from 4412 to 4422 are marked "ETWS ....", the message IDs from 4401 to 4411 need to be marked "CMAS ...."

-

Hyounhee

I didn’t add “CMAS” because there might be someone else that interpreted it as US WEA as you did.

In 3GPP specifications, CMAS term seems to be described in general to be applied for US WEA, EU-Alert, KPAS and others over CMAS by countries. Also CMAS term seems to be described to mean US WEA as you first pointed out that part.

So, with the expression “Not applicable for US WEA”, I think those new MIs are for CMAS based messages, not ETWS based messages.

I prefer proposed expression as the new ePWS functionality if it is not sensitive to you.

-

Ivo Sedlacek (Ericsson)

> I prefer proposed expression as the new ePWS functionality if it is not sensitive to you.

this is NOT OK as this also encompases ETWS.

What about the message IDs from 4401 to 4411 being marked as "Non-ETWS ...."?

--

Peter Sanders (one2many)

@Hyounhee,

In 442\_r4 a range of Message IDs (4412-4422) was added for ETWS type messages.

Clause 9.3.24 of TS 23.041 has this entry:

=====

9.3.24 Warning-Type

This parameter is set when ETWS is used. It has three fields in order to contain warning type value, emergency user alert and popup indications.

The warning type value field indicates the following 5 warning types as its values; earthquake, tsunami, earthquake and tsunami, test, and other. Also, other warning types can be defined in the future if it is required.

====

Please, explain to me how ETWS is going to be used in ePWS for example for a volcanic eruption; which value of Warning-Type shall be selected?

-

Hyounhee

I don’t assume using the existing Warning Type for UEs with no user interface as you do.

I think it should be discussed in SA1 first to define a new Warning Type for UEs with no user interface in order not to give any impact on legacy ETWS procedure in TS 22.268 as new MIs are defined for UEs with no user interface.

So if you explicitly want something at this meeting, I can draft a Liaison to SA1 to request SA1 to deal with this issue in TS 22.268.

Without that liaison, I will submit a CR to address this issue in next SA1 meeting.

-

Ivo Sedlacek (Ericsson)

since we are coming near to deadline for revisions, I would like to repeat that C1-200442\_r4 is NOT OK since semantics of different message IDs are overlapping as e.g. 4401 encompasses 4412.

4401 1131 CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality.

Not applicable for US WEA

4412 113C ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality.

Not applicable for Japan ETWS

I propose that semantics of message IDs in range of 4401 to 4411 are changed so that it is clear that they are NOT applicable for ETWS, e.g. as follows:

4401 1131 Non-ETWS CBS Message Identifier for warning message dedicated to UEs with no user interface and with ePWS functionality.

Not applicable for US WEA

Such change will ensure that semantics of different message IDs are non-overlapping.

-

Peter Sanders (one2many)

The first sentence in clause 9.3.24 of TS 23.041 says the Warning Type IE is mandatory for ETWS, regardless of what the UE is going to do with it. Hence, specifying a range of Message IDs for ETWS and not addressing the Warning Type will lead to an unimplementable ePWS feature.

I don't believe SA1 would specify warning types. This is a stage 2 issue.

We would only need a single new Warning Type value for ePWS, because the real information about the disaster is in the Message Identifier value. We shouldn't reuse Warning Type values that are used in Japan today, because UEs have specific behaviour associated with those Warning Types. We need a new one.

So, as 442 stands now, the ETWS part is unimplementable and we shouldn't do that close to the freeze of the release 16. We either remove the list of ETWS message identifiers from 442 or we add an editor's note in 9.3.24 stating that the Warning Type for ePWS will be allocated later, or we allocate 1 new value for ePWS if we want to finish the WI in release 16.

-

Peter Sanders (one2many)

I'm sorry if I made you feel unhappy with my nagging comments.

Be assured that I am not advocating my solution from the study that didn't make it; neither am I advocating to modify anything on the PWS system that affects legacy CMAS or ETWS.

I keep nagging because you are not addressing my comments; hence I keep resending them. Below are the concerns that are still left open.

If ePWS is to be used for broadcast to devices without user interfaces with CMAS-like broadcast, then the information about the disaster is in the value of the Message ID. There is no Warning Message Content, but the Warning-Message-Content IE is mandatory. Since there is no real content, the IE will have to be populated with 1 page of CB-Data consisting of (useless) padding characters. In one of the comments I proposed to add a note clarifying this.

You didn't address this suggestion.

If ePWS is to be used for broadcast to devices without user interfaces with ETWS-like broadcast, then the information about the disaster is in the value of the Message ID, but in ETWS the Warning Type IE is mandatory. Without addressing this the feature is unimplementable (see my previous mail)

You didn't address this comment.

Since Korea has KPAS (a CMAS-like service) and you do this work item on request of the Korean government I'm simply expressing a concern that ePWS with ETWS-like broadcast and KPAS don't go together in a single network, since ETWS doesn't support concurrent broadcast. I'm wondering about the use case. Do you anticipate there is going to be a real deployment of ePWS with ETWS-like broadcast? Do we really need ePWS with ETWS? I'm only asking; I'm not against it if there is a use case for it.

You didn't address this concern.

-

Ivo Sedlacek (Ericsson)

on:

We either remove the list of ETWS message identifiers from 442 or we add an editor's note in 9.3.24 stating that the Warning Type for ePWS will be allocated later, or we allocate 1 new value for ePWS if we want to finish the WI in release 16.

My preference is the 2nd option - there has not been much discussion on this topic to conclude on the 3rd option and I do not agree with the 1st option.

Also, we can also postpone the CR, add "specification of the message Identifiers for warning messages dedicated to UEs with no user interface and with ePWS functionality" in ePWS exception sheet and work on the CR offline to Apr 2020 CT1 meeting.

-

Hyounhee

I uploaded revised version (file name: C1-200442\_r5.doc) in “Drafts” folder of “Inbox’ folder though I already uploaded the official revision C1-200890 to the inbox.

Regarding Ivo’s comment,

I don’t like the new term “non-ETWS” but it seems to be best way to differentiate two cases to prevent such potential confusion on semantics though I don’t see any confusion.

I added “non-ETWS”.

Regarding Peter’s comment,

I also thought that table you pointed in TS 23.041 while I assumed it is in TS 22.268. You are right. It can be addressed in TS 23.041.

I allocated one Warning Type for UEs with no user interface and with ePWS functionality in that clause you pointed out.

I hope r5 is happy to both of you now.

I will get another revision number to revise C1-200890 in order to reflect two changes described in r5 and upload the official version soon.

Peter Sanders (one2many)

You forgot to add the new section to the "clauses affected" on the cover sheet.

I'm happy with the change, but Ivo may not be; your and his mail crossed. Furthermore, I'm still not sure ePWS with ETWS serves a real use case ( see other mail from a bit earlier).

**Decision:** The document was **revised to C1-200890**.

**C1-200890 CR 23.041#0208 Addition of message identifiers for UEs with no user interface**

*Type: CR For: Approval  
 23.041 v16.2.0 CR-0208 rev 1 Cat: B (Rel-16)  
  
 Source: SyncTechno Inc.*

(Replaces C1-200442)

**Discussion:**

Ivo Sedlacek (Ericsson): still not ok

Hyounhee

Thank you for sending quick reply before I upload the official revision, C1-201033 to the inbox.

Initially I described the sentence to allocate a new number of Warning Type in the revised version as I mentioned below.

But I am also uncomfortable to do it without checking it in details with relevant stakeholders.

After this meeting, I will double-check some parts related to ETWS with Japanese operators and the representative of Japanese government in AWG meeting to figure out real operation and to discuss whether the single set of the new MIs are OK from ETWS perspective though there might be some implementation-dependent changes in RAN operation.

Depending on the real operation, there might be possible to use legacy Warning Type value 0000100 allocated for Other disasters and 0000000 for earthquake, 0000001 for Tsunami, and 0000010 for earthquake and tsunami rather than defining a new number.

It may be issue to be addressed by operation policy.

I added Editor’s note as follows in 9.3.24 and will upload C1-201033 to the inbox soon.

Editor’s note: FFS on whether legacy Warning typeValue can be used or a new Warning typeValue need tobe allocated for UEs with no user interface and with ePWS functionality

-

Peter Sanders (one2many)

The consequence of this editor's note for the Warning Type is that we still need to complete the feature and need an exception to do that in the next meeting if we want to complete it within release 16.

That implies there is some work for you, Hyounhee.

I have no objection against that.

-

Hyounhee

@Peter

Regardless of Warning Type, the exception sheet will be submitted to CT plenary because of potential update depending on the discussion in AWG meeting if necessary as I indicated several times.

I still consider possibility of using legacy Warning Type without defining a new value. If it is concluded as a right way, there is no change in TR 23.041 only by deleting Editor’s note. If it is concluded that the single value is newly necessary, only value will be allocated from the reserved values. So I don’t think it is a big issue to delay all ePWS works to Release 17.

Considering potential losses from disasters without ePWS tool in Release 16 for IoT devices that all of us cannot imagine, I don’t think 3GPP delegates are against completing it in Release 16 because 3GPP delegates are one of experts who can figure out 5G world.

**Decision:** The document was **revised to C1-201033**.

**C1-201033 CR 23.041#0208 Addition of message identifiers for UEs with no user interface**

*Type: CR For: Approval  
 23.041 v16.2.0 CR-0208 rev 2 Cat: B (Rel-16)  
  
 Source: SyncTechno Inc.*

(Replaces C1-200890)

**Decision:** The document was **agreed**.

**C1-200443 CR 23.041#0209 Support of a stored language-independent content referenced by a warning message**

*Type: CR For: Approval  
 23.041 v16.2.0 CR-0209 Cat: B (Rel-16)  
  
 Source: SyncTechno Inc.*

**Abstract:**

Support of a stored language-independent content referenced by a warning message

**Discussion:**

Ivo Sedlacek (Ericsson): - 1st sentence uses "mapping" while 2nd sentence uses "referencing".

---------------------------

2) UEs with user interface which support the ePWS language-independent content functionality and which are incapable of displaying text-based warning messages should be capable of mapping message identifiers of received warning messages to language-independent contents stored in those UEs. Such UEs should be capable of referencing a stored language-independent content to be displayed by those UEs when a warning message is received.

---------------------------

Are those supposed to be the same functionality? If so, then the same term should be used. E.g. 2nd sentence can be changed as follows: "When a warning message is received, such a UE should be capable of displaying of a language-independent content stored in the UE mapped from message identifier of the received warning message."

If those are not supposed to the same functionality, then the 2nd sentence was not concluded in 23.735 subclause 6.4.3.

Peter Sanders (one2many):

This is the new proposed text:

2) UEs with user interface which support the ePWS language-independent content functionality and which are incapable of displaying text-based warning messages should be capable of mapping message identifiers of received warning messages to language-independent contents stored in those UEs. Such UEs should be capable of referencing a stored language-independent content to be displayed by those UEs when a warning message is received.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The words "with user interface" seem to be unnecessary. The device only needs to display language-independent content and that is mentioned in the second sentence. I think the words "with user interface" add a requirement that serves no purpose. I would remove those words.

--

Cristina:

We agree on this local storage and mapping feature, but the words “should be” is unacceptable. Considering some simple devices which just sound alarm after receiving any waring message, this feature may be too heavy to support. “can be” or “may be” are preferred.

-

Hyounhee

Followings are clarification on your comments.

Regarding the issue on “referencing” or “mapping” (Ivo & Peter’s comment),

Ivo is right. It should be “mapping”. I was confused between the first paragraph and the second paragraph in the clause 6.4.2 of TR 23.735.

Regarding the issue on “should be” or “ can be or may be” (Cristina’s comment),

This proposal is not for simple devices you considered as it was described in the clause 6.4 of TR 23.735.

The existing PWS messages can not include big size of contents suitable for devices such as AR devices or hologram devices that are incapable of text-based warning message.

In addition, it is assumed that 5G devices will be used to help disabled persons experience lots of things. So if a proper content stored in such devices dedicated to persons with specific disability can be displayed, then such disabled persons can understand what happened when a warning message is received in such devices.

And TR 23.735 request it as “shall” as follows.

UEs with ePWS functionality incapable of displaying-text-based warning messages shall be capable of mapping message identifiers of received warning messages to contents stored in UEs with ePWS functionality.

Considering any potential issues that we can not identify in such future 5G devices, I selected “should” instead of “shall”.

If Cristian worrys about mis-interpretation on proposed sentences different from what is specified in TR 23.735, I think NOTE can be added to clarify that this sentence is not applied for UEs with user interface and with very limited memory that can not include any stored language-independent content. However, what I intended to do with this paragraph is that any content stored in such UEs can be useful to the user of such devices to recognize that something dangerous is happening.

-

Hyounhee

@Ivo, Qiang

Followings are clarification on your comments.

Regarding Ivo’s comment,

I am happy about what you suggested. That sentence is much more readable and understandable.

Regarding Cristina’s comment,

I added “NOTE” for the clarification that describe that it is not applied for such UEs with very limited memory size that is impossible to store anything.-

-

@Peter

Bullet 3) does not exist in C1-200444 but exists in C1-200443 because bullet 2) is added to deal with a stored content.

So, I will add what you suggested, i.e. “in order to take appropriate action” at the end of bullet 3) in C1-200443.

I already uploaded rev 2 to address comments from Ivo and Qiang. So I will definitely add “in order to take appropriate action” when I uploaded the CR with the formal revised Tdoc number C1-200891 later.

-

Ivo Sedlacek (Ericsson)

nearly OK.

Minor changes:

- there are two NOTEs in subclause 8.3 so they need to be numbered (with hard space between "NOTE" and the number)

- there are two full stops at the end of "received warning message.."

- style of the NOTE should be "NO" (rather than "NO + Left: 1 cm, Hanging: 1,5 cm" as now)-

-

Cristina

It will be better to revise the current text in NOTE as follows, since there may be other limitations not only memory size. Thanks.

“NOTE: This ePWS functionality is not applied for such UEs if they are not possible to store any language-independent content due to the very limited memory size of such UEs.”

to be

“NOTE: This ePWS functionality is not applied for such UEs if they are not possible to store any language-independent content.”-

-

Hyounhee @Ivo

Thank you for your comments. I fixed all of them and I uploaded revised version (file name: C1-200443\_r3.doc) in “Drafts” folder of “Inbox’ folder.

I will upload the official revision C1-200891.zip to the inbox in 4 hours from now on.

@Cristina

I agree with you. There might be other reasons for such UEs to be impossible to store any content considering diverse new types of UEs in 5G we may not be possible to imagine now.

I deleted “due to….” as you suggested.

I already uploaded C1-200443\_rev3 to “Drafts” folder by reflecting Ivo’s comment before seeing your mail. So I will definitely reflect your comment in the official revision C1-200891.

-

Lena Chaponnière (Qualcomm)

I propose the following editorial edits to the wording of NOTE 2:

NOTE 2: This ePWS functionality is not applied for such UEs if they are not capable of storing any language-independent content due to the very limited memory size of such UEs.

-

Hyounhee @Lena,

Thank you for suggesting the better expression.

I reflected your comment and Cristina’s comment in C1-200443\_r4 that I just uploaded to the Drafts folder.

I will upload the official revision C1-200891.zip to the inbox in 3 hours from now on based on C1-200443\_r4.

-

Cristina: I’m ok with C1-200443\_r4. Thanks.

Lena: ditto

**Decision:** The document was **revised to C1-200891**.

**C1-200891 CR 23.041#0209 Support of a stored language-independent content referenced by a warning message**

*Type: CR For: Approval  
 23.041 v16.2.0 CR-0209 rev 1 Cat: B (Rel-16)  
  
 Source: SyncTechno Inc.*

(Replaces C1-200443)

**Decision:** The document was **agreed**.

**C1-200444 CR 23.041#0210 Example of Unicode based symbols as the language independent contents mapping to disasters in NOTE**

*Type: CR For: Approval  
 23.041 v16.2.0 CR-0210 Cat: F (Rel-16)  
  
 Source: SyncTechno Inc.*

**Abstract:**

Example of Unicode based symbols as the language independent contents mapping to disasters in NOTE

**Discussion:**

Lena Chaponnière (Qualcomm) - each unicode character required to be supported as a language-independent content needs to be listed in a normative text (not in a NOTE). Until this is done, editor's notes in 9.1.3.4.2 and 9.1.3.5.2 are valid and cannot be removed. I suggest to introduce a table with rows containing an event/disaster semantic and related unicode character code (if known, or TBD if not known) + an editor's note related to those TBDs.

Peter Sanders (one2many)

I have a few proposals for C1-200444.

In clause 8.3 are 2 functionalities (2 bullets) and 444 proposes to add an example in the note under bullet 1.

Bullet 1) starts with this sentence:

1) UEs with user interface which support the ePWS language-independent content functionality and which are not

capable of displaying text-based warning messages should be capable of displaying the language-independent .....

and I propose to remove the words in red, because this requires the UE to have a user interface, while this is not necessary. The UE needs to have a display to display the unicode character, and that is already stated further down the sentence. Secondly, I think the purple word not is missing from the original text and should be added.

Bullet 2); I propose to add the text in red and remove the text in purple

2) UEs with no user interface which support the ePWS disaster characteristics functionality should be capable of identifying the characteristics of a disaster derived from the message identifier of a received warning message in order to take appropriate action.

Without this text in red it is unclear what the purpose is of a UE identifying characteristics of a disaster.

Secondly, I don't think it is relevant whether the UE has a user interface or not. Let's not include such a restriction.

Peter Sanders (one2many)

Hyounhee,

I think you have missed one of my comments in the middle of all the discussions.

Bullet 3) is the only bullet that deals with ePWS devices with no user interface:

3) UEs with no user interface which support the ePWS disaster characteristics functionality should be capable of identifying the characteristics of a disaster derived from the message identifier of a received warning message.

This sentence only states what the UE should do, but it is unclear why that is. Hence I proposed to add a few words (in red) at the end: "..... received warning message, in order to take appropriate action.

--

Hyounhee

My view on your comments are as follows.

First, regarding adding the description on Unicode Symbol as the normative text (Ivo’s comment),

I don’t agree with you.

It should be described as a NOTE, not a normative text because it is to help device manufacturers get 3GPP guidance on how to handle them in case regulatory bodies of countries where their devices are sold do not have any regulation on that issue yet.

And I double-checked with the expert on Unicode symbols to identify which Unicode numbers represent some disasters important from the perspective of public warning.

Due to too many Unicode numbers, it was like looking for a needle in a haystack.

So rather than adding some Unicode numbers mapping to some of disasters based on my searching Unicode symbol, I selected a way of sending a liaison out to ISO in charge of Unicode standardization because they are the expert on them and can provide an recommended approach to be taken by 3GPP CT1 to address this issue.

In addition, if any normative texts need to be added to address this issue, then, I think that the clause 6.2.3 of TS 23.038 is a right place to add them instead of the clauses of TS 23.041.

So… I would like to suggest to approve C1-200444 to replace existing Editor’s notes by the new Editor’s note and the addition of new sentences in NOTE at this meeting and wait until the ISO sends the reply liaison to 3GPP. Then, depending on the recommendation from ISO, it will be revised.

Second, regarding Peter’s comment on the first bullet in the clause 8.3,

I think Peter confused something on the first bullet.

The first bullet is applied to legacy type of handsets with ePWS functionality to address the language issue for foreigners who do not know local language used in warning message. So it is right to have “with user interface” and it is right not to have “not”.

I hope all of your comments are clarified above.

I still keep the first version on this CR, i.e. C1-200444 for the approval at this meeting.

-

Peter Sanders (one2many)

My only comment that remains on 444 (and 443), is to add a few words at the end of bullet 3). See my last 2 emails. All other comments from my side were withdrawn after the discussion with Ivo last week.

Ivo Sedlacek (Ericsson)

In order to have a testable solution, we need a normative text identifying what "the language-independent content mapped to an event or a disaster (e.g. character such as Unicode based pictogram mapping to a disaster) that is part of user information contained in the content of a warning message" is.

NOTE will not do the job.

I have no preferences whether to document this in 23.041 or in some other TS, but the Editor's note below cannot be removed until it is documented in a TS.

Editor’s note [WI: ePWS, CR#202]: FFS on what character(s) such as Unicode based pictogram(s) are the language-independent content mapped to an event or a disaster.

So, C1-200444 is not OK.

Hyounhee @Ivo

I partly agree with you and partly disagree with you. I would like to focus on what I partly agree with you rather than what I partly disagree with you.

As I accepted your suggestion at the last meeting, I still think it will be best for 3GPP technical specification to include them assuming that such Unicode symbols introduced in 3GPP technical specification are highly likely to be quickly accepted by governments in the world unless there is a very very critical issue on what 3GPP specified for such Unicode symbols though I assume it will be rare probability for such a critical issue to happen.

I believe 3GPP has such position and 3GPP is likely to be more often requested to provide such guidelines that were in general defined by regulatory requirements in the past because 5G are getting to be more and more complex to be quickly understood by regulatory bodies to figure out what regulatory policies are needed to be defined in advance.

In order to address this issue, I want to take procedures step by step as follows.

First, I would like to see the reply liaison by ISO in terms of the liaison intended to be sent from 3GPP CT1 at this meeting in order to officially identify whether there are existing Unicode symbols that can be used to be mapped to disasters critical to public warning.

If there are no such Unicode symbols at all, then I will move to the next step in order to make ISO start to work the standardization on such Unicode symbols.

Once such standardization is done in ISO, then ISO can send liaison to 3GPP CT1 again in order to inform that 3GPP can add such Unicode Symbol in 3GPP specification.

Then, I will bring a CR for TS 23.041 to delete this Editor’s NOTE and add some description to indicate that the language independent contents are identifiable in TS 23.038 and a CR for TS 23.038 to add Unicode Symbols used for language independent contents.

Second, considering approach I described above, I would like to suggest C1-200444 to be postponed at this meeting because Editor’s NOTE intended to replace Editor’s NOTE described in TS 23.041 does not change the fact that anyway we need Editor’s NOTE for this issue for the time being.

I might have another chance to address this issue during AWG meeting in April before ISO sends a reply liaison back to 3GPP CT1. As the Editor of the work item related to public warning in AWG meeting, I plan to make a liaison to be sent from AWG to ISO in April as well in order to officially request ISO to deal with this issue.

I don’t know how I can postpone C1-200444 in such e-meeting. I will double-check with Frederic on what I need to do.

-

Peter Sanders (one2many)

The "clauses affected" on the cover sheet only has 8.3 in it, there are a few missing: 9.1.3.4.2 and 9.1.3.5.2.

There is also a typo in "consequences if not approved": Missiong

Rest looks okay to me.

**Decision:** The document was **postponed**.

**C1-200446 Workplan for ePWS-CT aspects**

*Type: Work Plan For: Information  
 Source: SyncTechno Inc.*

**Abstract:**

Workplan for ePWS-CT aspects

**Decision:** The document was **noted**.

**C1-200765 handling of ePWS message**

*Type: CR For: Agreement  
 23.041 v16.2.0 CR-0211 Cat: F (Rel-16)  
  
 Source: Samsung /Grace*

**Discussion:**

The CR seems to be related to incoming LS in C1-200226. The incoming LS pertains to Rel-15, and is not part of work item ePWS.

Lena Chaponnière (Qualcomm): The contents of the CR are not related to ePWS. In our view they fall under TEI16. So we request the CR to be postponed to the April meeting.

Grace Suh Kyungjoo (Samsung)

I got some comments from Peter Sanders from one2many and Mikael from Ericsson.

This CR C1-200765 is related to outgoing LS C1-200764 and incoming LS C1-200226 from RAN3 R3-197749.

The incoming LS is related to release 15 and our CT1 #122 e-meeting focuses on release 16 related incoming LS and related CRs.

Therefore, I will postpone this CR until upcoming April meeting CT1 #123.

If you have any opinion, please share your view and discuss this issue.

In advance, I appreciate for you comments.

**Decision:** The document was **postponed**.

**C1-200769 discussion for concurrent broadcast for CMAS**

*Type: discussion For: Discussion  
 23.041 v..  
 Source: Samsung R&D Institute UK*

**Decision:** The document was **withdrawn**.

**C1-200770 discussion for concurrent broadcast for CMAS**

*Type: discussion For: Discussion  
 23.041 v..  
 Source: Samsung R&D Institute UK*

**Decision:** The document was **withdrawn**.

**C1-200771 discussion for concurrent broadcast for CMAS**

*Type: discussion For: Discussion  
 23.041 v..  
 Source: Samsung /Grace*

**Decision:** The document was **postponed**.

#### 16.2.2 SINE\_5G

**C1-200796 Alignment of error codes with 3GPP TS 24.501**

*Type: CR For: Agreement  
 27.007 v16.3.0 CR-0683 rev 3 Cat: F (Rel-16)  
  
 Source: InterDigital / Atle*

(Replaces C1-200320)

**Decision:** The document was **agreed**.

**C1-200513 Work plan for SINE\_5G**

*Type: discussion For: Information  
 Source: Huawei, HiSilicon/Lin*

(Replaces C1-198222)

**Decision:** The document was **noted**.

**C1-200514 No retry in 4G for PDU session type related 5GSM causes**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1943 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Decision:** The document was **agreed**.

**C1-200547 Correction on UE retry restriction on EPLMN**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1944 Cat: F (Rel-16)  
  
 Source: China Telecom, Huawei, HiSilicon*

**Decision:** The document was **agreed**.

**C1-200768 handling of PDU session authentication**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2026 Cat: F (Rel-16)  
  
 Source: Samsung/Grace*

**Discussion:**

Lena Chaponnière (Qualcomm): In subclause 4.9.3, a note should be added stating “The term "non-3GPP access" used in "SNPN is selected over non-3GPP access " is used to express access to SNPN services via a PLMN.”

Ivo Sedlacek (Ericsson): the text should either be a NOTE or should be reformulated to be a normative requirement on the UE.

Amer Catovic (Qualcomm): The proposed new text is not needed, because the NW and the UE behavior is defined in sc. 6.4.1.4.1:

The network may include a Back-off timer value IE in the PDU SESSION ESTABLISHMENT REJECT message.

…

The SMF shall send the SM PDU SESSION ESTABLISHMENT REJECT message.

Upon receipt of a PDU SESSION ESTABLISHMENT REJECT message and a PDU session ID, using the NAS transport procedure as specified in subclause 5.4.5, the UE shall stop timer T3580 shall release the allocated PTI value and shall consider that the PDU session was not established.

--

Lin Shu (Huawei)

We have a disc paper (C1-198429.zip) in the last Reno meeting on #29 for SINE.

So now in 5G SINE for #29, should take different restriction per different use cases.

For the case of this CR touched, we believe the retry is not allowed so we actually believe to specify something on this is useful.

As the UE cannot distinguish this case from other cases in which #29 can be used, I second what Ivo proposed, to have a NOTE to remind that in this case, retry is not allowed.

-

Grace Suh Kyungjoo (Samsung)

I got comments from Lin, Ivo, Lena, and Amer, however, I need time to resolve the issues.

Therefore, I want to postpone the CR C1-200768.

**Decision:** The document was **postponed**.

#### 16.2.3 SAES16 WIs

##### 16.2.3.1 SAES16

##### 16.2.3.2 SAES16-CSFB

##### 16.2.3.3 SAES16-non3GPP

#### 16.2.4 5GProtoc16 WIs

##### 16.2.4.1 5GProtoc16

**C1-200332 Handling of unsupported SSC mode**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1794 rev 2 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

(Replaces C1ah-200147)

**Decision:** The document was **agreed**.

**C1-200515 Deletion of the rejected NSSAI for the current registration area**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1812 rev 2 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

(Replaces C1ah-200157)

**Decision:** The document was **agreed**.

**C1-200620 Dual-registration requirements for EHPLMNs**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1974 Cat: F (Rel-16)  
  
 Source: Intel, Qualcomm Incorporated / Vivek*

**Decision:** The document was **postponed**.

**C1-200631 S-NSSAI as a mandatory parameter to support interworking with 5GS**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1836 rev 2 Cat: F (Rel-16)  
  
 Source: MediaTek Inc., Ericsson / JJ*

(Replaces C1ah-200131)

**Decision:** The document was **agreed**.

**C1-200680 Reject non-emergency PDU session request attempt while registered for emergency services**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1845 rev 2 Cat: F (Rel-16)  
  
 Source: Ericsson /kaj*

(Replaces C1ah-200205)

**Discussion:**

Lena Chaponnière (Qualcomm): It does not seem justified to add the possibility for the AMF to reject a non-emergency PDU session establishment request from an emergency-registered UE with cause “congestion”. In this case, the reject is not due to congestion, it is due to the fact that the UE is emergency-registered.

Sung Hwan Won (Nokia): I support the CR.

If one searches “or case f)” in the CR, it can be spotted in multiple places. It is a workaround to enable the AMF’s control of UE behavior with providing it with a BO timer value. Otherwise, there is no way to prevent a UE from aggressively retrying 5GSM requests.

Lena Chaponnière (Qualcomm): Thanks for the additional information. Now I understand the motivation for adding case f), and I am fine with the CR.

Kaj Johansson (Ericsson)Thank you Sung for helping out with the explanation and for the support.

And thank you Lena for your initial feedback and final support.

**Decision:** The document was **agreed**.

**C1-200719 Corrections in specifying reasons for errors**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1834 rev 2 Cat: D (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1ah-200181)

**Decision:** The document was **agreed**.

##### 16.2.4.2 5GProtoc16-non3GPP

#### 16.2.5 ATSSS

**C1-200286 ATSSS PCO parameters for 5G-RG**

*Type: CR For: (not specified)  
 24.008 v16.3.0 CR-3211 Cat: B (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

**Discussion:**

Joy Zhou (ZTE): This CR is lack of "MA PDU request" in PCO as specifined in 4.12.3.2 of 23.316:

"If the 5G-RG is registered to EPC and wants to add user-plane resources on 3GPP access over EPC, then the 5G-RG shall send a PDN Connection Establishment Request over this access containing a "handover" indication and include a "MA PDU Request" indication in the PCO.,..."

Roozbeh Atarius (Motorola Mobility): What are subclauses 6.1.x.2 and 6.1.x.3? There should be cross reference somehow with C1-200287. I am not sure how to create those in a pCR but as is, there is problem if this CR gets agreed but not C1-200287.

Atle Monrad (Interdigital):

Missing clause 2 in clauses affected

Don’t really understand the 2-octets ATSSS when the referenced IE in 24.193 states “The ATSSS response with the length of two octets PCO parameter container contents can be 1 octet or more octets long”

I have probably missed something. I’d be happy to learn what.

Ivo Sedlacek (Ericsson)

:> What are subclauses 6.1.x.2 and 6.1.x.3?

3GPP TS 24.193 subclause 6.1.x.2 and 3GPP TS 24.193 subclause 6.1.x.3 are part of C1-200287.

> I am not sure how to create those in a pCR but as is, there is problem if this CR gets agreed but not C1-200287.

If the C1-200286 is agreed but C1-200287 is not agreed, C1-200286 can be postponed at the CT plenary.

Does this address the comment?

Ivo Sedlacek (Ericsson)

> Don’t really understand the 2-octets ATSSS when the referenced IE in 24.193 states “The ATSSS response with the length of two octets PCO parameter container contents can be 1 octet or more octets long”

[Ivo]

The "with the length of two octets" in the PCO parameter name indicates that the length indicator of the PCO parameter has 2 octets, i.e. PCO parameter value can be up to 65535 octets long (while the length indicator of a regular PCO parameter has 1 octet only, a regular PCO parameter value can be up to 255 octets long)

There are already similar PCO parameters in 24.008 and they use the same convention in the name:

- 0023H (QoS rules with the length of two octets);

- 0024H (QoS flow descriptions with the length of two octets);

Does this address the comment or would you like me to change the PCO parameter name?

-

Chairman: I suggest the following:

The 24.008 CR#3211 (tdocs 286) depends on agreement of the pCR in 287 and its revisions. I will capture this in the chairman’s note and then by the end of the meeting determine the final status of CR#3211, i.e. it would only stay agreed if the pCR is agreed.

--

Ivo Sedlacek (Ericsson)

such dependency in chairman’s notes is OK with me.

Thanks for your help.

-

Atle Monrad (Interdigital)

I noticed the existing param names, and if the rest of 3GPP is fine with this rather obscure parameter names, I will not be the showstopper.

**Decision:** The document was **revised to C1-200927**.

**C1-200927 ATSSS PCO parameters for 5G-RG**

*Type: CR For: -  
 24.008 v16.3.0 CR-3211 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

(Replaces C1-200286)

**Decision:** The document was **agreed**.

**C1-200287 Contents of ATSSS PCO parameters for 5G-RG**

*Type: pCR For: (not specified)  
 24.193 v1.0.0  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

**Discussion:**

Joy Zhou (ZTE):The definition of ATSSS request PCO parameter in 6.1.x.2 needs to be update according to 5.32.6 of 23.501.

The UE ATSSS capability includes:

1) ATSSS-LL functionality with any steering mode

2) MPTCP functionality with any steering mode and ATSSS-LL functionality with only Active-Standby steering mode

3) MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode

The definition can consider to follow the way made in C1-200565 from Apple.

Haorui Yang (OPPO): ATSSS request IE itself overlaps with the “MA request type”bit because if UE wants to request the PDN connection to be one leg of MA PDU session, ATSSS request IE will be used, vice versa.

“MA request type”bit seems unnecessary.

--

Roozbeh Atarius (Motorola Mobility)

Change "The ATSSS request PCO parameter container contents can be 1 octet or more octets long. If the ATSSS request PCO parameter container contents is longer than 1 octet, the 2th octet and later octets are ignored." to

The ATSSS request PCO parameter container contents may be one or more octets long. If the ATSSS request PCO parameter container contents is more than one contents, other octets than the first octet shall be ignored."

There are new granularity for ATSSS-LL and MPTCP support in 23.501. These features are now somehow connected to each other please see subclause 5.32.6.1 saying:

The UE indicates to the network its supported steering functionalities and steering modes by including in the UE ATSSS Capability one of the following:

1) ATSSS-LL functionality with any steering mode.

In this case, the UE indicates that it is capable to steer, switch and split all traffic of the MA PDU Session by using the ATSSS-LL functionality with any steering mode specified in clause 5.32.8.

2) MPTCP functionality with any steering mode and ATSSS-LL functionality with only Active-Standby steering mode.

In this case, the UE indicates that:

a) it is capable to steer, switch and split the MPTCP traffic of the MA PDU Session by using the MPTCP functionality with any steering mode specified in clause 5.32.8; and

b) it is capable to steer and switch all other traffic (i.e. the non-MPTCP traffic) of the MA PDU Session by using the ATSSS-LL functionality with the Active-Standby steering mode specified in clause 5.32.8.

3) MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode.

In this case, the UE indicates that:

a) it is capable to steer, switch and split the MPTCP traffic of the MA PDU Session by using the MPTCP functionality with any steering mode specified in clause 5.32.8; and

b) it is capable to steer, switch and split all other traffic (i.e. the non-MPTCP traffic) of the MA PDU Session by using the ATSSS-LL functionality with any steering mode specified in clause 5.32.8.

Change" The ATSSS response with the length of two octets PCO parameter container contents can be 1 octet or more octets long. If the ATSSS response with the length of two octets PCO parameter container contents is longer than as indicated in the figure 6.1.x.3-1, the octets after the last field of the figure 6.1.x.3-1 are ignored." To "The ATSSS response with the length of two octets PCO parameter container contents may be one or more octets long. If the ATSSS response with the length of two octets PCO parameter container contents is longer than as indicated in the figure 6.1.x.3-1, the octets after the last field of the figure 6.1.x.3-1 shall be ignored."

There is no need for R bit. The function seems to be redundant.

[Ivo]

R bit is useful if we need to provide some ATSSS information in rejection cases.

In such case, SMF/P-GW needs to provide the ATSSS response with the length of two octets PCO parameter while indicating rejection.

Does the above address the comments?

--

Ivo Sedlacek (Ericsson)

not sure I understand.

In either establishment of a PDN connection as a user-plane resource of a MA PDU session to be established (as in C1-200288, 5.2.x) or in establishment of a PDN connection as a user-plane resource of an already established MA PDU session (as in C1-200288, 5.2.y), there is no ATSSS request IE in the PDN connectivity request and there is no “MA request type” bit.

C1-200287 solution proposes "MA request type" value of the MA request type field of the ATSSS request PCO parameter. "MA request type" value is used in establishment of a PDN connection as a user-plane resource of an already established MA PDU session (as in C1-200288, 5.2.y), as expected in 23.501:

--------------------

After the MA PDU Session establishment in 5GS/W-5GAN, the description in TS 23.501 [2], clause 5.32.2, applies with the following additions:

- If the 5G-RG is registered to EPC and wants to add user-plane resources on 3GPP access over EPC, then the 5G-RG shall send a PDN Connection Establishment Request over this access containing a "handover" indication and include a "MA PDU Request" indication in the PCO.

--------------------

Does this address the comment?

--

Roozbeh Atarius (Motorola Mobility): Hello Ivo and thanks for incorporating the changes.

You wrote:

R bit is useful if we need to provide some ATSSS information in rejection cases.

In such case, SMF/P-GW needs to provide the ATSSS response with the length of two octets PCO parameter while indicating rejection.

So for my clarification when R is set to zero, then aren’t NSFII bit and MAII bit zero too? Or do we have a case that R is zero but at least one of NSFII and MAII bits are not zero? If the latter then I understand the need for R bit. However if the first statement is correct then wouldn’t you think that R is redundant?

--

Haorui Yang (OPPO):

In my understanding, the “MA PDU request”indication in PCO mentioned in SA2 spec can correspond to the ATSSS request PCO parameter without the “MA request type”bit.

If UE wants to establish PDN connection as a leg of MA PDU session, no matter as the first or the second leg, UE will provide ATSSS request PCO parameter in the PCO IE, if not, UE will provide.

--

Joy Zhou (ZTE)

In ATSSS request PCO parameter, "MA request type" is not needed.

For request 1st leg in EPS: ATSSS request PCO parameter + "initial request" request type.

ATSSS-ST shall be set in ATSSS PCO parameter accordingly.

For 2nd leg in EPS: ATSSS request PCO parameter + "handover" request type.

ATSSS request PCO parameter shall be set to ALL-ZERO.

What do you think?

-

Ivo Sedlacek (Ericsson)

comments to the solution below:

1) in this solution, coding of the ATSSS request PCO parameter in PCO IE depends on values of other IEs present in PDN CONNECTIVITY REQUEST. This is not a good design.

2) this solution is not easily extendable to indicate additional MA PDU session related actions, as the coding of the PCO parameter depends on other IEs present in PDN CONNECTIVITY REQUEST and they might be the same for those MA PDU session related actions.

If CT1 has preference for such design, I can update the CR but IMO, it is suboptimal solution.

-

Jörgen Axell (Ericsson)

Same comment as to C1-200286.

If all other are fine with param-names as is, I’m fine aswell

-

Ivo Sedlacek (Ericsson)

I got offline comments from further people who preferred Joy's solution and I have updated the CR accordingly.

Please see a draft revision of C1-200287 in [1].

Main changes:

- text on ignoring superfluous octets became normative

- titles of Figure 6.1.x.3-1 and Table 6.1.x.3-1 updated

- MA request type field removed from ATSSS request PCO parameter and dependency of ATSSS-ST field in the ATSSS request PCO parameter on the request type IE of the PDN CONNECTIVITY request introduced

- R bit removed from ATSSS response with the length of two octets PCO parameter

- ATSSS capability indications aligned with revision of C1-200565, with exception of value 00 which is "reserved" instead of "ATSSS not supported". (Reason: 5G-RG supporting ATSSS request PCO parameter supports ATSSS).

- "a MA PDU session" -> "an MA PDU session"

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaea-was-C1-200287-v06.zip

-

Joy Zhou (ZTE)

I just give the comment to C1-200565 that 2 bits for "ATSSS-ST" are not sufficient for future use. In Rel-17, eATSSS expects to support more steering functionalities (e.g. MP-QUIC).

ATSSS-ST should have 3-bit space at least.

The rest of revisions look OK to me. Thanks.

--

Roozbeh Atarius (Motorola Mobility)

@Ivo,

It looks Okay

-

Krisztian Kiss (Apple)

Please check ftp://3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx-rev-C1-200565%20non-MPTCP%2024.501-V08.doc

--

Ivo Sedlacek (Ericsson)

Please see a update draft revision of C1-200287 in [2].

Main changes on top of those indicated below:

- ATSSS capability indications aligned with revision of C1-200565, with exception of value 000 which is "reserved" instead of "ATSSS not supported". (Reason: 5G-RG supporting ATSSS request PCO parameter supports ATSSS). Also not-assigned values are considered as "reserved".

References:

[2] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaea-was-C1-200287-v07.zip

-

Roozbeh Atarius (Motorola Mobility)

I am fine with this

**Decision:** The document was **revised to C1-200928**.

**C1-200928 Contents of ATSSS PCO parameters for 5G-RG**

*Type: pCR For: -  
 24.193 v1.0.0  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

(Replaces C1-200287)

**Decision:** The document was **agreed**.

**C1-200288 Procedures for establishment of a PDN connection as a user-plane resource of a MA PDU session**

*Type: pCR For: (not specified)  
 24.193 v1.0.0  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

**Discussion:**

Joy Zhou (ZTE): In 5.2.x, 1) and 2) under bullet c): need to update ATSSS capability with steering mode according to 5.32.6 of 23.501.

Roozbeh Atarius (Motorola Mobility): Not a strong opinion except The text should say an MA PDU session and not a MA PDU session.

Atle Monrad (Interdigital): if these new subclauses are for 5G-RG only, would it be useful to also identify this from the title of the new subclauses?

--

Ivo

please see a draft revision of C1-200288 in [1].

Main changes:

- ATSSS capability indications aligned with revision of C1-200565

- "a MA PDU session" -> "an MA PDU session"

- titles updated to reflect that the procedures are for 5G-RG only

- alignments with ATSSS request PCO parameter not containing ATSSS request type field and with ATSSS response with the length of two octets PCO parameter not containing the result bit, based on comments received for C1-200287.

- "shall included" -> "shall include"

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaga-was-C1-200288-v03.zip

--

Roozbeh Atarius (Motorola Mobility):

I am fine with this

-

Krisztian Kiss (Apple)

This looks good to me.

**Decision:** The document was **revised to C1-200929**.

**C1-200929 Procedures for establishment of a PDN connection as a user-plane resource of a MA PDU session**

*Type: pCR For: -  
 24.193 v1.0.0  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

(Replaces C1-200288)

**Decision:** The document was **agreed**.

**C1-200289 PDU session ID usage when the UE is a 5G-RG and requests establishment of a PDN connection as a user-plane resource of a MA PDU session**

*Type: CR For: (not specified)  
 24.301 v16.3.0 CR-3326 Cat: B (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

**Discussion:**

Roozbeh Atarius (Motorola Mobility)

Not a strong opinion except The text should say an MA PDU session and not a MA PDU session.

Ivo Sedlacek (Ericsson)

please see a draft revision of C1-200289 in [1].

Main changes:

- editorial changes are proposed by Roozbeh below.

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaia-was-C1-200289-v01.zip

**Decision:** The document was **revised to C1-200930**.

**C1-200930 PDU session ID usage when the UE is a 5G-RG and requests establishment of a PDN connection as a user-plane resource of a MA PDU session**

*Type: CR For: -  
 24.301 v16.3.0 CR-3326 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

(Replaces C1-200289)

**Decision:** The document was **agreed**.

**C1-200299 5GSM capabilities for MA PDU session**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1860 rev 1 Cat: F (Rel-16)  
  
 Source: Motorola Mobility, Lenovo*

(Replaces C1-200001)

**Discussion:**

Joy Zhou (ZTE): I understand the intention of this CR and agree to add the condition description for UE indicating the ATSSS capability.

However, this CR does not update the definition of UE ATSSS capability according to SA2 updates which have been reflected in 5.32.6 of 23.501.

Now the content of capability include steering functionality as well as steering mode, including:

1) ATSSS-LL functionality with any steering mode

2) MPTCP functionality with any steering mode and ATSSS-LL functionality with only Active-Standby steering mode

3) MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode

And this changes are made in Apple's C1-200565.

So I suggest that C1-200565 and C1-200299 should be merged.

Roozbeh Atarius (Motorola Mobility): That is a good point. I will incorporate the changes and share with Apple to see if they agree to merge the CR.

I have only merged that part with Apple CR and has sent that to Apple for their approval. I am keeping the second part of C1-200299 is there is no objection.

Krisztian Kiss (Apple): I am happy to merge part of C1-200299 into the revision of C1-200565.

**Decision:** The document was **revised to C1-200989**.

**C1-200989 5GSM capabilities for MA PDU session**

*Type: CR For: -  
 24.501 v16.3.0 CR-1860 rev 2 Cat: F (Rel-16)  
  
 Source: Motorola Mobility, Lenovo*

(Replaces C1-200299)

**Decision:** The document was **agreed**.

**C1-200301 MA PDU session is not supported**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1862 rev 1 Cat: B (Rel-16)  
  
 Source: Motorola Mobility, Lenovo*

(Replaces C1-200004)

**Decision:** The document was **withdrawn**.

**C1-200303 MA PDU session is not supported**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1862 rev 2 Cat: B (Rel-16)  
  
 Source: Motorola Mobility, Lenovo*

(Replaces C1-200004)

**Discussion:**

Joy Zhou (ZTE):

One question for clarification:

The UE has an MA PDU session established over 3GPP access and then moves to a different PLMN.

In this case, Does the UE need to initiate to release the MA PDU session if the UE learns that this network does not support ATSSS during the mobility registration procedure?

One comment:

In 6.4.1.2, "If the UE is registered to a network supporting ATSSS" is better than "If the network supports ATSSS". Why not use the same wording in the beginning of the three paragraphs?

-

Sung Hwan Won (Nokia)

Regarding your question: This is more based on registration area; meaning if the UE changes the registration area and need to re-register, the UE shall release the related PDU sessions and act appropriately when establishing the new PDU session. Meaning the UE shall not establish any MA PDU session if it does not receive any indicator from the network supporting MA PDU session.

Regarding your comment; that is fine with me. I need to see if there are more comments before I request for new number if that is what we do in E-meeting.

Krisztian Kiss (Apple) proposed further changes.

--

Haorui Yang (OPPO): For the following sentence:

In a UE with the capability for ATSSS, the network support for ATSSS shall be provided to the upper layers.

Why to mandate UE to provide whether network supports ATSSS to the upper layers, especially in the case that UE only supports ATS-LL?

-

Roozbeh Atarius (Motorola Mobility):

Regarding bullet 1:

This should NOT be restricted to two different PLMNs and should be registration area per registration area. Note that not all the registration areas within a PLMN supports ATSSS even if the PLMN support ATS. Please see subclauses 4.22.2.1 and 4.22.2.2 in TS 23.502, they say

Clause 4.22.2.1: In step 2, if the AMF supports MA PDU sessions, then the AMF selects an SMF, which supports MA PDU sessions

Clause 4.22.2.2: In step 2, if the AMF supports MA PDU sessions, then the AMF selects a V-SMF and an H-SMF, which supports MA PDU sessions.

My interpretations are

1- From the yellow highlight: Within a PLMN supporting ATSSS, there are registration areas or AMFs which do not support it;

2- From the Green highlight: Within a PLMN supporting ATSSS, there are SMF which do not support it, and

3- From the Green Highlight: As long as the registration area or AMF supports the ATSSS, it will always route it to home or visited SMF which supports the ATSSS.

Moreover, the way URSP is designed the UE knows whether a PLMN supports ATSSS or not; even in case of roaming. So we have two scenarios:

1- The UE follows the URSP rules to initiate the ATSSS feature, then there is no issue; or

2- The UE initiates the ATSSS feature without the URSP rules, then there is a risk that the MA PDU session is not established and AMF changes the MA PDU session to SA PDU session. IMHO, this is not any issue since this does not break any standards (i.e. URSP rules and its procedure) and should be considered as an implementation issue. Note that the UE will realize that the MA PDU session has not been established in this case since the UE will not receive any ATSSS rules.

So as a conclusion, I cannot agree to your wording.

Regarding bullet 2:

Fine with me

Regarding bullet 3:

“is” is missing in the entire table so perhaps we should keep the format for this the same.

I think adding “registration area” is redundant since the UE is registering in that registration area or AMF so basically either you should add that to all the parameters in that table or to none. However if you are emphasizing the registration area vs. PLMN supporting the ATSSS, then I do not agree that your assumption is correct. Please see above.

-

Roozbeh Atarius (Motorola Mobility) The reason for that sentence is that the UE shall not initiate an MA PDU session so upper layer is application layer. This is the wording 24.501 is using for application layer (my understanding) and it should not be mixed with ATSSS-LL and MPTCP

--

Haorui Yang (OPPO): Even upper layer(application layer) does not know whether the network supports ATSSS and triggers 5GSM to establish MA PDU session, the 5GSM can still stop sending the signaling. This not sending behaviors at 5GSM are already included in the same CR.

-

Roozbeh Atarius (Motorola Mobility): The CR is for the case when the registration area sends an indicator on the NAS layer to the UE, that the ATSSS has supports. The UE when receiving this, will forward it to the upper layer. Now the upper layer does not initiate any MA PDU session since the registration area does not support the MA PDU session.

-

Haorui Yang (OPPO): I understand the intent of this CR and I agree with the majority of changes.

However, I think 5GSM layer can also stop sending MA PDU session related signaling and IMHO this is the meaning of the following copied sentence from this CR.

“If the network does not support ATSSS, the UE shall not perform the procedure to allow the network to upgrade the requested PDU session to an MA PDU session.”

I agree that the upper layer can avoid triggering the MA PDU session but this is also can be done at 5GSM layer even the upper layer initiates.

So I think there is no need mandating NAS layer to provide this network ATSSS capability to the upper layer.-

-

Joy Zhou (ZTE): When SA2 discussed this "MA PDU not suported in VPLMN", many solutions with kinds of indications are raised.

In the end, SA2 agreed Ericsson's solution which defining ATSSS indication provided by the AMF during the registration procedures. The reason why this solution won is because it based on the assumption that support of ATSSS is homogeneous in a PLMN. With this assumption, this solution is the most easy and clear way.

-

Roozbeh Atarius (Motorola Mobility)

This was also brought up by Apple. However, I am confused by this.

1- If all AMFs and SMFs within a PLMN supporting ATSSS, support ATSSS then it means there won’t be any rel 15 AMFs or SMFs in that PLMN.

2- Currently the URSP tells the UE that the UE can initiate an MA PDU session in a certain PLMN thus there is no indicator needed from the registration area that the PLMN is supporting the ATSSS.

3- The SA2 documentations are all written based on the registration areas and not PLMN

So as a conclusion we at Motorola cannot agree to this note from the SA2 report.

I am happy to draft an LS to SA2 to get clarification on this if that is a way forward.

--

Roozbeh Atarius (Motorola Mobility)

I understand your intention now that the application can still initiate the MA PDU session and the NAS can stop it by having some kind of placeholder or memory so it remembers that the network did not send any support for the ATSSS. If that is what you are suggesting then

1- I believe NAS signaling is session and mobility handling rather than application. Having said that if there is a UE vendor who wants to implement like this by mixing the application and session layers, then they can still do t even if this information is passed to the application layer.

2- There are some aspects that I do not understand why a vendor would like to do so considering that NAS now needs to have access to memory to remember this. Plus the user experience would not be that great since the use trigger application thinking everything if fine and then NAS stops it, unless you want to define or implement some kind of NAS signaling to the upper layer what the reason was.

-

Mikael Wass (Ericsson)

I share the view of Roozbeh and think it should be the responsibility of upper layers to control the requests for MA PDU session based on the indications provided by 5GSM layer. I do not think it is correct to add a requirement on 5GSM to keep a state on the network ATSSS support and based on that “filter” the requests from upper layer.

Thus, I support keeping the added sentence in the CR as is:

“In a UE with the capability for ATSSS, the network support for ATSSS shall be provided to the upper layers.”

-

Haorui Yang (OPPO)

@Roozbeh,

I think what you said is reasonable that modem follows what application triggers.

But in the CR, there is the following description and the similar descriptions are made in several places:

If the network does not support ATSSS, the UE shall not request to establish an MA PDU session.

“UE”here does not mean 5GSM layer since 24.501 is for NAS layer?

I realize that now the other features such as CIoT do not mention whether the feature is supported in RA or the whole PLMN in network support feature IE.

(Info: for CIoT, AMF also considers whether SMF supports CIoT)

So I am confused why ATSSS is special?

And for UE, whether it is necessary for UE to know that since anyhow when changing RA, UE will do mobility registration and can get the new network support feature IE from AMF.

-

Joy Zhou (ZTE)

Tthere is ongoing discussion on this AMF indication is per RA or PLMN in SA2 emeeting this week.

For C1-200303, I propose to add an editor's note FFS this issue. LS to SA2 is not so necessary.

What do you think?

Roozbeh Atarius (Motorola Mobility)

That is correct, The UE has several layers including application layer which shall not trigger any request.

I believe having a requirement that the entire PLMN must be homogenous, is way overkill. This can never happen IMHO since different releases, support different features, unless operators decide to launch their network PLMN per PLMN which I seriously doubt. IMHO, as long as

1- the AMF knows which SMF ;and

2- V-SMF (or I-SMF) knows which H-SMF

supports a feature including ATSSS, then if the UE knows that the registration area has that support (e.g. ATSSS) then everything should be fine. So there is nothing special about ATSSS. Note that there is no solid text in stage 2 which backs up the text which is in SA2 report. On the contrary, when reading SA2 documents, the procedures are clearly written on registration area level.

-

Haorui Yang (OPPO)

If ATSSS is not special from the other features, I am confused why the RA should be added into “ATSSS supported in registration area”.

Anyhow, I am OK to wait for SA2 conclusion.

-

Roozbeh Atarius (Motorola Mobility)

Sorry I may have misunderstood your concern. IMHO

1- The AMF which supports the ATSSS knows which SMF supports the ATSSS; and

2- The v-SMF which supports the ATSSS knows which h-SMF supports the ATSSS,

See step 2 in Clause 4.22.2.1 and Clause 4.22.2.2 of TS 23.502 for more details.

With the above assumption, all UE needs to know is whether an AMF supports ATSSS or not. Something that SA2 has agreed upon in the last meeting. With that there is no need for having any requirement that the PLMN must be homogenous and all AMFs and SMFs in that PLMN, must support the ATSSS.

-

Joy Zhou (ZTE)

SA2 does not have explicit statement on what level of granularity of ATSSS support.

The statement of your revision for now is OK but it is no a complete solution.

It does not explain during handover procedure in 3GPP what happen to the established MA PDU session if the target AMF does not support ATSSS.

How to handle the case above depends on the feature is per RA or per slice. The procedures are different.

Thus, I propose to add an editor's note to reflect this issue.

**Decision:** The document was **revised to C1-200990**.

**C1-200990 MA PDU session is not supported**

*Type: CR For: -  
 24.501 v16.3.0 CR-1862 rev 3 Cat: B (Rel-16)  
  
 Source: Motorola Mobility, Lenovo*

(Replaces C1-200303)

**Discussion:**

Roozbeh Atarius (Motorola Mobility)I think this is out of the scope of this CR so I am asking you to re-think adding an editor’s note here. I understand your concern and I can come up with a couple of solutions, but I think we can have this in mind and work offline to correct it. So I suggest if it is possible for ZTE, please let this CR go as is and resolve that in the next SA2 meeting. I can gladly work offline with you on this.

**Decision:** The document was **revised to C1-201044**.

**C1-201044 MA PDU session is not supported**

*Type: CR For: -  
 24.501 v16.3.0 CR-1862 rev 4 Cat: B (Rel-16)  
  
 Source: Motorola Mobility, Lenovo*

(Replaces C1-200990)

**Decision:** The document was **agreed**.

**C1-200313 Comparison of solutions for performance measurement function (PMF) protocol**

*Type: discussion For: (not specified)  
 Source: Ericsson / Ivo*

**Decision:** The document was **noted**.

**C1-200314 Performance management function protocol**

*Type: pCR For: (not specified)  
 24.193 v1.0.1  
 Source: Ericsson, InterDigital, Nokia, Nokia Shanghai Bell, Huawei, HiSilicon, ZTE, SHARP, NTT DOCOMO, China Mobile / Ivo*

(Replaces C1-200110)

**Discussion:**

Krisztian Kiss (Apple)The technical voting on the solution for Performance Measurement Function Protocol (PMFP) scheduled for CT1#122 was cancelled because CT1#122 face-to-face meeting was cancelled and converted into CT1#122-e electronic meeting. The situation since CT1#121 has not changed, i.e. C1-200314 and C1-200655 are alternative proposals and CT1 should re-schedule the technical voting for CT1#123. Hence, I am proposing to postpone C1-200314.

**Decision:** The document was **postponed**.

**C1-200317 MA-PDU Session establishment or activation in non-allowed area**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: InterDigital / Atle*

(Replaces C1-200112)

**Discussion:**

Mikael Wass (Ericsson): The CR seems to introduce a new term: “MA-PDU session establishment procedure”. Could we either add a definition, or maybe better, reword to e.g.:

“PDU session establishment procedure for an MA PDU session”

Atle Monrad (Interdigital):

I agree that the phrase “PDU session establishment procedure for an MA PDU session” is nice.

Before we decide what to do, note that the phrase “MA PDU session establishment procedure” already is used in TS 24.193 in the clauses 4.4, 4.5 and 6.1.3.2.

The phrase “MA PDU session established” is also used in clause 4.2 of TS 24.193 and in clause 6.4.1.2 of TS 24.501.

The new phrase “MA-PDU session establishment procedure” is used nowhere. I can at least get rid of the dash.

--

Mikael Wass (Ericsson):

I agree that existing wording is always a good reason… In this case maybe we however should consider what would be best and most logical from a 24.501 perspective, as 24.193 is fairly “young”. In a way I would think it is better to align 24.193 wording to 24.501 style (and the legacy style inherited from previous NAS specs), than the other way around.

Generally in 24.501 I think there is no terminology of “xx PDU session establishment procedure” (to indicate a certain flavor of executing the procedure). The comparable cases we have are for emergency PDU sessions, and then the wording is:

“PDU session establishment procedure for emergency services”

What do you think? Does it make sense to stick to this style and maybe align 24.193 to use the same as an exercise to next meeting?

BTW, I have no problem using “MA PDU session” to describe a type of PDU session, in the same way as we use “emergency PDU session”. So my comments are limited to the terminology used for the procedures.

--

Roozbeh Atarius (Motorola Mobility):

From stage 2 I see the following wording

In a Non-Allowed Area a UE is service area restricted based on subscription, so bear with me. The UE and the network are not allowed to initiate Service Request or SM signalling (except for PS Data Off status change reporting) to obtain user services (both in CM-IDLE and in CM-CONNECTED states). The UE shall not use the entering of a Non-Allowed Area as a criterion for Cell Reselection, a trigger for PLMN Selection or Domain selection for UE originating sessions or calls. The RRC procedures while the UE is in CM-CONNECTED with RRC Inactive state are unchanged compared to when the UE is in an Allowed Area. The RM procedures are unchanged compared to when the UE is in an Allowed Area. The UE in a Non-Allowed Area shall respond to core network paging or NAS Notification message from non-3GPP access with Service Request and RAN paging.

This to me is not specific to ATSSS. It seems to belong perhaps to 24.501 or 24.502. Moreover, the wording seems to be stage 2ish.

--

Atle Monrad (Interdigital): I can replace the existing / new instances of

“MA PDU session establishment procedure” / “MA-PDU session establishment procedure”

With

“PDU session establishment procedure for an MA PDU session”

I understand that you are fine with keeping the existing “MA PDU session establishment”

-

Roozbeh Atarius (Motorola Mobility): I do not have any concrete comment on the wording however from InterDigital's CR, it says:

It (the UE) may still initiate a MA-PDU session establishment procedure over the non-3GPP access, however the network shall not establish user plane resources for the 3GPP access if the UE is in the non-allowed area.

If a UE is in non-allowed area, I am assuming that the UE cannot initiate any PDU session except the emergency call. So in contrast to 3GPP access with which, you do not allow the UE to establish any non-emergency PDU session, you are now allowing the UE to establish the MA PDU session. However the network or the registration area (AMF) will not allocate any resources. So

1- What if the non-3GPP registration is in another registration area within the same PLMN or different PLMNs? If that is the case then there should not be any restriction for the network to allocate the resources.

2- Is this specific to ATSSS? If my above assumptions are right then at least the first part i.e. that the UE is allowed to establish the PDU session via non-3GPP access in a non-allowed area, should be first resolved in either SA2 or 24.502 or 24.501. Note that I am not against to have something like that in the ATSSS, but I do not understand why it should be structured and prioritized as you are proposing.

Just a question if this was brought up in SA2 before? I asked my “people” but they didn’t recall.

-

Atle Monrad (Interdigital)

Mikael / all

I’ve taken on board the comments from you and Krisztian on "UE-requested PDU session establishment procedure for MA PDU session” and taken this onboard throughout 24.193.

The revised paper is available in C1-200799. I hope you are fine with the rephrasing.

And to Roozbeh

My SA2-guy claims that this was brought into SA2, but people thought it was a detail that was more appropriate to address by Stage 3 only.

Further, your comment on what if the non-3GPP registration is in another registration area within the same PLMN or different PLMNs? If that is the case then there should not be any restriction for the network to allocate the resources.

Reply:

Remember that Non-allowed Area is only for 3GPP access. If the UE is in PLMN 1 Non-allowed area for 3GPP access but registered in PLMN2 for non-3GPP access, then UP resource should not be established for PLMN 1. It doesn’t matter whether UE is registered over different or same PLMN for 3GPP and Non-3GPP access.

On whether this is this specific to ATSSS? You write that at least the first part i.e. that the UE is allowed to establish the PDU session via non-3GPP access in a non-allowed area, should be first resolved in either SA2 or 24.502 or 24.501. Note that I am not against to have something like that in the ATSSS, but I do not understand why it should be structured and prioritized as you are proposing.

Reply:

Only an MA PDU has this issue regarding Non-allowed area, so we think it is specific for ATSSS.

\_\_

I hope this clarifies your concerns. The revised paper is uploaded as C1-200799.

-

Mikael Wass (Ericsson)

Fine for me.

(a couple of remaining PDU \*S\*ession, though. I leave it to you to decide if/how to fix 😊)

-

Atle Monrad (Interdigital)

I noticed at some point, but forgot it ☹

I’ll revise the pCR.

However, if we exclude param-names as “PDU Session ID” - as far as I can see the wording of PDU Session versus PDU session look a bit random. Would it be possible to also ask Joy to go through 24.193 and fix the appropriate capital “S” to lower case “s” as a rapporteurs-exercise?

-

Mikael Wass (Ericsson)

Perfect, if Joy can do that it is probably the best way. I think we have tries to be a bit consistent on this in 24.501, so good if we can apply the same for 24.193.

-

Atle Monrad (Interdigital)

Uploaded as C1-200807

I corrected my “PDU Session” to “PDU session”, and assume that Joy will correct other instances.

-

Joy Zhou (ZTE): Got it. I will correct all the rest of "S" to "s" in next version of 24.193.

-

Roozbeh Atarius (Motorola Mobility)

@Atle,

You wrote:

Remember that Non-allowed Area is only for 3GPP access. If the UE is in PLMN 1 Non-allowed area for 3GPP access but registered in PLMN2 for non-3GPP access, then UP resource should not be established for PLMN 1. It doesn’t matter whether UE is registered over different or same PLMN for 3GPP and Non-3GPP access.

Reply:

True.

I have nothing against your CR in C1-200807. And as I pointed out before, I have nothing against the concept. I am just raising one point that I do not think this is specific for ATSSS. As you pointed out the UE can be in anon-allowed area which is 3GPP specific. Your proposal says that the UE can still establish an MA PDU session where the network does not assign any resource allocations. So my questions are

1- Can the UE in the same circumstance establish a single access PDU session?

2- Can the UE in the same circumstance establish a single access PDU session and also allows the network to upgrade it to MA PDU session?

If not, then I am wondering why? If yes, then the first bullet is not specific to ATSSS and should be in TS 24.501 or TS 24.502.

Please share your opinion

-

Atle Monrad (Interdigital) @Roozbeh

I try a slightly different approach:

The non-allowed area only applies to 3GPP access, while there is no such concept for Non-3GPP access. Consequently, for a single PDU session we are clear on UE behavior.

If it’s a 3GPP access PDU and the UE is in non-allowed area, it should not establish or activate it.

if it’s a non-3GPP access PDU, there is no such limitation, but as the MA PDU involves the both accesses and SM signaling can be sent over either access, there are at least two possible approaches:

1, doesn’t allow MA-PDU establishment at all (neither over 3GPP nor over non-3GPP)

2, allow MA-PDU establishment over non-3GPP access, even at the moment it is no different than a single-access PDU

We think 2 is the approach to select, as it allows the UE to add the 3GPP access leg when it moves out of the non-allowed area.

\_\_\_\_\_\_

I hope this clarify the reason why we think this is related to ATSSS.

---

Roozbeh Atarius (Motorola Mobility)

@Atle,

You wrote:

2, allow MA-PDU establishment over non-3GPP access, even at the moment it is no different than a single-access PDU

Reply:

Perhaps we say the same thing. I do not see any restriction for a UE to establish PDU session in an non-allowed area via non-3GPP access (independent on any sort e.g. MA or SA), however obviously there won’t be any network resources by the 5GC network. I have no comment on you latest revision.

**Decision:** The document was **revised to C1-200799**.

**C1-200799 MA-PDU Session establishment or activation in non-allowed area**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: InterDigital / Atle*

(Replaces C1-200317)

**Decision:** The document was **revised to C1-200807**.

**C1-200807 MA-PDU Session establishment or activation in non-allowed area**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: InterDigital / Atle*

(Replaces C1-200799)

**Decision:** The document was **agreed**.

**C1-200396 MA PDU session and one set of QoS parameters**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1896 Cat: F (Rel-16)  
  
 Source: Ericsson / Ivo*

**Discussion:**

Atle Monrad (Interdigital):

On the text:

In an MA PDU session, the UE shall have one set of the mapped EPS bearer contexts. The network can provide the set of the mapped EPS bearer contexts of the MA PDU session via either access of the MA PDU session.

I’m not convinced that we can mandate it like this in the receiving end. Maybe we should rephrase and talk about what the NW shall provide, or possibly state what the UE will do when it receives something over one access and already has got something (possibly different) via the other access.

--

Ivo Sedlacek (Ericsson)

> I’m not convinced that we can mandate it like this in the receiving end. Maybe we should rephrase and talk about what the NW shall provide, or possibly state what the UE will do when it receives something over one access and already has got something (possibly different) via the other access.

Regarding "we should rephrase and talk about what the NW shall provide" - given that the UE has only one set of the mapped EPS bearer context, why to restrict the network to provide the mapped EPS bearer context via a particular access?

Regarding "state what the UE will do when it receives something over one access and already has got something (possibly different) via the other access"

- I am OK to add some text on this.

Would you be OK with something like:

"In an MA PDU session, the UE shall have one set of the mapped EPS bearer contexts. The network can provide the set of the mapped EPS bearer contexts of the MA PDU session via either access of the MA PDU session. In an MA PDU session, the UE shall support modification or deletion via an access of a mapped EPS bearer context of the MA PDU session created via the same or the other access."

or perhaps we can remove the network statement and focus solely on the UE handling:

"In an MA PDU session, the UE shall have one set of the mapped EPS bearer contexts and shall support modification or deletion via an access of a mapped EPS bearer context of the MA PDU session created via the same or the other access."

Any preference?

The same changes will be applied on QoS rules and QoS flow descriptions.

--

Ivo Sedlacek (Ericsson)

please see a draft revision of C1-200396 in [1].

Changes:

- it is clarified that the UE accepts modification or deletion received via either access.

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaja-was-C1-200396-v01.zip

**Decision:** The document was **revised to C1-200939**.

**C1-200939 MA PDU session and one set of QoS parameters**

*Type: CR For: -  
 24.501 v16.3.0 CR-1896 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson / Ivo*

(Replaces C1-200396)

**Decision:** The document was **agreed**.

**C1-200404 Minor Correction to ATSSS container IE desciption**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1903 Cat: F (Rel-16)  
  
 Source: China Mobile*

**Decision:** The document was **agreed**.

**C1-200406 Minor Correction to Traffic descriptor component type identifier of ATSSS rules**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: China Mobile*

**Discussion:**

Roozbeh Atarius (Motorola Mobility): This is not one-to one mapping with the table in 24.526. Connection capability needs to be reasoned. I do not think there is any need for it for the ATSSS.

Anyone else has an issue with this?

Chen Xu (China Mobile): I have some quesions:

1. Why PCC system need to maintain two different Traffic descriptor lists for URSP and ATSSS? When both two rules are applied to match the same application traffic.

2. Why not use " The traffic descriptor field is, as defined in table 5.2.1 in 3GPP TS 24.526(except "Connection capabilities type" ) "at the beginning, if we don't want it on the list?

Roozbeh Atarius (Motorola Mobility): SA2 created new traffic descriptor for ATSSS later on and we at CT1 tried to find those which are applicable from the URSP. We did not think that the Connection Capabilities is applicable. So all I can say that mapping is not one-to one and as long as I am aware the connection capabilities are applicable for URSP but not for ATSSS, unless you can provide a reason why it should be there.

Xu: Sorry I haven't found pCRs or minutes about the comparison of two Traffic descriptor lists.In previous CT1 discussions , what do you think is the most important reason for ATSSS Traffic descriptor list gives up "Connection Capabilities"? What's the disadvantage of it for ATSSS? Since UE and PCC need to maintain two different lists when match the same application traffic.

When an operator deploys URSP, Connection Capabilities can be used to match application x ; but when ATSSS is introduced, application x has to be matched by 2 Traffic descriptors. If an alternative one can be use, why "Connection Capabilities" is likely to be used or is worthful to URSP, what's advantage of it for URSP? I am not clear about the details of the discussions.

-

Roozbeh Atarius (Motorola Mobility)

I do not think there is any minute or pCR which is describing it. The connection capability in URSP is described in stage 2 in Table 6.6.2.1-2: UE Route Selection Policy Rule of TS 23.503. Why has SA2 created it? Simply because the operating system such as Android or any other has connection capabilities to e.g. tethering GW, FOTA, IA servers, Internet, IMS, MMS, RCS, etc etc etc. However 3GPP decided to accept only connection capabilities for IMS, MMS, SUPL, and Internet. If any member believes there should be another one, then the member should bring CR to add connection capabilities with a justified reason.

Now going back to your CR, I do not think you can justify the need for connection capabilities for ATSSS as to avoid having separate lists in PCF for URSP and ATSSS (If that is what you meant in your mail). As I pointed out in my previous mail, you need to educate SA2 or CT1 why the connection capability is needed for ATSSS. If you have a reason for that then you need to describe it in a discussion paper or cover page as in SA2 or CT1. I am not trying to make this difficult. I simply do not see any motivation in your CR for it, except mapping to URSP list which is not a valid reason , IMHO.

-

Xu: Yes, the reason we suggest adding the connection capabilities is to keep 2 Traffic descriptor lists consistent, if it is simple for UE and PCC to do the traffic mapping when support ATSSS following URSP. If vendors and operators think it's not a problem to maintain 2 different lists, let connection capabilities go. And I am not sure if it is a routine to discuss the Traffic descriptor for ATSSS rules in SA2 , since TS 24.193 defines ATSSS rules and no TS in SA2 mentions it.

And if connection capabilities is not lucky to be on the ATSSS's list, maybe it's better to point out the difference between two lists. The current desciption "The traffic descriptor field is, as defined in table 5.2.1 in 3GPP TS 24.526 [5],..." looks like no difference.

-

Lazaros Gkatzikis (Nokia): We believe that the reference to 24.526 has to be preserved, since in 24.193 we do not repeat the encodings of Traffic descriptor components.

Notice also that TS 24.193 states “The traffic descriptor field is, as defined in table 5.2.1 in 3GPP TS 24.526 [5], of variable size and contains a variable number (at least one) of traffic descriptor components.” This phrase, due to the commas, does not imply that the components are identical.

Connection capabilities were discussed within CT1 and considered not applicable to ATSSS.

--

Joy Zhou (ZTE)

I also feel the existing wording for traffic descriptor with reference to 24.526 may bring some confusions.

My proposal:

The traffic descriptor field is, as defined in table 5.2.1 in 3GPP TS 24.526 [5], of variable size and contains a variable number (at least one) of traffic descriptor components. Each traffic descriptor component shall be encoded as a sequence of one octet traffic descriptor component type identifier and a traffic descriptor component value field. The traffic descriptor component type identifier shall be transmitted first

Traffic descriptor component type identifier

Bits

8 7 6 5 4 3 2 1

0 0 0 0 0 0 0 1 Match-all type

0 0 0 0 1 0 0 0 OS Id + OS App Id type (NOTE 1)(NOTE 3)

0 0 0 1 0 0 0 0 IPv4 remote address type

....

.....

....

The encoding of the traffic descriptor component value field is as defined in table 5.2.1 in 3GPP TS 24.526 [5]

--

Roozbeh Atarius (Motorola Mobility)

Your proposal may imply that the traffic descriptor is different in TS 24.193 than from TS 24.526, which is not true. They are the same however “traffic descriptor components” may not be the same. Perhaps a note can be added to highlight that or perhaps some wording like:

The traffic descriptor field is, as defined in table 5.2.1 in 3GPP TS 24.526 [5], of variable size and contains a variable number (at least one) of traffic descriptor components, which are not be the same traffic descriptor components which are defined in table 5.2.1 in 3GPP TS 24.526 [5].

One way or the other I think it should be highlighted the traffic descriptors are the same.

-

Xu

Thank you for your comments and background information!

We will think about the CR further.

-

Lazaros Gkatzikis (Nokia)

I am ok with the latest version.

@joy IMO the comma in the added text “components, defined” is not needed. Could you please take care of this in the new version of 24.193?

**Decision:** The document was **revised to C1-201000**.

**C1-201000 Minor Correction to Traffic descriptor component type identifier of ATSSS rules**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: China Mobile*

(Replaces C1-200406)

**Decision:** The document was **agreed**.

**C1-200413 Removing editor's note**

*Type: pCR For: (not specified)  
 24.193 v1.0.1  
 Source: Motorola Mobility, Lenovo*

**Discussion:**

Atle Monrad (Interdigital): Note that this Editor’s Note also is removed by C1-200459.

Joy Zhou (ZTE): If the solution of editor's note under 5.2 is agreed to go with alternative 2. (i.e. remove the editor's note only) then 0459 can be agreed directly. In this case, no revision is needed for both 0459 and 0413. (0413 needs a revision anyway since the incorrect template is used.)

So would you please wait for a while to see what will happen?

Joy Zhou (ZTE)

Whatever clause 5.2 in 24.193 will not be moved or not to 24.501, it will be kept in 24.193 in next version since there are couple of p-CRs on this clause expected to be agreed.

I request to merge the overlapping part in ZTE's C1-200459 to your p-CR. Please add ZTE as co-signer. Thanks.

**Decision:** The document was **revised to C1-200988**.

**C1-200988 Removing editor's note**

*Type: pCR For: -  
 24.193 v1.0.1  
 Source: Motorola Mobility, Lenovo*

(Replaces C1-200413)

**Decision:** The document was **agreed**.

**C1-200414 MA PDU session is not supported**

*Type: pCR For: (not specified)  
 24.193 v1.0.1  
 Source: Motorola Mobility France S.A.S*

**Discussion:**

Atle Monrad (Interdigital) I would prefer all text in an introductory clause like 4.1 to be informative (i.e. no may, should or shall). The last section looks like a repetition of the ToC. Is this really necessary?

Roozbeh Atarius (Motorola Mobility): We have in the past in introduction of subclauses in TS 24.526, TS 24.501, TS 24.502 and more, used mandatory text. Since I could not find any other place in the spec to verbalize this information, I thought this was the only place I could add it.

Regarding your second comment, I tried to follow the format in other TS and also subclause 5.1 in the same TS.

Krisztian Kiss (Apple): This should be a p-CR to 24.193 V1.0.1, so you can delete the CR cover page.

Perhaps you can delete this: If the UE does not receive the indication for the ATSSS capability from the AMF, the UE shall not initiate any PDU session related to the ATSSS.

The reference to 24.501 is enough.

Clause 4.4 describes access performance measurments —> Clause 4.4 describes access performance measurements

-

Roozbeh Atarius (Motorola Mobility):

I am not sure if there is hard regulation to prevent me to use the CR format instead of pCR. The reason I have this format is the dependency this pCR has to two CRs; against 23.501 and 24.501. So unless there is rule and Fredric dictates me to change that to pCR, I would rather keep it as is to have those dependencies listed.

You wrote:

Perhaps you can delete this: If the UE does not receive the indication for the ATSSS capability from the AMF, the UE shall not initiate any PDU session related to the ATSSS.

The reference to 24.501 is enough.

This is one of the main reasons I started this CR. This is good information that a reader can get without reading another spec. SO if it is OK with you, I insist keeping it!

You wrote

Clause 4.4 describes access performance measurments —> Clause 4.4 describes access performance measurements

Done!

Krisztian Kiss (Apple): IMHO the wording "any PDU session related to the ATSSS” potentially confuses the reader in an Introduction section, so it’s better to just reference 24.501 for the complete description.

--

Lazaros Gkatzikis (Nokia)

We do not see the need for this CR as is, since

1) most of the information mentioned exists already in 23.501

2) the purpose of section 4 was to be informative

Please consider the provided significantly shortened version which addresses also the following main issues:

1)Where is it stated that we can have preconfigured ATSSS rules?

2)this sentence does not read well: “If the UE does not receive the indication for the ATSSS capability from the AMF, the UE shall not initiate any PDU session related to the ATSSS.”

ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft%20C1-200414%20MA%20PDU%20session%20not%20supported%2024.193-V01%20Nokia%20rev.zip

If this is acceptable, please add Nokia, Nokia Shanghai Bell as cosigners.

--

Roozbeh Atarius (Motorola Mobility):

@Krisztian,

I now see your point and the reason for the wording is that the PDU session related to ATSSS is

1- MA PDU session or

2- SA PDU session which can be upgraded.

So how about compromise saying

If the UE does not receive the indication for the ATSSS capability from the AMF, the UE shall not initiate

1- an MA PDU session; or

2- a single access (SA) PDU session which can be upgraded by the network.

Note that I just realized that Nokia has also commented on this so I get back to you on this.

-

Roozbeh Atarius (Motorola Mobility)

I have modified the CR to avoid details and also get a flavor from your suggestions.

Lazaros,

Would you like to cosign?

-

Atle Monrad (Interdigital)

Would you be able to change the “may” to “can” in the 1st section?

**Decision:** The document was **revised to C1-200992**.

**C1-200992 MA PDU session is not supported**

*Type: pCR For: -  
 24.193 v1.0.1  
 Source: Motorola Mobility France S.A.S*

(Replaces C1-200414)

**Decision:** The document was **revised to C1-201036**.

**C1-201036 MA PDU session is not supported**

*Type: pCR For: -  
 24.193 v1.0.1  
 Source: Motorola Mobility France S.A.S*

(Replaces C1-200992)

**Decision:** The document was **agreed**.

**C1-200456 Discussion on handling of clause 5.2 of TS 24.193**

*Type: discussion For: Decision  
 Source: ZTE / Joy*

**Discussion:**

Atle Monrad (Interdigital):This topic has a knock on effect on other CRs to this meeting, thus I think that we must attempt conclusion on where to specify this as soon as possible.

Generally speaking, if we can justify to specify a new feature in a TS of 25 pages versus a TS of 625 pages, the smaller TS is as I see it preferable.

Looking at the current version of TS 24.193, it looks like we can justify this text in TS 24.193. I do not think the clauses in question look misplaced.

Consequently I am in favor of keeping these subclauses in TS 24.193 and only remove the EN in TS 24.193 clause 5.2.

-

Roozbeh Atarius (Motorola Mobility): On 456, 457, 458: prefer to keep the clauses in 24.193. No need to move them. With that I think the related CRs can be withdrawn.

-

Joy Zhou (ZTE): Personally, I am OK with either way.

Since I had a promise (especially to Jennifer and Christian) will consider to move this clause to 24.501 in last April meeting, it is the time to collect all the thoughts and make a final conclusion now.

@Jennifer, Christian, your thought about this now? Thanks.

-

Christian Herrero (Huawei): We support alternative 1 as discussed back in April 2019. That clause should be part of TS 24.501, and therefore we support both C1-200457 and C1-200458.

Can you please add both Huawei and HSilicon as co-signers of any revision of C1-200457 and C1-200458?

-

Lazaros Gkatzikis (Nokia):

Nokia prefers alternative 1, i.e. moving it to 24.501.

Notice that otherwise the reader would have to go back and forth between 2 specs(24.501 and 24.193), so as to find out how it works.

--

Joy Zhou (ZTE)

Opinions on this topic are collected as follows until now:

Alternative 1 (moving it to 24.501): Huawei, Nokia

Alternative 2 (Keep it in 24.193): InterDigital, Motorola

From reading the comments below, I did not see there is any concern related to technical aspects.

As mentioned previously, ZTE is OK with either way. I think we should respect and follow the decision made in last April meeting as long as there is no irresistible problem.

So ZTE supports alternative 1.

Any further suggestion?

-

Atle Monrad (Interdigital)

Joy / all

Note the e-mail (with incorrect subject tag) from Roozbeh supporting this text in 24.193.

I have not looked through all text in the CR to 24.501 in details, but it looks like the subclauses in 5.2 is moved clause-by-clause to 4.x of 24.501.

To me, this indicates that we have found a reasonable split between the documentation of ATSSS in 24.193 versus the L3 documented in 24.501.

If we now take out parts on clause 5, do we need to take out parts of clause 4 as well to align documentation of clause 4 and clause 5?

Are there IEs in clause 6 that now will be relevant for both 24.501 and 24.193?

I am concerned that we now propose to fragment a fairly well-scoped TS.

-

Roozbeh Atarius (Motorola Mobility)

As indicated before, it is better to keep subcaluse 5.2 in 24.193. We believe having a small spec is much more beneficial rather than having a large Specfor ATSSS. So we suggest if we can offload TS 24.501 as much as possible it is better.

Moreover, we share Interdigital view that segmentations of 5.2 and other subclauses related to 5.2 may be needed. An exercise which seems to be unnecessary and time consuming.

--

Krisztian Kiss (Apple): +1

I also support Alternative 2.

-

Joy Zhou (ZTE)

In 24.193, clause 4 is informative wording style and aims to give a general introduction of ATSSS feature. only clause 4.6 EPS interworking refers some procedures in clause 5.2 while rest of clauses refer to stage 2 specification.

In addition, there is no reference to clause 5.2 in clause 6 the ecoding IE part.

Therefore, there is little impact to clause 4 and clause 6 if moving clause 5.2 to 24.501.

--

Chen-Ho Chin (OPPO)

Sorry to enter this discussion so late. I would like to state OPPO preference on this topic here and our position is for Alternative 2.

i.e

Alternative 2:

Keep clause 5.2 in TS 24.193 and remove the editor's note which is reflected in C1-200459.

In fact, we (OPPO) will be very much against doing Alternative 1 and for reasons we have been expressing since the beginning when starting 24.193. And those reasons are same reasons when we worked on NBIFOM / IFOM.

The point of 24.193 is for ATSSS... The SM procedures in 24.501 are generic procedures that ATSSS feature can use to set up or change or delete MA PDU Sessions.

Those should be in a TS dedicated to ATSSS and that is 24.193 ...

Moving subclause 5.2 of 24.193 to 24.501 will mess up the base of 24.501 .....

Also if we do it , then we open up in future that other features (e.g MUSIM? , eNPN onboarding? Even Rel-16 NPN for PLMN services through SNPNs) starts creeping in or even worse gets detailed into the baseline core spec.

I am against doing it that way and I hope other CT1 delegates remember the mess we had to clean up for 24.301 when more and more details and exceptions for NBIFOM/IFOM got into 24.301.

So NO to Alternative 1.

--

Joy Zhou (ZTE)

In last April meeting in Xi'an China, the work of 24.193 was in the skeleton status. There was no texts but editor's note describing the what procedures are expected to specify under clause 5.2 at that time. Jennifer and Christian believed the content in clause 5.2 should be specified in 24.501 like other features e.g. CIoT.

From ZTE's perspective, the content of clause 5.2 is necessary for ATSSS in stage 3 spec while which TS is the best place to have it is 2nd priority.

Considering there would be quite a lot input texts in clause 5.2 and avoid to bother 24.501 with a lot of CRs, I suggested to focus to complete the content of clause 5.2 in 24.193 first. When things are mostly done, this clause can move to 24.501.

That is the story behind the editor's note "This clause will specify handling of multi-access PDU connectivity service. What content under this clause will be moved into TS 24.501 is FFS.".

As rapporteur of this spec and the one put this editor's note, I don't want to break my promise unless Nokia and Huawei change their minds.

Regarding alternative 1, I indicated in another mail to address Atle's concern as follows:

"

In 24.193, clause 4 is informative wording style and aims to give a general introduction of ATSSS feature. only clause 4.6 EPS interworking refers some procedures in clause 5.2 while rest of clauses refer to stage 2 specification.

In addition, there is no reference to clause 5.2 in clause 6 the ecoding IE part.

Therefore, there is little impact to clause 4 and clause 6 if moving clause 5.2 to 24.501.

"

-

JJ Huang Fu (Mediatek)

Our preference is alternative 1 (moving it to 24.501).

Since TS 24.501 is already impacted by ATSSS WI, (e.g., a lot of ATSSS specific requirements included in clause 6 for 5GSM procedures), to avoid overlapping, conflicting and the overhead of alignment between specifications, moving the essential clauses to 24.501 is beneficial.

I also have sympathy with Chen’s comment, unfortunately TS 24.501 has already included many details from Rel-16 WIs (e.g., CIoT, Vertical-LAN… etc) thus TS 24.501 looks like not a baseline anymore.

I believe Joy will well organize the structure of those clauses and not mess TS 24.501 up.

-

Joy Zhou (ZTE)

Thanks for providing your point.

Considering there are couple of 24.193 p-CRs for clause 5.2 in this emeeting, I will take actions in April meeting.

I propose to note C1-200456 saying it is expected to go with alternative 1. The related work will be done in April meeting.

Your understanding is appreciated.

**Decision:** The document was **noted**.

**C1-200457 Move the content of clause 5.2 out of TS 24.193**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: ZTE / Joy*

**Discussion:**

Atle Monrad (Interdigital): see comments for 456

I think this text is useful in TS 24.193 and I do not agree with this CR.

**Decision:** The document was **postponed**.

**C1-200458 Introduction of multi-access PDU connectivity service**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1920 Cat: B (Rel-16)  
  
 Source: ZTE / Joy*

**Discussion:**

Atle Monrad (Interdigital): see comments for 456

I think this text is useful in TS 24.193 and I do not agree with this CR. If people want some half-page introductory text for ATSSS in clause 4, I would be OK with that.

**Decision:** The document was **postponed**.

**C1-200459 Remove editor's notes**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: ZTE / Joy*

**Discussion:**

Atle Monrad (Interdigital): see comments for 456

I support removing the Editor’s Note in 5.2, as I think this text is useful in TS 24.193

For the Editor’s Note in 5.2.4, this EN is also removed by C1-200413

-

Roozbeh Atarius (Motorola Mobility): No issue to remove the editor’s note. Just remove one of them so it does not collide with C1-200413.

-

Krisztian Kiss (Apple): I also support this alternative.

A re-wording proposal for the NOTE:

NOTE: It is possible the network provides a "link-specific multipath" IP address/prefix that is not routable via N6 (e.g. IPv6 link local address).

-

Christian Herrero (Huawei): We support alternative 1 of C1-200456 so we are against agreeing C1-200459 but C1-200457 and C1-200458 as the way to solve the issue identified by the editor’s note.

-

Joy Zhou (ZTE): I am OK with your re-wording suggestion to C1-200460.

**Decision:** The document was **postponed**.

**C1-200460 Clarification on link-specific address/prefix**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: ZTE / Joy*

**Decision:** The document was **revised to C1-200789**.

**C1-200789 Clarification on link-specific address/prefix**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: ZTE / Joy*

(Replaces C1-200460)

**Decision:** The document was **agreed**.

**C1-200461 Clarification on multi-homing and UL-CL funtionalities in MA PDU Session**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: ZTE / Joy*

**Decision:** The document was **agreed**.

**C1-200565 ATSSS Non-MPTCP traffic support**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1948 Cat: F (Rel-16)  
  
 Source: Apple*

**Abstract:**

New 5GSM capability is introduced for "MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode" and existing 5GSM capabilities for ATSSS-LL functionality and MPTCP functionality are re-defined. UE-requested PDU session

**Discussion:**

Mikael Wass (Ericsson): I think it makes sense to limit the setting of ATSSS support indication as proposed in Motorola CR (C1-200299): “If the UE requests to establish a new MA PDU session or if the UE requests to establish a new PDU session and the UE allows the network to upgrade the requested PDU session to an MA PDU session”

I propose to use one parameter with sufficient codepoints to cover the needed indication alternatives, rather than 3 individual one bit indications. With proposed separate indications there will be several invalid setting combinations that need to be evaluated and handled whereas a combined parameter limits such cases. Maybe a two bit parameter is sufficient?

--

Roozbeh Atarius (Motorola Mobility) proposed some changes.

--

Krisztian Kiss (Apple): Thanks for the comments! Please check the draft revision implementing your comments (also includes the partial merge of C1-200299):

ftp://3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx-rev-C1-200565%20non-MPTCP%2024.501-V04.doc

-

Haorui Yang (OPPO)

One comment for using 3 separate bits to indicate ATSSS capability.

In the following case, whether UE should also set ATS-LL bit to "ATSSS Low-Layer functionality with any steering mode supported"?

If the UE supports MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode

An alternative is to still use existing 2 bits which can cover 4 kinds of scenarios. Just change the wording on the condition of UE supporting ATSSS capability, such as:

If the UE supports MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode as specified in subclause 5.32.6 of 3GPP TS 23.501 [8], the UE shall set the MPTCP bit to "MPTCP functionality with any steering mode supported" and set the ATS-LL bit to “ATSSS Low-Layer functionality with any steering mode supported” in the 5GSM capability IE of the PDU SESSION ESTABLISHMENT REQUEST message.

Krisztian Kiss (Apple) proposed a revision. The 3 separate bits are replaced by 2 bits called ATSSS-ST:

Haorui Yang (OPPO)

I am OK with the format with the capability.

But for the added change to the PDU session modification procedure “If the UE requests to modify a session to an MA PDU session or if the UE requests to modify a PDU session and the UE allows the network to upgrade the requested PDU session to an MA PDU session”,

since the only case UE uses modification procedure to upgrade to an MA PDU session is after interworking from EPS, the change you added should be applied to the next paragraph for interworking.

Actually the existing description about UE indicating ATSSS capability has no dependence on whether UE wants to establish or upgrade an MA PDU session.

But if people want to add the condition on this, I am fine.

--

Mikael Wass (Ericsson): V05 is mostly fine for me. My only comment is that codepoint “00” needs to be kept as “not supported” as a UE not supporting ATSSS at all will set this.

So use “00” as e.g. “ATSSS not supported” and shift the 3 used values one step so that the spare value is also taken in use.

-

Roozbeh Atarius (Motorola Mobility):

Good observation in your first comment, i.e.

since the only case UE uses modification procedure to upgrade to an MA PDU session is after interworking from EPS, the change you added should be applied to the next paragraph for interworking.

Perhaps Krisztian should add

“For a PDN connection established when in S1 mode, after the first inter-system change from S1 mode to N1 mode”

To the start of the change in subclause 6.4.2.2 and then delete the paragraph coming after the changes.

Regarding your second comment i.e.

Actually the existing description about UE indicating ATSSS capability has no dependence on whether UE wants to establish or upgrade an MA PDU session.

But if people want to add the condition on this, I am fine.

Well, I am one of the “people” who want to add the condition on this, so than you for your corporation.

-

Roozbeh Atarius (Motorola Mobility): I think what Mikael is suggesting makes sense.

-

Krisztian Kiss (Apple): Thanks for the comments! Please check whether this version incorporates all your comments:

ftp://3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx-rev-C1-200565%20non-MPTCP%2024.501-V06.doc

--

Lazaros Gkatzikis (Nokia)

Please consider the following suggestions:

1) MPTCP functionality with any steering mode=> MPTCP functionality with all steering modes

2) Some restructuring may be needed below since now it appears (at least to me) like 1),2),3) apply only to case b).

“For a PDN connection established when in S1 mode, after the first inter-system change from S1 mode to N1 mode,

a) if the UE requests to modify a PDU session to an MA PDU session; or

b) if the UE requests to modify a PDU session and the UE allows the network to upgrade this PDU session to an MA PDU session, the UE shall set "MA PDU session network upgrade allowed" in the MA PDU session information IE and set the request type to "modification request" in the UL NAS TRANSPORT message:

1) if the UE supports ATSSS Low-Layer functionality with any steering mode as specified in subclause 5.32.6 of 3GPP TS 23.501 [8], the UE shall set the ATSSS-ST bits to "ATSSS Low-Layer functionality with any steering mode supported" in the 5GSM capability IE of the PDU SESSION MODIFICATION REQUEST message;

2)….

3)…

“

Krisztian Kiss (Apple): My intention is to use the same terminology as in 23.501.

Joy Zhou (ZTE): ATSSS is expected to introduce more kinds of steerting functionalities (e.g. MP-QUIC) in Rel-17. So only two bits for ATSSS-ST are not sufficient for future use.

-

Krisztian Kiss (Apple)

Thanks for the feedback. I extended to three bits:

ftp://3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx-rev-C1-200565%20non-MPTCP%2024.501-V08.doc

-

Ivo Sedlacek (Ericsson)

for ATSSS-ST field, it should be clear whether the not-assigned values are to be treated as "reserved" or as "spare". My expectation is "reserved".

--

Mikael Wass (Ericsson)

Apart from specifying the reserved or spare of not used code points as already commented by Ivo the latest revision looks good.

Only a very minor fix: multiple bit parameters are specified as “(octet 3, bits 4 to 6)”

-

Joy Zhou (ZTE)

Just evaluate the extension of ATSSS-ST in Rel-17.

Assuming only MP-QUIC (for UDP traffic) steering functionality will be supported, there would be following addintional steering functionality+steering mode:

1) MP-QUIC with any steerming mode supported + ATSSS-LL with only active-standby steering mode supported (non-MPUDP traffic)

2) MP-QUIC with any steerming mode supported + ATSSS-LL with any steerming mode supported

3) MP-QUIC with any steering mode supported + MPTCP with any steering mode supported + ATSSS-LL with only active-standby steering mode supported (non-MP UDP/TCP traffic)

4) MP-QUIC with any steering mode supported + MPTCP with any steering mode supported + ATSSS-LL with any steering mode supported

Maybe there would be another new combinations in Rel-17....

Considering we have 000, 100, 101, 110, 111 reserved if having 3 bits. I am afraid it is safe for ATSSS-ST to have 4 bits field.

-

Krisztian Kiss (Apple)

Let’s reserve 4 bits just to be on the safe side for future extensions.

Here is the revision uploaded: ftp://3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs/C1-200870.zip

-

Joy Zhou (ZTE) Two "steering mode" are redundant.

"

In 6.4.1.2:

c) if the UE supports MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode as specified in subclause 5.32.6 of 3GPP TS 23.501 [8], the UE shall set the ATSSS-ST bits to "MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode steering mode supported" in the 5GSM capability IE of the PDU SESSION ESTABLISHMENT REQUEST message.

"

and 6.4.2.2:

"

In case UE executes case a) or b):

......

3) if the UE supports MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode as specified in subclause 5.32.6 of 3GPP TS 23.501 [8], the UE shall set the ATSSS-ST bits to "MPTCP functionality with any steering mode and ATSSS-LL functionality with any steering mode steering mode supported" in the 5GSM capability IE of the PDU SESSION MODIFICATION REQUEST message.

"

I am OK with rest of the changes.

--

Mikael Wass (Ericsson)

Just a minor comment:

We now use all bits of octet 3, so this could also be corrected:

“All other bits in octet 4 to 15 are spare and shall be coded as zero, if the respective octet is included in the information element.”

If you have time and want to revise, please also add Ericsson as co-signer

**Decision:** The document was **revised to C1-200870**.

**C1-200870 ATSSS Non-MPTCP traffic support**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1948 rev 1 Cat: F (Rel-16)  
  
 Source: Apple*

(Replaces C1-200565)

**Decision:** The document was **revised to C1-201008**.

**C1-201008 ATSSS Non-MPTCP traffic support**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1948 rev 2 Cat: F (Rel-16)  
  
 Source: Apple*

(Replaces C1-200870)

**Decision:** The document was **agreed**.

**C1-200567 ATSSS Non-MPTCP traffic support**

*Type: pCR For: Approval  
 24.193 v1.0.1  
 Source: Apple*

**Abstract:**

Clarify how the network provides necessary information (e.g. ATSSS rules for non-MPTCP traffic) based on the received UE ATSSS capability.

Clarify that the network may also provide measurement assistance information when the UE support MPTCP functionality

**Discussion:**

Roozbeh Atarius (Motorola Mobility): the cover page should refer to TS 23.501 rather than SA2 CR from November.

Krisztian Kiss (Apple):

Thanks! I fixed the cover page:

ftp://3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx-rev-C1-200567%20non-MPTCP%2024.193-V03.doc

In the revision proposal, I also fixed this bullet:

"b) for an MA PDU session of IPv4, IPv6, or IPv4v6 PDU session type, if the UE does not support:

1) the MPTCP functionality with any steering mode and the ATSSS-LL functionality with only the active-standby steering mode; and

2) the MPTCP functionality with any steering mode and the ATSSS-LL functionality with any steering mode,

then ATSSS-LL functionality with any steering mode is mandatory."

**Decision:** The document was **revised to C1-200871**.

**C1-200871 ATSSS Non-MPTCP traffic support**

*Type: pCR For: Approval  
 24.193 v1.0.1  
 Source: Apple*

(Replaces C1-200567)

**Decision:** The document was **revised to C1-201009**.

**C1-201009 ATSSS Non-MPTCP traffic support**

*Type: pCR For: Approval  
 24.193 v1.0.1  
 Source: Apple*

(Replaces C1-200871)

**Decision:** The document was **agreed**.

**C1-200627 Considering allowed NSSAI when establishing MA PDU session**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1976 Cat: B (Rel-16)  
  
 Source: MediaTek Inc., ZTE / JJ*

**Discussion:**

Mikael Wass (Ericsson):

Could we change ”is allowed to” to “may” in the text:

“When the UE is registered over both 3GPP access and non-3GPP access in the same PLMN and the UE requests to establish a new MA PDU session, the UE may provide an S-NSSAI in the UL NAS TRANSPORT message only if the S-NSSAI is included in the allowed NSSAIs of both access types.”

JJ Huang Fu (Mediatek): Yes, I will take your comment on board, thanks.

Lazaros Gkatzikis (Nokia): Could you please elaborate on your intention with this CR?

Stage-2 states that “the current S-NSSAI is not in the Allowed NSSAI for both accesses, the AMF shall reject the PDU session modification”

1) To my understanding, here you take a more drastic approach of prohibiting such a request, aren’t you?

2) By putting the condition “and the S-NSSAI associated with the MA PDU session is included in the allowed NSSAI of the other access,” we make it mandatory, so we prefer the previous version

JJ Huang Fu (Mediatek):

My intention is that the UE shall check the allowed NSSAI of both accesses in those scenarios to avoid errors:

1. based on stage 2 requirement, the MA PDU session shall not be established

If the UE requests an S-NSSAI, this S-NSSAI should be allowed on both accesses. Otherwise, the MA PDU Session shall not be established.

2. otherwise, the request sent from the UE will anyway be rejected by the network.

Also:

Stage-2 states that “the current S-NSSAI is not in the Allowed NSSAI for both accesses, the AMF shall reject the PDU session modification”

1) To my understanding, here you take a more drastic approach of prohibiting such a request, aren’t you?

[JJ] In my CR, I only proposed the UE behavior.

The reason why SA2 is proposing that “the current S-NSSAI is not in the Allowed NSSAI for both accesses, the AMF shall reject the PDU session modification” in S2-2001620 is because the network cannot fully trust UE (although the UE shall not send this kind of request). To my understanding, the correct/expected UE behavior is missing in current stage 3.

Regarding the network behavior in the CR S2-2001620 (for PDU session modification procedure after inter-system change), we are not sure whether the network shall reject the request. E.g., for the case that Request type IE to “modification request" and include the MA PDU session information IE set to "MA PDU session network upgrade allowed", the network can just include NO ATSSS container IE in the PDU SESSION MODIFICATION COMMAND message (but not reject the modification request). I don’t have strong opinion on the network behavior, I believe UE shall avoid the error in advance.

I am also plan to add the UE handling in this procedure.

2) By putting the condition “and the S-NSSAI associated with the MA PDU session is included in the allowed NSSAI of the other access,” we make it mandatory, so we prefer the previous version

[JJ] to my understanding, the main effect of this change is to avoid error case, e.g., considering the following condition:

1. the UE has an MA PDU session established over one access; and

2. the UE performs PDU session establishment procedure to establish user plane resources over the other access; and

3. the S-NSSAI associated with the MA PDU session is NOT included in the allowed NSSAI of the other access

By using the previous version, the UE will request UP resources over the other access anyway (without indicating the S-NSSAI value), and this request will be rejected by the network.

By using the proposed version, the UE will not request the UP resources over the other access, since the S-NSSAI is not in the allowed NSSAI of the other access.

JJ Huang Fu (Mediatek)

The only change is to take Mikael’s comment on board.

Comments and suggestions are welcome.

To Lazaros,

Please let me know if I clarified the intention of the proposal.

Regarding the corresponding change to the PDU session modification procedure, the best place might be TS 24.193 sub-clause 5.2.5 (Converting PDU session transferred from EPS to MA PDU session). However, I don’t have TS 24.193 pCR touching this topic submitted to this meeting, thus I plan to finish this work in April, if possible.

What do you think?

**Decision:** The document was **revised to C1-201012**.

**C1-201012 Considering allowed NSSAI when establishing MA PDU session**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1976 rev 1 Cat: B (Rel-16)  
  
 Source: MediaTek Inc., ZTE / JJ*

(Replaces C1-200627)

**Decision:** The document was **agreed**.

**C1-200628 UE Handling upon receipt of PDU session release command**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1977 Cat: B (Rel-16)  
  
 Source: MediaTek Inc. / JJ*

**Discussion:**

Lazaros Gkatzikis (Nokia) Please consider the following comments on your CR

1) In 6.3.3.1 ”if the PDU session is an MA PDU session” to be added

2)” and the UE shall create a PDU SESSION RELEASE COMPLETE message” to be added.

3) Editorials in b)

is->are not available, shall further process

-

Sang Min Park (LG Electronics)

I have the following comments on C1-200629 from MediaTek Inc..

According to the TS 23.502 clause 4.22.7,

If the UE has established a MA PDU Session and the user plane resources are activated over either one access or both accesses, then:

- If the network wants to de-activate the user-plane resources over single access, then the network shall initiate the CN-initiated deactivation of UP connection procedure over this access, as specified in clause 4.3.7.

Also in clause 4.22.10.1

The MA PDU Session Release procedure is used to release the MA PDU Session or release the MA PDU Session over a single access. The MA PDU Session release over a single access may be triggered by the network due to e.g. when the UE is deregistered over an access or when S-NSSAI of the MA PDU Session is not in the Allowed NSSAI over an access.

In the proposed changes,

Upon receipt of the PDU SESSION RELEASE COMMAND with the Access type IE, the UE shall behave as follows:

a) if the PDU session is an MA PDU session and has user plane resources established on both 3GPP access and non-3GPP access, the UE shall consider the user plane resources on the access type indicated in the Access type IE as released;

b) if the PDU session is an MA PDU session and user plane resources on the access type indicated in the Access type IE is not available, the UE shall not diagnose an error, further process the release command and consider the user plane resources on the access type indicated in the Access type IE as successfully released;

c) if the PDU session is an MA PDU session which has only user plane resources on the access type indicated in the Access type IE, the UE shall consider the MA PDU session as released.

We need to distinguish two cases: release of the PDU session and release of the user plane resources (for the PDU session).

According to the stage 2, it is clear that the PDU session release procedure actually \*release\* the PDU session, and when it is MA PDU, it will release the PDU session for all access or over a single access. And if the user plane resources have to be released for MA PDU session (for one or both accesses), it shall be done via the CN-initiated deactivation of UP connection procedure (not NAS procedure).

So in your CR, you seems to mix both cases. In the proposed change, bullet a and b seems not correct, which should be nothing to do with the user plane resources.

--

Sang Min Park (LG Electronics)

Thanks for your explanation.

I talked with JJ offline, and found out that current terminologies used in CT1 is not exactly aligned with SA2, which gives possibility for confusion between session release and UP deactivation. So I withdraw my previous comments. Instead, in order to clarify this, here’s my suggestion for re-wording on the proposed changes.

Upon receipt of the PDU SESSION RELEASE COMMAND with the Access type IE, the UE shall behave as follows:

a) if the PDU session is an MA PDU session and has user plane resources established on both 3GPP access and non-3GPP access, the UE shall consider this MA PDU session the user plane resources overn the access type indicated in the Access type IE as released;

b) if the PDU session is an MA PDU session and the MA PDU session over user plane resources on the access type indicated in the Access type IE is not established available, the UE shall not diagnose an error, further process the release command and consider the MA PDU session over user plane resources on the access type indicated in the Access type IE as successfully released;

c) if the PDU session is an MA PDU session which is only established over has only user plane resources on the access type indicated in the Access type IE, the UE shall consider the MA PDU session as released.

Also, case b) above seems like an abnormal case, so it would be better to be described in subclause 6.4.3.5.

--

JJ Huang Fu (Mediatek)

Thanks a lot for your comments, please find the revision here:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20XXXX\_was\_0628\_%5BATSSS%2024.501%5D%20release%20with%20access%20type%20v1.docx

The wording proposals provided by SangMin are fine with me.

I noticed that we need to also align the terminology in TS 24.193, even the title of sub-clause, e.g., 5.2.3 Release of user-plane resources

Let’s discuss this in another E-mail thread for C1-200629 where I will also provide a draft.

-

Joy Zhou (ZTE)

Similar comment to 0629, in case of release one leg of the MA PDU session, it is more appropriate to say "release the user plane resources of MA PDU session on an access type".

Lazaros Gkatzikis (Nokia)

The fate of this CR is dependent on 200629.

On top of my comments related to 200629,please consider the following rephrasing

b) MA PDU session is not established over the access indicated in the Access type IE.

if the PDU session is an MA PDU session that is not established over the access indicated in the Access type IE of the PDU SESSION RELEASE COMMAND, the UE shall not diagnose an error, shall further process the release command, shall consider the user plane resources of the MA PDU session on the access indicated in the Access type IE as successfully released and shall create a PDU SESSION RELEASE COMPLETE message. and shall proceed with the PDU session release procedure;

--

Sang Min Park (LG Electronics)

Let me echo my comments on 0629 below:

---

Hi Lazaros, Joy, and JJ,

So this is the wording issue in our spec, which is not aligned with stage 2. In stage 2, “the release of user plane resources for MA PDU session over one access” and “the release of one leg for MA PDU session” is clearly distinguished.

According to the TS 23.502 clause 4.22.7,

If the UE has established a MA PDU Session and the user plane resources are activated over either one access or both accesses, then:

- If the network wants to de-activate the user-plane resources over single access, then the network shall initiate the CN-initiated deactivation of UP connection procedure over this access, as specified in clause 4.3.7.

Also in clause 4.22.10.1

The MA PDU Session Release procedure is used to release the MA PDU Session or release the MA PDU Session over a single access. The MA PDU Session release over a single access may be triggered by the network due to e.g. when the UE is deregistered over an access or when S-NSSAI of the MA PDU Session is not in the Allowed NSSAI over an access.

“Release of UP resources for PDU session” usually refers a UP tunnels over AN and CN (N3 or N9) release, also known as “deactivation” done via “CN-initiated deactivation of UP connection procedure” (although this is not a NAS procedure), with reserving PDU session context in CN and UE. If the this PDU session is required, SR or registration procedure with the Uplink Data Status IE shall be initiated.

“Release of PDU session” refers the entire removal of that PDU session context from the UE and CN, done via “PDU session release procedure”. If this PDU session is required, PDU session establishment procedure needs to be initiated.

In TS 24.193, we use “Re-activation of user-plane resources“ and “Release of user-plane resources”.

The former seems to refer actual re-activation of UP done via SR or RR, which is aligned with SA2’s condition specified in clause 4.22.7 of TS 23.502 as follows:

If the UE has established a MA PDU Session and the user-plane resources over one access of the MA PDU Session have been established but are currently inactive (e.g. because the UE is CM-IDLE over this access),

The latter seems to refer the PDU session release over one leg done via PDU session release procedure, which corresponds to SA2’s condition specified specified in clause 4.22.10 of TS 23.502 as follows:

The MA PDU Session Release procedure is used to release the MA PDU Session or release the MA PDU Session over a single access.

However, the use of terminology “release of user plane resources” is \*VERY CONFUSING\* since it reminds both “UP deactivation” and “PDU session release”. As far as I understand, the intent of 0628 and 0629 was to clarify the case of “PDU session release”, not “UP deactivation”. So that’s why I suggested to remove the terminology “user plane resources” from the proposals. Of course further clean-up on the terminology is required, but this has be done in the next meeting.

Also for Lazaros’ comment on “CN-initiated deactivation of UP connection procedure over this access”, this is not a NAS procedure, so I guess CT1 does not have to capture this in our specs.

Thanks.

--

JJ @Lazaros and SangMin,

I can understand SangMin’s concern about the confusion by using “release of user plane resources”.

Also I can understand Lazaros’s concern that the new confusion is caused by using “release the MA PDU session over either 3GPP access or non-3GPP access” (i.e., it can also be interpreted as “to release an MA PDU session by sending NAS message over either 3GPP access or non-3GPP access”).

Considering that terminology alignment may impact other sub-clauses, I suggest that we can focus on the procedure in this meeting and solve the terminology issues in the next meeting.

What do you think?

Please find my revision here:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20XXXX\_was\_0628\_%5BATSSS%2024.501%5D%20release%20with%20access%20type%20v2.docx

In this revision I keep the existing terminology (i.e., release UP resources on an access) while take your technical comments on board.

Comments and suggestions are welcome.

--

Sang Min Park (LG Electronics)

I understand your concern. For me, CR looks fine except for the terminology. So if we all agree that current wording in CT1 needs to be fixed, then we say that we are okay to agree this CR.

Or, is it acceptable to add the following EN after the proposed change?

(this will also apply to 0629)

Editor’s Note: the terminology “the user plane resources” in terms of MA PDU session needs to be further checked.

Kaj Johansson (Ericsson)

As clause 5.2 is expected to move to 24.501 with a CR in next meeting, the terminology can be fixed in that CR.

I will co-work with you all to make sure all the terminology fixed when prepaing that CR before the meeting.

As for this one, the editor's note is not so necessary.

-

Lazaros Gkatzikis (Nokia)

So it seems that we all see the needs to fix the terminology on ATSSS. If so, then I would like to withdraw previous comment proposing EN, and can live with the latest version of the draft that JJ provided without EN.

**Decision:** The document was **revised to C1-201013**.

**C1-201013 UE Handling upon receipt of PDU session release command**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1977 rev 1 Cat: B (Rel-16)  
  
 Source: MediaTek Inc. / JJ*

(Replaces C1-200628)

**Discussion:**

Rroozbeh Atarius (Motorola Mobility)@ Joy

You wrote:

As clause 5.2 is expected to move to 24.501 with a CR in next meeting,

Comment:

Did I miss a mail in the pile that there was an agreement for this expectation?

You are missing an “or” in your first list. I am not objecting to the CR but please make a note to fix it for the next meeting.

-

Atle Monrad (Interdigital)

I can agree C1-201013 (rev of C1-200628), and I do not mind if we need a round of terminology cleanups in the next meeting.

However, I’d like to get it confirmed from the originator of C1-201013 that the move of clause 5.2 to 24.501 is not a prerequisite for agreement of C1-201013.

At last I echo Roozbeh in his question below. There are companies that wish to move clause 5.2 to 24.501, but there are opponents as well, thus the word “clause 5.2 is expected to move” is in my view a bit premature to state.

-

Joy Zhou (ZTE)

I introduce the background story and explain there is little impact to other clauses in the mail thread for [16.2.5\_C1-200456] . There is no technical issue about this movement.

Checking the status of the mail thread which the latest feedback is from MediaTek supporting alternative 1, I did not receive further feedback on alternative 2 side.

I hope we can reach an agreement in this meeting. Unfortunately, seems not very possible now.

As for this 0628, further terminology cleanup will be made in a p-CR for 24.193(if 5.2 keeps in 24.193) or a CR for 24.501(if 5.2 goes to 24.501).

-

JJ Huang Fu (Mediatek)

I can confirm that “the move of clause 5.2 to 24.501 is not a prerequisite for agreement of C1-201013”.

To be more clear, no matter which of Alt#1 or Alt#2 will be selected

- C1-201013 is fine

- Terminology correction/alignment in TS 24.193/24.501 would be very helpful.

Please let me know if I can further clarify, thanks a lot.

-

Lazaros Gkatzikis (Nokia)

I think there is some misunderstanding here. The moving of the clause 5.2 is not related to what this CR is trying to do.

No related remark has been made by JJ, the author of the CR.

**Decision:** The document was **agreed**.

**C1-200629 Correction of release of user-plane resources**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: MediaTek Inc. / JJ*

**Discussion:**

Roozbeh Atarius (Motorola Mobility): No comment on restructuring however please use hard space so the text and numbers are on the same line.

JJ Huang Fu (Mediatek): No problem, I will take your comment on board, thanks a lot.

Sang Min Park (LG Electronics): I have the following comments on C1-200629 from MediaTek Inc..

Similar concerns as expressed for C1-200628 are also applied to this pCR.

We need to distinguish two cases: release of the PDU session and release of the user plane resources (for the PDU session).

According to the stage 2, it is clear that the PDU session release procedure actually \*release\* the PDU session, and when it is MA PDU, it will release the PDU session for all access or over a single access. And if the user plane resources have to be released for MA PDU session (for one or both accesses), it shall be done via the CN-initiated deactivation of UP connection procedure (not NAS procedure).

So in your pCR, you seems to mix both cases.

-

JJ Huang Fu (Mediatek): As I responded in the discussion E-mail thread for C1-200628, we believe that the PDU session release procedure is used for:

- release an MA PDU session; or

- release the UP resources on an access type of an MA PDU session

And this pCR is proposed to distinguish the two cases, i.e., release of the PDU session and release of the user plane resource.

FYI, the access type IE is included in PDU SESSION RELEASE COMMAND (in TS 24.501 CR#01500) for the second case.

Sang Min Park (LG Electronics) proposed some changes

--

JJ Huang Fu (Mediatek)

Thanks a lot for the comments, please find the revision here:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20XXXX\_was\_0629\_%5BATSSS%2024.193%5D%20release%20options%20v1.doc

In this revision:

- hard space is used (based on Roozbeh’s comment)

- “user plane resources” is removed to avoid confusion (based on SangMin’s comment)

- I also change the title as “Release of MA PDU session” (instead of “Release of user plane resources”)

Note that, in SA2 TS 23.502, the title of the corresponding sub-clause is “MA PDU Session Release”

I also noticed that we need to align the terminologies in other sub-clauses, e.g., 5.2.1 Activation of multi-access PDU connectivity service

Please let me know whether people are fine with this change, I can also do the same in the other sub-clauses.

Comments and suggestions are welcome, thanks a lot.

Joy Zhou (ZTE)

When releasing the MA PDU session, it means everything of the MA PDU session will be gone. The newly specified first part in this p-CR is OK.

When releasing just one leg of the MA PDU session, I think original texts "In order to release the MA PDU session's user plane over either 3GPP accces, or non-3GPP access" are better.

And I don't think 5.2.1 needs to be revised.

Lazaros Gkatzikis (Nokia) @JJ

I do not agree with the latest version of the CR.

The part of MA PDU session release is clear.

However, I do not see how the stage-2 requirements are captured regarding deactivation of user plane resources.

Notice that the corresponding title of TS23.502 is ”4.22.7 Adding / Re-activating / De-activating User-Plane Resources”

And deactivation is realized via “CN-initiated deactivation of UP connection procedure over this access”

Isn’t this what you are trying to capture via the second part of your CR? Please let me know in case I missed something.

I also do not agree with the terminology used for user plane resources release.

Your CR states

1)“In order to release the MA PDU session over either 3GPP access or non-3GPP access, “

This for me reads that you send a message to release the MAPDU and you just specify over which access you send the message.

2) “with the Access type IE indicating which access type of the MA PDU session is released”

I do not see why you use the term type to refer to the access.

Sang Min Park (LG Electronics) @Lazaros, Joy, and JJ,

So this is the wording issue in our spec, which is not aligned with stage 2. In stage 2, “the release of user plane resources for MA PDU session over one access” and “the release of one leg for MA PDU session” is clearly distinguished.

According to the TS 23.502 clause 4.22.7,

If the UE has established a MA PDU Session and the user plane resources are activated over either one access or both accesses, then:

- If the network wants to de-activate the user-plane resources over single access, then the network shall initiate the CN-initiated deactivation of UP connection procedure over this access, as specified in clause 4.3.7.

Also in clause 4.22.10.1

The MA PDU Session Release procedure is used to release the MA PDU Session or release the MA PDU Session over a single access. The MA PDU Session release over a single access may be triggered by the network due to e.g. when the UE is deregistered over an access or when S-NSSAI of the MA PDU Session is not in the Allowed NSSAI over an access.

“Release of UP resources for PDU session” usually refers a UP tunnels over AN and CN (N3 or N9) release, also known as “deactivation” done via “CN-initiated deactivation of UP connection procedure” (although this is not a NAS procedure), with reserving PDU session context in CN and UE. If the this PDU session is required, SR or registration procedure with the Uplink Data Status IE shall be initiated.

“Release of PDU session” refers the entire removal of that PDU session context from the UE and CN, done via “PDU session release procedure”. If this PDU session is required, PDU session establishment procedure needs to be initiated.

In TS 24.193, we use “Re-activation of user-plane resources“ and “Release of user-plane resources”.

The former seems to refer actual re-activation of UP done via SR or RR, which is aligned with SA2’s condition specified in clause 4.22.7 of TS 23.502 as follows:

If the UE has established a MA PDU Session and the user-plane resources over one access of the MA PDU Session have been established but are currently inactive (e.g. because the UE is CM-IDLE over this access),

The latter seems to refer the PDU session release over one leg done via PDU session release procedure, which corresponds to SA2’s condition specified specified in clause 4.22.10 of TS 23.502 as follows:

The MA PDU Session Release procedure is used to release the MA PDU Session or release the MA PDU Session over a single access.

However, the use of terminology “release of user plane resources” is \*VERY CONFUSING\* since it reminds both “UP deactivation” and “PDU session release”. As far as I understand, the intent of 0628 and 0629 was to clarify the case of “PDU session release”, not “UP deactivation”. So that’s why I suggested to remove the terminology “user plane resources” from the proposals. Of course further clean-up on the terminology is required, but this has be done in the next meeting.

Also for Lazaros’ comment on “CN-initiated deactivation of UP connection procedure over this access”, this is not a NAS procedure, so I guess CT1 does not have to capture this in our specs.

-

JJ Huang Fu (Mediatek) @Lazaros

I believe you misunderstood my proposal, this proposal corresponds to TS 23.502 “4.22.10 MA PDU Session Release”.

I see more confusion after changing the terminology, thus I reverted the terminology back, please find the new revision here:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20XXXX\_was\_0629\_%5BATSSS%2024.193%5D%20release%20options%20v2.doc

This difference between this revision and the original C1-200629 is that “type” is removed based on your comments.

Here are some more clarifications:

To my understanding

- the verbs “release/establish/add” imply the operations on the context of the MA PDU session

- the verbs “deactivate/re-activate” imply the operations on the UP resources (i.e., no impact to the context of the MA PDU session)

and the mappings between SA2 and CT1 are summarized in the table below:

SA2 CT1 Note

[by UE] Add UP resources over the other access (TS 23.502 sub-clause 4.22.7) In CT1 TS 24.193, this is part of the “Activating multi-access PDU connectivity service” (TS 24.193 sub-clause 5.2.1)

Already covered.

[by NW] Deactivate UP resources over the access (TS 23.502 sub-clause 4.22.7) It is not yet captured in CT1 IMHO. It is FFS whether this should be captured in TS 24.501/24.193.

[by UE] Reactivate UP resources over the access (TS 23.502 sub-clause 4.22.7)

In CT1 TS 24.193, this is also called re-activation of UP resources (TS 24.193 sub-clause 5.2.2)

Already covered.

[by UE/NW] Release the MA PDU session (TS 23.502 sub-clause 4.22.10)

Similar to the legacy PDU session release procedure (TS 24.193 sub-clause 5.2.3)

C1-200629 is proposed to clarify this.

[by NW] Release the MA PDU session over a single access (TS 23.502 sub-clause 4.22.10)

This is a new procedure which requires the Access type IE included in the PDU SESSION RELEASE COMMAND message (TS 24.193 sub-clause 5.2.3)

C1-200629 is proposed to clarify this.

Comments and suggestions are welcome.-

**Decision:** The document was **revised to C1-201014**.

**C1-201014 Correction of release of user-plane resources**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: MediaTek Inc. / JJ*

(Replaces C1-200629)

**Decision:** The document was **agreed**.

**C1-200630 Correction of "a different PLMN"**

*Type: pCR For: Agreement  
 24.193 v1.0.1  
 Source: MediaTek Inc. / JJ*

**Decision:** The document was **agreed**.

**C1-200655 ATSSS Performance Measurement Function Protocols and Procedures**

*Type: pCR For: Approval  
 24.193 v1.0.1  
 Source: Apple, Deutsche Telekom, Charter Communications*

(Replaces C1-199051)

**Abstract:**

This proposal is to define the protocol and procedures for Performance Measurement Function (PMF) over IP and Ethernet for ATSSS.

**Discussion:**

Ivo Sedlacek (Ericsson): C1-200655 refers to IETF draft-ietf-ippm-stamp-option-tlv-03 which does not exist. Thus, the solution cannot be reviewed

Krisztian Kiss (Apple): Version-03 of the TLV draft was released today and is available at: https://tools.ietf.org/html/draft-ietf-ippm-stamp-option-tlv-03

-

Chair: I have not seen much of discussion on the protocol for ATSSS Performance Measurement Function Protocols where we have competing CRs in C1-200655 (Apple) and C1-200314 (Ericsson).

If the situation does not change (e.g. one company withdrawing), then we will postpone both CRs out of the meeting and try resolving this in the next meeting.

-

Krisztian Kiss (Apple): I agree with your proposed way forward.

Our intention with C1-200655 was simply to address some of the concerns raised by Ivo in the January conference call.

-

Ivo Sedlacek (Ericsson)

TDoc submission deadline was 17th Feb 2020.

Start of meeting was 20th Feb 2020.

draft-ietf-ippm-stamp-option-tlv-03 was made available only on 21st Feb 2020.

Given that draft-ietf-ippm-stamp-option-tlv-03 contains major part of the solution of C1-200655, unavailability of draft-ietf-ippm-stamp-option-tlv-03 at submission deadline implies that the solution cannot be reviewed at the time set for TDoc review, i.e. between the TDoc submission deadline and the start of meeting.

Thus, I request that C1-200655 is postponed.

**Decision:** The document was **postponed**.

**C1-200747 service request for multiple access PDU session**

*Type: pCR For: Approval  
 24.193 v1.0.1  
 Source: Samsung /Grace*

**Discussion:**

Roozbeh Atarius (Motorola Mobility): I have some editorial comments on this CR however I am trying to understand why is it important that the UE must be registered in different PLMNs and why this cannot be generic? If it can be generic then to me this is covered by bullet a and b.

Lazaros Gkatzikis (Nokia): We do not see the need for the CR. As described in "4.22.7 Adding / Re-activating / De-activating User-Plane Resources of TS 23.502 re-activation is always the same.

The differentiation based on the PLMN as per your added text applies to activation of user plane resources, but this is already captured in subclause 5.1 of TS 24.193.

Sang Min Park (LG Electronics): I have the following comments on C1-200747 from Samsung.

1) Can you clarify the following proposed change?

x) if the UE is registered over both 3GPP access and non-3GPP access in different PLMNs, and if the UE requests to re-establishment of the user-plane resources of an MA PDU session over 3GPP access which were released, the UE shall include the Uplink data status IE indicating the related MA PDU session with the same PDU Session ID activated on the other access for the MA PDU session,

1) in the REGISTRATION REQUEST message when the registration procedure for mobility and periodic registration update is initiated by the UE over 3GPP access; or

2) in the SERVICE REQUEST message when the service request procedure is initiated by the UE over 3GPP access.

Upon receiving the request from the UE, the network shall then confirm the same PDU Session ID activated on

the other access.

I don’t understand what “confirm the same PDU session ID activated on the other access” means, and why this is required.

2) for non-3GPP access, I’m not sure whether there is any triggering condition for the registration procedure during connected mode. Mobility registration and periodic registration will not occur, and I’m not sure if there is any triggering condition for updating/changing capability or configuration for non-3GPP access. So in bullet y), 1) seems not needed.

-

Grace Suh Kyungjoo (Samsung)

I got comments from Roozbeh, Lazaros, and Sangmin, however, I need time to resolve the issues.

Therefore, I want to postpone the PCR C1-200747.

**Decision:** The document was **postponed**.

**C1-200760 ATSSS 5GSM capability indication**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-2024 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **withdrawn**.

#### 16.2.6 eNS

**C1-200315 Alignment of error codes with 3GPP TS 24.501**

*Type: CR For: Agreement  
 27.007 v16.3.0 CR-0683 rev 1 Cat: F (Rel-16)  
  
 Source: InterDigital / Atle*

(Replaces C1-200018)

**Discussion:**

revised before the meeting

**Decision:** The document was **revised to C1-200320**.

**C1-200318 Cleanups on introduction of pending NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1869 rev 1 Cat: F (Rel-16)  
  
 Source: InterDigital / Atle*

(Replaces C1-200113)

**Discussion:**

Atle Monrad (Interdigital):

Related with the comments on 16.2.6\_C1-200352:

Assuming that the idea to merge a number of same/similar changes to the pending NSSAI from multiple CR into a single CR is agreeable, I will revise C1-200318 accordingly to remove overlaps with the revision of C1-200352.

Lin Shu (Huawei): I know you will take some overlapped part out from your revision but I have small one as below:

1. Some times you used “based on the rejection cause in the rejected S-NSSAI(s)” and sometime you used “based on the rejection cause in the rejected S-NSSAIs”, any sepecial reason behind? Thanks.

Atle Monrad (Interdigital)

Nope, you found one “rejection cause in the rejected S-NSSAIs”

All should be “rejection cause in the rejected S-NSSAI(s)”

Will take into account

Ricky Kaura (Samsung) Generally I am not a fan of using this “S-NSSAI(s)” terminology and my preference is always to spell it out a “one or more S-NSSAIs” (as you did in subclauses 8.2.7.6 to 8.2.19.16), but in those subclauses surely you could have also used S-NSSAI(s), given that S-NSSAI(s) seems to be the majority of cases in the spec now.

--

Atle Monrad (Interdigital)

All overlap with rev of 0352 is removed.

The missing ()s on the s discovered by Lin added.

An additional “based on the rejection cause in the rejected S-NSSAI(s)” found and corrected

On s versus (s)

NSSAIs / S-NSSAIs is used in plural (e.g. “one or more NSSAIs” and “authorization fails for all S-NSSAIs”).

NSSAI(s) / S-NSSAI(s) is used to illustrate that it can be one or more S-NSSAI involved (e.g. “The allowed NSSAI(s) can be stored” and “excluding the S-NSSAI(s) for which …”),

24.501 is made more consistent on this, but there can probably be more cases debated …

The file is uploaded as C1-200797

-

Sung Hwan Won (Nokia)

I am reluctant to the use of rejected S-NSSAI, which is not defined even though the TS is contaminated with the term. If you want to use it, I request for you to define it in section 3.1.

Sung Hwan Won (Nokia)

I just searched that “rejected S-NSSAI” was used many times in the current spec.

Also the term “allowed S-NSSAI” was used without definition.

To me to use “rejected S-NSSAI” is fine as it just refers a single S-NSSAI included in a rejected NSSAI.

Sung Hwan Won (Nokia)Indeed the TS is contaminated by those terminologies… And it is not fair to ask Atle to fix it. So I can live with those terms.

**Decision:** The document was **revised to C1-200797**.

**C1-200797 Cleanups on introduction of pending NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1869 rev 2 Cat: F (Rel-16)  
  
 Source: InterDigital / Atle*

(Replaces C1-200318)

**Decision:** The document was **agreed**.

**C1-200320 Alignment of error codes with 3GPP TS 24.501**

*Type: CR For: Agreement  
 27.007 v16.3.0 CR-0683 rev 2 Cat: F (Rel-16)  
  
 Source: InterDigital / Atle*

(Replaces C1-200315)

**Discussion:**

Sunhee Kim (LGE)

In 9.2.2.2.3 Errors for 5GS, the error code names are not same to TS24.501 5GSM error cause.

I think the TS27.007 error code names should be change to the same error code name described in TS24.501.

So, in TS27.007, “PDN type IPv4v6 only allowed” should be changed to “ PDN session type IPv4v6 only allowed”.

And all three error code have to add “session”.

Atle Monrad (Interdigital)

Fixed and uploaded as C1-200796

Note that the AI should be corrected to 16.2.2

Work item code: SINE\_5G, 5WWC, 5GProtoc16

**Decision:** The document was **revised to C1-200796**.

**C1-200352 Handling of S-NSSAIs in the pending NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1889 Cat: B (Rel-16)  
  
 Source: LG Electronics / Sunhee*

**Discussion:**

Similar changes were identified. Sunhee Kim (LGE) proposed to partly merge them.

Kaj Johansson (Ericsson): I want to point out that there is also an overlap with C1-200683: subclause 4.6.2.2 and c) 3) iii).

No comments received on 0683 yet at least what I have noticed.

--

Atle Monrad (Interdigital)

There are indeed several CRs that cover this, and we must move some if these additions to a single CR. I’m fine that you hold the pen as indicated.

Please add InterDigital as cosigner of your revision. I will remove these changes from a revision of C1-200318.

Note a couple of smaller additional changes that you need to do in your revision:

in 3.1

Rejected NSSAI: Rejected NSSAI for the current PLMN or SNPN or rejected NSSAI for the current registration area

When this change gets a 3d item (or rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization), the sentence should read:

Rejected NSSAI: Rejected NSSAI for the current PLMN or SNPN, or rejected NSSAI for the current registration area or rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization.

In 4.6.1

c) allowed NSSAI; and

remove the “and” from bullet c) when you add bullet e)

c) allowed NSSAI; and

At last, add a full stop and not a semicolon after bullet e)

e) pending NSSAI.

--

Sunhee:

Thanks for the comments and the cosign to C1-200352.

I revised C1-200352 based on your comments as below.

Changes for rev2 (draft)

- Add InterDigital in Source to WG, as a co-signer

- Following InterDigital’comments are added in this rev2 (draft).

1) Change “ or” to “,” in Rejected NSSAI termination definition in 3.1

2) remove the “and” from bullet c) when you add bullet e) in 4.6.1

3) At last, add a full stop and not a semicolon after bullet e) in 4.6.1

I put the draft revision (draft-C1-200352\_r2\_add\_intetDigital.doc ) in the draft folder.

Please refer to link www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/ draft-C1-200352\_r2\_add\_intetDigital.7z

--

Lin Shu (Huawei)

Some more comments on the revision in the draft box:

1. In the comments to C1-200683, I have suggested to use a shorter name for “rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization” as “rejected NSSAI due to the failed or revoked NSSAA”. So it would be better we can use a consistent term in different CRs.

2. In C1-200683, about the bullet c.3. iii) in sub 4.6.2.2, it also has covered the change which was covered by this CR as well:

“iii) rejected NSSAI for the failed or revoked NSSAA, for each and every access type;

”

All in all, C1-200683 should be marked as related to the set of this CR as well as some overlapping exist.

--

Sunhee: There was problem in link due to “blank” in that link.

Please use this link www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-C1-200352\_r2\_add\_intetDigital.7z

-

RV Anikethan (Samsung)

We have a comment wrt the below text:

Rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization: A set of S-NSSAI(s) which was included in the requested NSSAI by the UE and is sent by the AMF with the rejection cause “rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization”.

It is not always necessary that the S-NSSAI was included in the requested NSSAI. For example:

1) UE initiates registration with a set of S-NSSAI’s in the requested NSSAI.

2) AMF finds that none of the S-NSSAI in the requested NSSAI are part of the subscribed NSSAI and hence instead picks the default configured NSSAI.

3) AMF finds that the default configured (in the subscribed NSSAI) needs NSSAA. It is put in pending NSSAI and notified to UE.

4) NSSAA is done and the same fails and the UE is notified via the rejected NSSAI with the relevant cause.

In this case the S-NSSAI was not included in the requested NSSAI.

Can we please remove that part and just keep the definition confined to the S-NSSAI being rejected by AMF with the specific cause.

Would you agree wrt the above reasoning?

-

Yanchao Kang (vivo) I am fine to merge C1-200401 into the revision of C1-200352, please add vivo as co-source.

I would like to second Lin’s comment of using a shorter name for “rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization” as “rejected NSSAI due to the failed or revoked NSSAA”.

--

Sunhee:

Thanks for co-source.

I added Vivo as co-source and uploaded r3.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-C1-200352\_r3\_add\_intetDigital\_add\_lin\_yanchao\_anikethan.zip

--

Sunhee:

I fixed it as you indicated as below.

Changes for rev3 (draft)

- Add Vivo in Source to WG, as a co-signer

- Removed the phrase belonging to Requested NSSAI from the rejected NSSAI due to NSSAA failure terminology, in 3.1

- Change “rejected NSSAI due to the failed or revoked network slice specific authentication and authorization” to “rejected NSSAI for the failed or revoked NSSAA” as a short terminology.

Please refer to the link

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-C1-200352\_r3\_add\_intetDigital\_add\_lin\_yanchao\_anikethan.zip

--

Sunhee:

Thanks for the comments.

As you indicated, I fixed this CR as below.

Changes for rev3 (draft)

- Add Vivo in Source to WG, as a co-signer

- Removed the phrase belonging to Requested NSSAI from the rejected NSSAI due to NSSAA failure terminology, in 3.1

- Change “rejected NSSAI due to the failed or revoked network slice specific authentication and authorization” to “rejected NSSAI for the failed or revoked NSSAA” as a short terminology.

Please refer to the link

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-C1-200352\_r3\_add\_intetDigital\_add\_lin\_yanchao\_anikethan.zip

Lin Shu (Huawei):

Thanks for providing the updated version.

After checking the one in the draft box, it seems you still not use the shorter name for this reject NSSAI, so I go through the CR to change it as below, please check. Also, we would like to co-sign this revision, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/draft-C1-200352\_r3\_add\_intetDigital\_add\_lin\_yanchao\_anikethan-Lin.DOCX

--

Xu:

As you mentioned in the early mail and latest draft ,C1-200405 is partially merged in rev of 352, we would like to co-sign it. Please add China Mobile as co-source,thank you!

We will remove the same part from a revision of C1-200405 later.

-

Sung Hwan Won (Nokia): I am OK with the merge.

-

Sung Hwan Won (Nokia)

Now more comments on the paper.

Shouldn’t “was included in the requested NSSAI by the UE and” removed from the definitions of other types of rejected NSSAI as well with the same reason that you specified in the note?

On “When the network slice-specific authentication and authorization procedure is initiated for one or more S-NSSAIs, these S-NSSAI(s) will be included in the pending NSSAI”, the sentence should be aligned with the discussion result of the discussion on C1-200694.

Tsuyoshi Takakura (NEC): Please add NEC as co-signer.

-

Sunhee provided reply to Sung

-

Yoko: Thank you for sharing your draft.

I'm fine with this version.

Could you add SHARP as co-signer?

--

sunhee

@Yanchao, Thanks for the correction.

I agree all your comments.

And, I added NEC and SHARP as co-signers.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200813\_C1-200352\_Yanchao\_NEC\_sharp.zip

-

Sung Hwan Won (Nokia)

About:

When the network slice-specific authentication and authorization procedure is initiated for one or more S-NSSAIs, these S-NSSAI(s) will be included in the pending NSSAI.

The e-mail thread “[16.2.6\_C1-200694]” reveals that there are some companies who do not want to send pending NSSAI whenever re-auth is initiated.

Lin Shu (Huawei):It seems you still not cover all my rewording comments.

Please see the attached:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200813\_C1-200352\_Yanchao\_NEC\_sharp-Lin.docx

Thanks.

-

Sunhee provided detailed comments

-

Tsuyoshi Takakura (NEC)To me this CR does not relate to C1-200694, as this ( C1-200352 ) is the existing procedure agreed in last meeting.

-

Sung Hwan Won (Nokia)

The existing paragraph is:

When the network slice-specific authentication and authorization procedure is completed for an S-NSSAI that has been in the pending NSSAI, the S-NSSAI will be moved to the allowed NSSAI or rejected NSSAI and communicated to the UE. The pending NSSAI is managed regardless of access type i.e. the pending NSSAI is applicable to both 3GPP access and non-3GPP access even if sent over only one of the accesses.

And now it is changed to:

When the network slice-specific authentication and authorization procedure is initiated for one or more S-NSSAIs, these S-NSSAI(s) will be included in the pending NSSAI. When the network slice-specific authentication and authorization procedure is completed for an S-NSSAI that has been in the pending NSSAI, the S-NSSAI will be moved to the allowed NSSAI or rejected NSSAI depending on the outcome of the procedure and communicated to the UE. The pending NSSAI is managed regardless of access type i.e. the pending NSSAI is applicable to both 3GPP access and non-3GPP access even if sent over only one of the accesses.

What do you mean by existing procedure agreed in the last meeting in terms of highlighted text??-

Chair @Sung, Tsuyoshi,

please clearly indicate whether you see a need for a rev of the text in 813 (was 352). If yes, please provide a proposal of new text.

Sung Hwan Won (Nokia) My proposal is to revert “is initiated for one or more S-NSSAIs, these S-NSSAI(s) will be included in the pending NSSAI. When the network slice-specific authentication and authorization procedure”, i.e. to not include them.

-

Tsuyoshi Takakura (NEC) To me "including Pending NSSAI in registration accept" is existing behavior.

My proposal is "is determined to invoke for one or more S-NSSAIs," instead of "is initiated for one or more S-NSSAIs, ".

-

Sung Hwan Won (Nokia)

>> To me "including Pending NSSAI in registration accept" is existing behavior.

The sentence that we are discussing does not state any specific procedure.

>> My proposal is "is determined to invoke for one or more S-NSSAIs," instead of "is initiated for one or more S-NSSAIs, ".

To me it does not make anything clearer. And as can be seen in the thread “[16.2.6\_C1-200694]”, whether an S-NSSAI for which NSSAA is planned or is ongoing should be added in the pending NSSAI is controversial. I don’t think that such a proposal does not help anything. This CR has many valuable other changes. I don’t want to object to this CR just for this specific part.

--

Tsuyoshi Takakura (NEC)

Maybe I am misunderstanding your stace.

Correct me if I am wrong. So the stance is simply against of that AMF maintaining pending NSSAI.

#Getting confused because somehow the discussion involves C1-200694, which is proposing UE impact upon reception of pending NSSAI over UCU.

-

Sung Hwan Won (Nokia)

When the network slice-specific authentication and authorization procedure is initiated for one or more S-NSSAIs, these S-NSSAI(s) will be included in the pending NSSAI.

Is this about internal network behavior? If yes, then for the same reason that I reject 0691, I disagree with this sentence.

Or is this about signaling? If yes, then there is ongoing discussion w.r.t 0694.

Or is this about internal UE behavior? If yes, then nobody will agree with this.

--

Lin Shu (Huawei): The text “When the network slice-specific authentication and authorization procedure is initiated for one or more S-NSSAIs, these S-NSSAI(s) will be included in the pending NSSAI.” you concerned is very general text which does not refer specific procedure

So to your question, my answer is to

[Sung]Or is this about signaling?

[Lin] Yes, but the signaling can refer Registration Accept message, not the UCU command in 0694. So I think above text is needed and is useful to provide a general information to align what we described in the registration procedure.

Chair;

I have seen a statement from Sung

“ I don’t want to object to this CR just for this specific part.”

So the current status for the CR is that it would go forward.

Any further discussion should be carried out in the next meeting. Let’s try to get something agreed.

--

Sang Min Park (LG Electronics)

Please find the intermediate draft revision of C1-200813 from here: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-201xxx\_was0813\_0352\_r2.docx

Overall clean-up has made, and I found some further editorial errors.

So only one issue remains on the added text to subclause 4.6.1:

When the network slice-specific authentication and authorization procedure is initiated for one or more S-NSSAIs, these S-NSSAI(s) will be included in the pending NSSAI. When the network slice-specific authentication and authorization procedure is completed (…)

Tsuyoshi suggested to update these texts as follows:

When the network slice-specific authentication and authorization procedure is determined to invoke initiated for one or more S-NSSAIs, these S-NSSAI(s) will be included in the pending NSSAI. When the network slice-specific authentication and authorization procedure is completed (…)

Since the deadline for providing new revision is coming, we need to get a consensus on this text.

Sung, can you live with the text as it is in the draft version or the text suggested by Tsuyoshi, if only Nokia does not agree with the text?

Tsuyoshi, can you live with the text as it is in the draft version if people do not agree with your proposal?

-

Tsuyoshi Takakura (NEC)

> Tsuyoshi, can you live with the text as it is in the draft version if people do not agree with your proposal?

yes.

-

Fei Lu (ZTE)

I would prefer the following wording ("with or "without" to be is fine to me ).

When the network slice-specific authentication and authorization procedure is (to be ) initiated for one or more S-NSSAIs, these S-NSSAI(s) will be included in the pending NSSAI. When the network slice-specific authentication and authorization procedure is completed (…)

-

Kaj Johansson (Ericsson)

There are still overlap with C1-200683 as mentioned in another thread (where I did a mistake, 3.1 should be 3.2):

There are still overlaps with C1-200813 (that was C1-200352) in 3.1, 4.6.1 and 4.6.2.2

My proposal:

• 0683: keeps 3.2 and revokes c)3)iii) in 4.6.2; and

• 0813: revoke changes in 3.2 c) in 4.6.1 and align c)3)iii) in 4.6.2. with c)3)iii) in 4.6.2 of draft 0683.

But I am open for other proposals.

Draft revision of 0683 in draft folder: ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxx-was200683-was198772-was8075-was7003-was6569-6187-nssaa-failure-and-revocation-v01.zip

Sung Hwan Won (Nokia)

I propose:

When, for an S-NSSAI in the requested NSSAI, there is a need to perform NSSAA and no previous NSSAA result is available, the S-NSSAI will be included in the pending NSSAI.

-

Sang Min Park (LG Electronics)

Since Sunhee has been handling eNS issue, I missed this overlap.

I guess your suggestion may work, by removing change in 3.1 from LGE’s. But I think the first change in clause 4.6.1 would be better revoked in 0683 and kept in 0813 since both CRs touches same lists but different bullets, which breaks the structure of that list.

Please find the further revision taking the suggestion above into account. https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-201xxx\_was0813\_0352\_v3.docx

-

Sang Min Park (LG Electronics)

Not sure whether others are fine with the proposal. I rephrased your suggestion to fit into the original proposal as below. Is this acceptable?

When the network slice-specific authentication and authorization procedure is initiated for one or more S-NSSAIs in the requested NSSAI and no previous NSSAA result is available, these S-NSSAI(s) will be included in the pending NSSAI.

-

Lin Shu (Huawei)Fine for me on below text

When the network slice-specific authentication and authorization procedure is to be initiated for one or more S-NSSAIs in the requested NSSAI, these S-NSSAI(s) will be included in the pending NSSAI.

-

Sang Min Park (LG Electronics)

Then can we agree on the following? Since we only have 40 minutes left, a compromise is really required.

When the network slice-specific authentication and authorization procedure is to be initiated for one or more S-NSSAIs in the requested NSSAI, these S-NSSAI(s) will be included in the pending NSSAI.

We should further work on the text in the next meeting. I guess this is what we all can agree on at this moment.

-

Kaj

@Sang Min

I am fine with the proposal and will update the revision of 0683 accordingly.

Please, add Ericsson as source, thank you.

-

Sung Hwan Won (Nokia): Works for me as well.

Chair: I suggest you take this latest text that is ok for LIN and put an EN that further work is needed. Just 29 mins left

Atle Monrad (Interdigital): InterDigital is also OK with this change.

Sang Min Park (LG Electronics): The revision of C1-200813 is now C1-201042. You can find the revision here: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs/C1-201042.zip

Lin Shu (Huawei): I would prefer Fei’s text:

When the network slice-specific authentication and authorization procedure is (to be ) initiated for one or more S-NSSAIs, these S-NSSAI(s) will be included in the pending NSSAI. When the network slice-specific authentication and authorization procedure is completed (…)

@Sangmin, your text “and no previous NSSAA result is available” is not needed as before initiate the NSSAA, the AMF needs to check this but this text is talking about NSSAA was already initiated yet.

**Decision:** The document was **revised to C1-200813**.

**C1-200813 Handling of S-NSSAIs in the pending NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1889 rev 1 Cat: B (Rel-16)  
  
 Source: LG Electronics / Sunhee*

(Replaces C1-200352)

**Decision:** The document was **revised to C1-201042**.

**C1-201042 Handling of S-NSSAIs in the pending NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1889 rev 2 Cat: B (Rel-16)  
  
 Source: LG Electronics / Sunhee*

(Replaces C1-200813)

**Decision:** The document was **agreed**.

**C1-200354 Correcting condition for Network Slice-Specific Authentication and Authorization**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1890 Cat: F (Rel-16)  
  
 Source: Samsung Electronics Polska / Ricky*

**Discussion:**

Merged into C1-200697 and its revisions

**Decision:** The document was **merged**.

**C1-200392 Clarification on HPLMN S-NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1893 Cat: F (Rel-16)  
  
 Source: LG Electronics / Sunhee Kim*

**Discussion:**

Fei Lu (ZTE):

This CR has some overlaps with CR in the 0432.

In this CR, it is proposed to re-use S-NSSAI IE.

In 0432, a new IE is proposed.

No strong preference. However, if re-using the existing IE, then I think it is better to add a table note in the S-NSSAI IE subclause. Then there is no need to touch the description in the subclause 5.4.7.1.

Sunhee Kim (LGE) proposed some changes

Fei Lu (ZTE): I am fine with this change and I will also remove the overlaps in the revision of C1-200432.

Sung Hwan Won (Nokia)

It is not entirely clear to me how the CRs (0392 and 0432) will evolve. Thus, let me make my comment based on the current versions.

This CR (0392) is not needed because in subclauses 5.4.7.2.1, 5.4.7.2.2, and 5.4.7.3.1, it is clarified that the S-NSSAI IE includes the HPLMN S-NSSAI.

Fei Lu (ZTE): Could I ask what is your exact opinion ?

1. The intention of CR is wrong. (already HPMN S-NSSAI definition is clear)

2. The intention of CR is correct but way to CR evolve is wrong

Fei and I think HPLMN S-NSSAI definition is not clear, so we think CR changes are needed, (even though the way to CR evolve is not correct

-

Lin Shu (Huawei)

I would prefer to re-use the existing IE format but would be fine to add a table NOTE in the Table 9.11.2.8.1, e.g. as below. Note that it is not only for NSSAA but also for the case that when the UE is accessing its HPLMN.

NOTE 5: if only HPLMN S-NSSAI is included, octets 7 to 10 shall not be included.

--

Ricky Kaura (Samsung). I have sympathy with the proposals in 0392 and 0432, but I also support Sung’s observations regarding subclauses 5.4.7.2.1, 5.4.7.2.2, and 5.4.7.3.1.

I am fine to go with a revision of 0392, but don’t think the new proposal from LGE works:

Slice/service type (SST) (octet 3)

This field contains the 8 bit SST value. The coding of the SST value part is defined in 3GPP TS 23.003 [4]. If this IE is included during the Network slice-specific authentication and authorization procedure, this field contains the 8 bit SST value of an S-NSSAI in the S-NSSAI(s) of the HPLMN to which the SST value is mapped

Slice differentiator (SD) (octet 4 to octet 6)

This field contains the 24 bit SD value. The coding of the SD value part is defined in 3GPP TS 23.003 [4]. If this IE is included during the Network slice-specific authentication and authorization procedure, this field contains the 24 bit SD value of an S-NSSAI in the S-NSSAI(s) of the HPLMN to which the SD value is mapped

If the SST encoded in octet 3 is not associated with a valid SD value, and the sender needs to include a mapped HPLMN SST (octet 7) and a mapped HPLMN SD (octets 8 to 10), then the sender shall set the SD value (octets 4 to 6) to "no SD value associated with the SST".

The highlighted text seems to only include the case when the UE is in the VPLMN. When the UE is in the HPLMN, then mapping data may not necessarily be present.

I think the proposal suggested by Lin (see below) works well and I would like to support that.

NOTE 5: if only HPLMN S-NSSAI is included, octets 7 to 10 shall not be included.

The note could be extended to add NSSAA as an example, but I am fine to leave the note as specified by Lin.

-

Sung Hwan Won (Nokia)

As I said, the CR (C1-200392, which just add some clarification in subclause 5.4.7.1) is not needed because subclauses 5.4.7.2.1, 5.4.7.2.2, and 5.4.7.3.1 specifies that the S-NSSAI IE is populated with a HPLMN S-NSSAI, e.g. in subclause 5.4.7.2.1, we have

The AMF shall set the S-NSSAI IE of the NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND message to the HPLMN S-NSSAI to which the EAP-request message is related.

Anyways, now it became clear that a revision of 0392 will clarify something in the coding part, I can live with it.

--

Sunhee:

I think you agree with us.

Because there is no more comments, I made a revised document as below.

There is no overlap and all comments are added.

Please refer to link

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/inbox/Drafts/revision\_C1-200392\_r1.zip

I added NOTE5 as Lin indicated.

I removed “to which the SD value is mapped” text in Table 9.11.2.8.1.

Please refer to link

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/inbox/Drafts/revision\_C1-200392\_r2.zip

-

Sunhee:

Please find the draft revision in the drafts with the following change:

I deleted all memos and changes on changes.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200830\_was392.zip

The revision number of 0392 will be 0830.

--

Kaj Johansson (Ericsson)

For the proposed change “If this IE is included during the Network slice-specific authentication and authorization procedure, this field contains the 8 bit SST value of an S-NSSAI in the S-NSSAI(s) of the HPLMN.”, what does “of an S-NSSAI in the S-NSSAI(s) of the HPLMN” mean, why “in the S-NSSAI(s)”?

Sunhee:

I copied this statement from definition in mapped PLMN SST which is written in below.

mapped HPLMN Slice/service type (SST) (octet 7)

This field contains the 8 bit SST value of an S-NSSAI in the S-NSSAI(s) of the HPLMN to which the SST value is mapped. The coding of the SST value part is defined in 3GPP TS 23.003 [4].

I will give the example.

Home NW (AT&T) has 2 NSSAIs (one is GM V2X slice, the other is VW V2X slice)

For the roaming agreement, GM VxX slice and VW V2X slice could have one V2X slice in visited NW (SKT).

Because, the visited NW does not have OEM specific V2X slice, just V2X slice.

In this case, in visited NW, mapped HPLMN SST can be one of the SST value in S-NSSAI(s), if any.

So, the mapped HPLMN SST defines “in the S-NSSAI(s) of the HPLMN”.

But, when the UE is in HPLMN, the UE uses S-NSSAI in HPLMN. (no need to (s) )

To include all cases ( when UE is in HPLMN, and in VPLMN), we use S-NSSAI(s) .

As you know, this CR is for clarify HPLMN S-NSSAI.

In case the UE is in HPLMN, the UE uses S-NSSAI as HPLMN S-NSSAI.

In case the UE is in VPLMN, the UE uses mapped HPLMN SST or mapped HPLMN SD in S-NSSAI as HPLMN S-NSSAI.

If you have further question, feel free to contact me.

-

Sung Hwan Won (Nokia)

Fine by me except some editorial issues on NOTE 5.

- Hard space between “NOTE” and “5”.

- Tab between “NOTE 5:” and “If only”.

**Decision:** The document was **revised to C1-200830**.

**C1-200830 Clarification on HPLMN S-NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1893 rev 1 Cat: F (Rel-16)  
  
 Source: LG Electronics / Sunhee Kim*

(Replaces C1-200392)

**Decision:** The document was **agreed**.

**C1-200393 Adding NSSAA result indication into Network slicing indication IE of the CONFIGURATION UPDATE COMMAND message**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1894 Cat: F (Rel-16)  
  
 Source: China Telecommunications*

**Abstract:**

Adding Network slice-specific authentication and authorization result indication into Network slicing indication IE of the CONFIGURATION UPDATE COMMAND message

**Discussion:**

MCC: Incorrect clauses affected. It would be good to:

- either indicate that all the unmodified clauses are provided for information

- or just remove them completely from the CR

Editorial: “Bits 4 is spare and shall be coded as zero.”, “bits” -> “bit”

--

Ricky Kaura (Samsung): I think there is a misunderstanding of the purpose of the Network Slicing Indication. It is not used just to tell the UE information. Each bit in this IE has an associated procedure associated with it.

Please check the generic UE configuration update procedure and the registration procedure for the associated UE and Network procedures for DCNI and NCSSI

I did not see any procedures associated to the new NSSAARI bit.

Additionally, the consequences if not approved are strange. There is no such thing as needing to understanding the purpose of the procedure.

We already have the reject causes will be sufficient to tell the UE what is not allowed due to NSSAA.

Summary: This CR needs to be rejected as it is not required.

Kaj Johansson (Ericsson): I have more or less the same view as Ricky.

The CR should not be agreed.

Vijay (Apple): We do not see a necessity for this change. The result of NSAAA would be communicated appropriately via the Allowed and Rejected NSSAI in CONFIGURATION UPDATE COMMAND. Thus, there is no extra benefit of having an additional indicator added in Network Slicing Indication.

-

Sung Hwan Won (Nokia): I agree with Ricky, Kaj, and Vijay.

**Decision:** The document was **postponed**.

**C1-200394 Adding NSSAA failed or revoked to 5GSM and 5GMM cause IE**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1895 Cat: F (Rel-16)  
  
 Source: China Telecommunications*

**Abstract:**

The 5GSM and 5GMM cause value IE is added for the Network Slice-Specific Authentication and Authorization failed.

**Discussion:**

MCC: Cover page: Please accept change marks on tdoc and CR numbers.

Chen Xu (China Telecom): I have a question about defining a 5GMM cause for the failed network slice-specific authorization and authentication or Authorization Revocation, to indicate the reason why a 5GMM request from the UE is rejected by the network.

According to TS, both the failed NSSAA and Authorization Revocation will trigger a CONFIGURATION UPDATE COMMAND with a new rejected NSSAI, 4 bits cause value is suitable for this case?

And UE is allowed to retry the rejected S-NSSAI due to the failed network slice-specific authorization and authentication or Authorization Revocation ,to trigger a new NSSAA,maybe rejecting a 5GMM request due to this reason is not a good choice?

Shuzhen Chen:

I think the 5GMM cause for the Network Slice-Specific Authentication and Authorization failed or revoked will help UE better understand why the netwrok initiated Deregistration procedure, which due to the NSSAA fails.

Although the rejected S-NSSAI is carried in the DEREGISTRATION REQUEST, but in my understanding the UE will get the 5GMM cause IE first to better know the reason why the netword initiated Deregistration procedure.

And although the CONFIGURATION UPDATE COMMAND will be send to update the NSSAA result, but sometimes the UE will receive the DEREGISTRATION REQUEST first and take corresponding action.

Therefor, it's better to add the 5GMM cause. If not, do you have any proposal for this problem?

Fei Lu (ZTE)

Whether the cause #62 is sufficient for your described case below.

Additionally if the new 5GMM cause is introduced, the expected UE behaviour should be defined.

RV Anikethan (Samsung)

We agree with Fei that cause #62 is sufficient for this use case.

When cause #62 is received, it implies that all those S-NSSAI’s for which NSSAA were pending failed the NSSAA procedure. Additionally it is also generally expected that the network also sends rejected NSSAI with the relevant cause.

Also no 5GSM cause would be needed since NSSAA failure is not at the 5GSM level.

-

Chen Xu: I get your idea now.

Maybe we can try this existing cause "No network slices available " in the DEREGISTRATION REQUEST? If you agree the rejected NSSAI with cause value (due to the failed network slice-specific authorization and authentication or Authorization Revocation) shall in the message and is enough to let UE know the reason of the network-initiated de-registration,in pure NSSAA case (i.e. all S-NSSAIs within the allowed NSSAI fail the NSSAA or their authorization are revoked. )

I am not sure if it's better to put all network slices unavailable cases together .

0 0 1 1 1 1 1 0 No network slices available

-

Sung Hwan Won (Nokia)

Introduction of new 5GMM and 5GSM cause values is not justified. China Telecom claims “better” understanding with the new 5GMM cause value, but what is additional information that the cause value brings?

-

Roozbeh Atarius (Motorola Mobility) Cause value #62 should cover the 5GMM case

For 5GSM case, please see the Cr in C1-200415 if it covers your purpose.

**Decision:** The document was **postponed**.

**C1-200399 Update to registration procedure due to eNS**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1899 Cat: F (Rel-16)  
  
 Source: vivo / Yanchao*

**Discussion:**

Kaj Johansson (Ericsson)

I have problems to identify a scenario that motivates the proposal.

My view.

The UE based on local UE policies can request S-NSSAIs that is rejected due to NSSAA failure or revocation.

The AMF is not aware of any such UE local policies.

Given this, an AMF that receives a S-NSSAI in requested NSSAI that has the status “not-authorized” have to initiate a re-NSSAA procedure following the registration accept message (with the S-NSSAI in the pending NSSAI).

--

Yanchao Kang (vivo)

If you look at the existing specification highlighted in yellow below:

You will find that the AMF could provide the S-NSSAI which the NSSAA has been successfully performed in the allowed NSSAI in the registration accept message, this is because the result of NSSAA is available to AMF before the completion of registration procedure.

So why the AMF can’t provide the rejected NSSAI due to the failed or revoked NSSAA if the result of NSSAA is available to AMF before the completion of registration procedure.

--

Kaj Johansson (Ericsson):On ” So why the AMF can’t provide the rejected NSSAI due to the failed or revoked NSSAA if the result of NSSAA is available to AMF before the completion of registration procedure.“

KJ: I think I understand your scenario now. If the UE e.g. performs a mobility update when there is an ongoing NSSAA procedure and the NSSAA unsuccessful result is received by the AMF from AUSF before AMF sends the registration accept message. In that case, the AMF could according to your proposal include the S-NSSAI in the rejected NSSAI due to the failed NSSAA of the registration accept message.

Is that correct understanding?

As the AMF could send the result via configuration update command message, then there should be a “may” instead of shall.

I’m not yet fully convinced but we are closer.

-

Yanchao Kang (vivo)

I agree with you that AMF behavior should be “may”, and I am doing this using the term ”if any”, please if the highlighted “if any” below:

Are you ok with this way forward?

-

Sung Hwan Won (Nokia):; I do not think that the stage 2 requirement on the UE context in AMF including the result of the NSSAA justifies changes in this CR.

Please correct me if I am wrong: My understanding is that the network performs NSSAA for an S-NSSAI that is requested by the UE through the registration procedure even if the NSSAA on the S-NSSAI failed previously.

-

Yanchao Kang (vivo) gave some detailed comments on the list

Fei Lu (ZTE):

The motivation of the CR is fine to me.

Since the result of the NSSAA procedure is in the AMF context, then the AMF can determine whether to perform the NSSAA procedure again.

Therefore I proposed to make some improvement on the second bullet.

the rejected NSSAI containing one or more S-NSSAIs for which NSSAA procedure has failed or been revoked and the AMF decides not to initiate the NSSAA procedure.

-

Tsuyoshi Takakura (NEC)

I understand you point.

But, there is no difference in data model (assuming the data model will be defined in CT4 spec) by additionally saying "and the AMF decides not to initiate the NSSAA procedure." And I feel that there is no difference in UE and also AMF perspective.

-

Kaj Johansson (Ericsson)

From Yanchao on “Are you ok with this way forward?”.

[kaj] The intention is in the right direction but “if any” does not mean “may”.

From Fei on “the rejected NSSAI containing one or more S-NSSAIs for which NSSAA procedure has failed or been revoked and the AMF decides not to initiate the NSSAA procedure.”.

[kaj] This seems not correct as the AMF is not aware of any UE local policies allowing the UE to request a S-NSSAI that is currently unauthorized (in rejected NSSAI NSSA failed or revoked). To my understanding the AMF have to initiate a re-NSSAA procedure in this case.

-

Yanchao Kang (vivo); @Kaj

How about using “optionally”?

b) if the Requested NSSAI IE includes one or more S-NSSAIs subject to network slice-specific authentication and authorization, the AMF shall in the REGISTRATION ACCEPT message include:

1) the allowed NSSAI containing the S-NSSAIs or the mapped S-NSSAIs which are not subject to network slice-specific authentication and authorization or for which the network slice-specific authentication and authorization has been successfully performed;

2) optionally, the rejected NSSAI due to the failed or revoked NSSAA; and

3) pending NSSAI containing one or more S-NSSAIs for which network slice-specific authentication and authorization will be performed, if any.

-

Kaj Johansson (Ericsson)

”the AMF shall optionally” is fine for me, thanks.

--

Sung Hwan Won (Nokia)Thanks to Yanchao for clarification.

I am OK with the addition of “optionally”.

**Decision:** The document was **revised to C1-200868**.

**C1-200868 Update to registration procedure due to eNS**

*Type: CR For: -  
 24.501 v16.3.0 CR-1899 rev 1 Cat: F (Rel-16)  
  
 Source: vivo / Yanchao*

(Replaces C1-200399)

**Decision:** The document was **agreed**.

**C1-200401 Definition of Rejected NSSAI due to the failed and revorked NSSAA**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1901 Cat: F (Rel-16)  
  
 Source: vivo / Yanchao*

**Discussion:**

Merged in C1-200352 and its revsions

**Decision:** The document was **merged**.

**C1-200405 Updating requirements and descriptions of NS for NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1904 Cat: C (Rel-16)  
  
 Source: China Mobile*

**Discussion:**

Fei Lu (ZTE)

Since some parts overlaps with the revision of C1-200352, A revision is required to remove the overlap.

P.S. The format of the CR looks very strange in my PC.

Xu:

We modified C1-200405, please see draft revision at :

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200405\_v1.zip

Does the format of this file look normal?

Changes are as follows:

- Remove the part from 4.6.1 which is merged to C1-200813(C1-200352).

- Update “Reason for change”.

- Use “NSSAA” instead of “network slice-specific authentication and authorization” in the cause value description for rejected NSSAI.

-

Xu

Although both two CRs focus on 4.6.2.2, the reasons and proposed changes on 4.6.2.2 in 405 and 683 are different:

1. 683: Cover the failed NSSAA or Authorization Revocation case

2. 405: Suggest not to consider some updating cases including NSSAA.

The details of 405 on 4.6.2.2 are as follows:

1.1 Reason for change 1: The rejected NSSAI for the current registration area should not be used to update the stored allowed NSSAI for the current PLMN/SNPN.Since the granularity of the stored allowed NSSAI is PLMN/SNPN, instead of registration area,according to TS 24.501 5.5.1.2.4(Initial registration accepted by the network) and 4.6.2.2 (The UE stores NSSAIs as follows: b) ...)

The AMF shall include the allowed NSSAI for the current PLMN and shall include the mapped S-NSSAI(s) for the allowed NSSAI contained in the requested NSSAI from the UE if available, in the REGISTRATION ACCEPT message if the UE included the requested NSSAI in the REGISTRATION REQUEST message and the AMF allows one or more S-NSSAIs in the requested NSSAI.

b) The allowed NSSAI shall be stored until a new allowed NSSAI is received for a given PLMN or SNPN. The network may provide to the UE the mapped S-NSSAI(s) for the new allowed NSSAI (see subclauses 5.5.1.2 and 5.5.1.3) which shall also be stored in the UE. When a new allowed NSSAI for a PLMN or SNPN is received, the UE shall:

1) replace any stored allowed NSSAI for this PLMN or SNPN with the new allowed NSSAI for this PLMN or SNPN;

2) delete any stored mapped S-NSSAI(s) for the allowed NSSAI and, if available, store the mapped S-NSSAI(s) for the new allowed NSSAI;

3) remove from the stored rejected NSSAI, the S-NSSAI(s), if any, included in the new allowed NSSAI for the current PLMN or SNPN; and

4) remove from the stored pending NSSAI, one or more S-NSSAIs, if any, included in the new allowed NSSAI for the current PLMN or SNPN.

1.2 Reason for change 2: The case to update the stored pending NSSAI by the rejected NSSAI is due to the failed NSSAA or Authorization Revocation. The consideration is as follows:

• Receiving the REGISTRATION REJECT and DEREGISTRATION REQUEST will result in a new registration and a new pending NSSAI in REGISTRATION ACCEPT;

• Receiving REGISTRATION ACCEPT will get a new pending NSSAI;

• Receiving CONFIGURATION UPDATE COMMAND with the rejected NSSAI alone is the case about NSSAA;

• Receiving CONFIGURATION UPDATE COMMAND due to the changing of subscription of S-NSSAIs will get a new configured NSSAI which is in 4.6.2.2 (The UE stores NSSAIs as follows: a) ...)

1.3 The proposed changes:

c) When the UE receives the S-NSSAI(s) included in rejected NSSAI in the REGISTRATION ACCEPT message, the REGISTRATION REJECT message, the DEREGISTRATION REQUEST message or in the CONFIGURATION UPDATE COMMAND message, the UE shall:

2) remove from the stored allowed NSSAI for the current PLMN or SNPN, the S-NSSAI(s), if any, included in the:

i) rejected NSSAI for the current PLMN or SNPN, for each and every access type; and

ii) rejected NSSAI for the current registration area, associated with the same access type; and

iii) rejected NSSAI due to the failed NSSAA or Authorization Revocationor revoked network slice-specific authentication and authorization, for each and every access type;

Editor's note: It is FFS whether and how the network can update the rejected NSSAI due to failed NSSAA.

3) remove from the stored pending NSSAI for the current PLMN or SNPN, one or more S-NSSAIs, if any, included in the rejected NSSAI due to the failed NSSAA or Authorization Revocation, for each and every access type: :

i) rejected NSSAI for the current PLMN or SNPN, for each and every access type; and

ii) rejected NSSAI for the current registration area, associated with the same access type;

Please see https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200405\_v1.zip, after remove the part from 4.6.1 which is merged to C1-200813.

**Decision:** The document was **revised to C1-201059**.

**C1-201059 Updating requirements and descriptions of NS for NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1904 rev 1 Cat: C (Rel-16)  
  
 Source: China Mobile*

(Replaces C1-200405)

**Decision:** The document was **not treated**.

**C1-200407 Clarification of T35xx timer during Network slice-specific authentication and authorization procedure**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1905 Cat: F (Rel-16)  
  
 Source: LG Electronics / Sunhee Kim*

**Discussion:**

Sunhee: I am fine to merge C1-200407 into the revision of C1-200791.

**Decision:** The document was **merged**.

**C1-200415 Network-requested PDU session release due no longer available S-NSSAI**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1906 Cat: B (Rel-16)  
  
 Source: Motorola Mobility, Lenovo, China Mobile*

**Discussion:**

Atle Monrad (Interdigital) Why isn’t the codepoint we have already introduced for this inside the Rejected S-NSSAI enough?

I do not understand why we need a new cause in session management for this.

RV Anikethan (Samsung): Our view wrt this CR is the same as the comments provided for “16.2.6\_C1-200704”

The 5GSM cause would not be needed due to the following reasons:

1) The UE is expected to do a local release of PDU sessions based on the new allowed NSSAI and this happens even before SMF can trigger any signalling towards the UE. So the UE and the network should ideally just do a local release of PDU sessions associated with an S-NSSAI for which NSSAA has failed/revoked.

2) 5GSM layer does not need to know any particular cause in this case. The EAP layer already is aware of the NSSAA failure/revocation and it can notify upper layers about the same.

Roozbeh Atarius (Motorola Mobility): The reason for need the cause value in 5GSM is that the PDU session is already established and the SMF releases the PDU session. Looking at 5GSM cause value, we could not find one we could use and therefore a new one was proposed.

Atle Monrad (Interdigital)

I agree that some SM-cause must be communicated to the UE as the cause is a mandatory IE, but in my view, an important point is to secure that a slice that is not any longer appropriate to use must be moved to the rejected NSSAI. This is done by the “Rejected NSSAI”.

Is this done in a separate CR to this meeting, or is the intention to only convey to the UE a SM-cause and don’t use the “rejected NSSAI”?

-

Roozbeh Atarius (Motorola Mobility): @Atle, I see your point and I can incorporate your comment if you believe there is a need for it in this CR. I have not submitted any other CR than this otherwise.

Atle Monrad (Interdigital): I’d like to understand how we can handle tearing down of a context with the cause-values provided by SM and additionally taking into account the cause-codes in rejected NSSAI as needed. As I see it, your CR is currently covering the 1st part. Some statements on the 2nd aspect would be good.

We are possibly a bit late in the release to put in Editor’s notes, but as these days are not normal, people may accept it if you have problems finding the timing or the words to cover this part.

Roozbeh Atarius (Motorola Mobility): On the second thought, wasn’t your comment already covered with last meeting’s CR that the NAS MM signaling will convey the rejected NSSAI with the appropriate cause value (e.g. due to NSSAA failure or revocation)? IF that is the case so nothing else needs to be done. This CR is for a general 5GSM cause value for unavailable slice.

**Decision:** The document was **postponed**.

**C1-200428 Work Plan for eNS in CT1**

*Type: Work Plan For: Information  
 Source: ZTE*

**Decision:** The document was **noted**.

**C1-200429 Deleting Editors note regarding indefinite wait at the UE for NSSAA completion**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1912 Cat: C (Rel-16)  
  
 Source: ZTE*

**Discussion:**

Atle Monrad (Interdigital): We do not think removal of the Editor’s Note without a solution in stage-3 is acceptable. We have a proposed way forward in C1-200494.

Fei Lu (ZTE):Actually we discussed this issue for several meetings. Several proposals were on table, e.g. UE-based solution (local timer or the NW to UE timer), NW solution.

However several companies indicated UE based solution was not acceptable because this was a corner case and also timer for sending the NSSAA message has started in the AMF. Anyhow people can change their mind sometimes.

For the NW solution, it was commented this was out of scope of CT1.

Back to the technical comments:

I am not convinced that the timer in the UE is needed. Since when the NSSAA procedure is completed, the AMF will inform the result to the UE either in the allowed NSSAI or the rejected NSSAI. Then the UE will remove the pending NSSAI. Based on this, the EN can be easily removed. There is no addtional work required in CT1.

--

Atle Monrad (Interdigital)

Lot of our stage-3 work is on unsuccessful and abnormal situations, thus I am not too happy about brushing this off by the corner-case argument.

If it is decided to go for a NW-oriented approach based on a functionality or timers found in a procedures that is outside the scope of CT1 hence will not be normatively specified in any of our TSs, I’d like to see informative text of this in 24.501.

Both informative descriptive text or NOTEs can work, but I’m not happy with these vague statements on the TS cover page without any corresponding text in the TS. I’d be happy to take part in the drafting.

--

Lin Shu (Huawei): In principle, we want to NW to fully control as this was triggered by the NW.

We have discussed this in Reno meeting and seems got a common understanding that we may need to do something in CT4 to have a mechanims to control the righ side of AMF while CT1 has already defiend a timer mechansim which can control the left side of AMF in the end-to-end NSSAA procedrue as below. So there is no any issue at the UE side.

One way forward is: as indicated by Atle, we can try to add a NOTE in CT1 spec to remind that, e.g. how to guarantee the completion of the network slice-specific authentication and authorization within a specific time is up to the network implementation.

Fei Lu (ZTE)

Clarifying this in an informative note would be fine to me.

-

Fei Lu (ZTE):

An informative note is added to clarify that the AMF behaviour for the NSSAA failure in the revision.

NOTE 2: If the AMF receives the HTTP code set to "4xx" or "5xx"as specified in 3GPP TS 29.500 [x]during the NSSAA procedurefor an S-NSSAI, then the AMF can consider the NSSAAprocedure hasfailedfor this S-NSSAI.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-2008xx\_was0429\_EN1.docx

-

Kaj Johansson (Ericsson)

The revision https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-2008xx\_was0429\_EN1.docx is fine for me.

Then it we are going to this direction, it seems the outgoing LS C1-200434 to SA2 is not needed, or?

Fei Lu (ZTE): Since the LS is only for information, I have no strong view on it.

Lin Shu (Huawei): Then I prefer to not send it as it no value, thanks.

-

Atle Monrad (Interdigital)

If I understand you correctly, want to use existing behavior and timers in the NW, and that you assume that lack of response from the AAA-server will provide a 4xx/5xx response back to the AMF.

We are talking about unsuccessful and failure scenarios, and ad part of a failure scenario you may not get a reply. Due to this, I am a bit puzzled that you build this around a reply message, as indicated on the CR cover sheet.

In the TS29.500, since the SBI interface is based on the HTTP and the AMF anyhow receives the response from the other NF even the status code is “4xx” or ‘5xx’, then the AMF can consider that the NSSAA procedure has failed.

You also indicate that as a result of this:

The UE can either move the pending S-NSSAI to the rejected NSSAI or the allowed NSSAI.

1. 1. I am not a master of HTTP, but unless either a response always is provided, or the originator on its own always will detect a timeout and act accordingly, I am not convinced that design of an unsuccessful scenario shall be designed around mandated reception of a response, when one of the scenarios is that no response is provided. Due to this, I would be happy to get a bit more input on how it works. Dependent on this, the NOTE may be OK as is or not.

2. Due to this, I would like to make it clear to SA2 how this works, thus I think the LS is needed. My current feeling is that not all aspects of failure are covered.

3. I cannot find the statement on the CR cover sheet indicates that the UE can move the pending slice to either rejected or allowed NSSAI reflected in the change.

4. For my own understanding, is it specified somewhere in 24.501 how to act/map from NW causes to UE-causes? I cannot find that.

5. Since the idea apparently is to provide only an SM cause only and not a cause for the rejected S-NSSAI, should we state this explicitly somewhere, to secure that implementations don’t include the cause value 2 of the rejected S-NSSAI?

Rejected S-NSSAI:

Cause value (octet 1)

Bits

4 3 2 1

0 0 0 0 S-NSSAI is not available in the current PLMN or SNPN

0 0 0 1 S-NSSAI is not available in the current registration area

0 0 1 0 S-NSSAI is not available due to the failed or revoked network slice-specific authorization and authentication.

I accept that the group want to use existing NW-behavior, so I will withdraw the alternative in C1-200494. However, I would appreciate a bit more verbose description of how this works in the NW (no problem to make it informative if it points to CT4-behaviour), and also a bit more description on the AMF-side and the UE side of what will happen with the pending S-NSSAI.

-

Fei Lu (ZTE)

Since the HTTP is based on the TCP as specified in the TS 29.500 and TCP will anyhow have the handshake mechanism, the AMF will know the failure or not.

Additionally the Nausf\_NSSAA is service in the HTTP and the status code per my understanding, should cover most scenarios.

I have added some words in the cover sheet, hope you can live with the content.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-201xxx\_was0998\_was0429\_EN1.docx

-

Atle Monrad (Interdigital)

To my understanding, the cover sheet now sort of states that the AMF decides whether the UE can reattempt or not, as the CR cover sheet gives some hints on how the CONFIGURATION UPDATE COMMAND is encoded.

In the TS29.500, since the SBI interface is based on the HTTP over the TCP and the AMF anyhow receives the response from the other NF even the status code is “4xx” or ‘5xx’, then the AMF can consider that the NSSAA procedure has failed. After the AMF received the failure indication from other NF, then the AMF can consider this S-NSSAI as rejected S-NSSAI and inform this information to the UE in the rejected NSSAI.

The UE can either move the pending S-NSSAI to the rejected NSSAI or the allowed NSSAI based on the information in the CONFIGURATION UPDATE COMMAND message. This means that the UE does not wait indefinitely for completion of the network slice-specific authentication and authorization

However, I don’t find existing behavior in 24.501 that covers all of this, and would have expected some (most likely normative) statements in 24.501. I think that such text is needed, and I am not keen to remove the editors notes until we have this text in 24.5021 in place.

-

Fei Lu (ZTE)

If the AMF considered the NSSAA procedure failed, then the AMF can send this in the rejected NSSAI. This has been captured in the CR 190683-revision.

If a network slice-specific authentication and authorization procedure for an S-NSSAI is completed as a:

a) success, the AMF shall include this S-NSSAI in the allowed NSSAI; or

b) failure, the AMF shall include this S-NSSAI in the rejected NSSAI for the failed or revoked NSSAAwith the reject cause "S-NSSAI is not available due to the failed or revoked network slice-specific authorization and authentication"

I did not think additional normative texts are required.

I change the reason for change a bit.

In the TS29.500, since the SBI interface is based on the HTTP over the TCP and the AMF anyhow receives the response from the other NF even the status code is “4xx” or ‘5xx’, then the AMF can consider that the NSSAA procedure has failed. After the AMF received the failure indication from other NF, then the AMF can consider this S-NSSAI as rejected S-NSSAI and inform this information to the UE in the rejected NSSAI.

Since all S-NSSAIs in the pending NSSAI will be either in the rejected NSSAI or in the allowed NSSAI in the CONFIGURATION UPDATE COMMAND message, the UE does not wait indefinitely for completion of the network slice-specific authentication and authorization

--

Atle Monrad (Interdigital)

@Fei

I’d like to digest if all cases where the AAA-server was unreachable should be seen as a “failure of NSSAA” and thereby lead to “rejected S-NSSAI” all the way back to the UE, with the consequences that the S-NSSAI goes from pending NSSAI to rejected NSSAI.

I would expect that some of these unsuccessful cases, the S-NSSAI could go from pending NSSAI to allowed NSSAI. In such cases the cause in the rejected NSSAI cannot really be used.

Note also that 24.501 states:

NOTE: If there are multiple S-NSSAIs subject to network slice-specific authentication and authorization, it is implementation specific if the AMF informs the UE about the outcome of the procedures in one or more CONFIGURATION UPDATE COMMAND messages.

I would really appreciate if we could take a timeout work on this until the next meeting and get it correct. Given that we are reaching the end-of-r16, I’d like to keep the Editor’s Note in 24.501 until we have fully corrected this outstanding topic.

I’m not debating use of NW-timer(s), but I’d like to:

1. Understand that the CT4.mechanism covers all failure / unsuccessful cases

2. See what needs to be documented in 24.501 for the AMF and the UE

-

Fei Lu (ZTE) @Atle

I did not fully get your point here. If the AAA-S is unreachable, and this means that the S-NSSAI is not authenticated successfully, I do not believe that it should go to the allowed NSSAI.

Anyhow this CR has been further revised to C1-201051 and it is on the server now.

Atle Monrad (Interdigital): Correct,

it is not obvious to me that not reaching any AAA-S should be seen as “rejected S-NSSAI”.

**Decision:** The document was **revised to C1-200998**.

**C1-200998 Deleting Editors note regarding indefinite wait at the UE for NSSAA completion**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1912 rev 1 Cat: C (Rel-16)  
  
 Source: ZTE*

(Replaces C1-200429)

**Decision:** The document was **revised to C1-201051**.

**C1-201051 Deleting Editors note regarding indefinite wait at the UE for NSSAA completion**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1912 rev 2 Cat: C (Rel-16)  
  
 Source: ZTE*

(Replaces C1-200998)

**Decision:** The document was **postponed**.

**C1-200430 UE behaviour for other causes in the rejected NSSAI during deregistration procedure**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1913 Cat: C (Rel-16)  
  
 Source: ZTE*

**Discussion:**

Kaj Johansson (Ericsson): I’m almost fine with the CR in C1-200430.

However about "S-NSSAI not available in the current registration area". To my understanding when the UE deregisters over an access then the TAI list is invalid.

Given this I don’t see why the UE shall remove the S-NSSAI from allowed NSSAI as the UE will not have a TAI list available during initial registration i.e. the UE is not aware about any registration area. But of course because no TAI list and at least no rejected NSSAI for RA, the UE can also request S-NSSAIs from configured NSSAI if available.

Maybe better the UE just ignores S-NSSAIs associated with "S-NSSAI not available in the current registration area" as it does not make sense that the network sends the reject cause for this use case.

--

Fei Lu (ZTE) Since you are now OK with the proposal in the C1-200433, I assume that you would be also OK with this similar proposal in the deregistration procedure.

--

Lin Shu (Huawei)

Comments:

1. For "S-NSSAI not available in the current PLMN or SNPN", it is better to fully align with initial registration reject with #62 as the case is the same.

2. For "S-NSSAI not available in the current registration area", it is better to also fully align with initial registration reject with #62, as I provided my comment to your CR C1-200430.

3. For "S-NSSAI is not available due to the failed or revoked network slice-specific authentication and authorization", even you did not changed it, but for consistency, it would be better to use the shorter name which I proposed to be used in other CRs, e.g.

“ The UE shall store the rejected S-NSSAI(s) in the rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization as specified in subclause 4.6.2.2.”

Changed to

“ The UE shall store the rejected S-NSSAI(s) in the rejected NSSAI for the failed or revoked NSSAA as specified in subclause 4.6.2.2.”

4. CR should be category F CR, not C.

--

Fei Lu (ZTE)

All the comments have been taken into account, please find the revision in the drafts.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200794\_was0430\_EN8.docx

And the revision tdoc number is C1-200794.

**Decision:** The document was **revised to C1-200794**.

**C1-200794 UE behaviour for other causes in the rejected NSSAI during deregistration procedure**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1913 rev 1 Cat: C (Rel-16)  
  
 Source: ZTE*

(Replaces C1-200430)

**Decision:** The document was **agreed**.

**C1-200431 Pending NSSAI update for the configured NSSAI in the CUC message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1914 Cat: C (Rel-16)  
  
 Source: ZTE*

**Discussion:**

Kaj Johansson (Ericsson): - I’m not yet fully convinced of the proposal.

- About “If the registration requested indication is included, then the UE will peform the registration procedure. In the Registration Accept message, the UE will receive the pending NSSAI again. So it is proposed that the UE deletes the pending NSSAI for this case.”:

o To my understanding of current specification the pending NSSAI will not include S-NSSAIs for which the NSSAA is ongoing. Needs the registration procedure to be updated? Also when the UE receives pending NSSAI IE in registration accept should UE replace an existing stored pending NSSAI list if exists?

- Summary of changes does not match the changes.

Sung Hwan Won (Nokia)

Our view is that update in configured NSSAI does not directly impact pending NSSAI. Change in configured NSSAI can result in renewal of allowed NSSAI and when allowed NSSAI is renewed, pending NSSAI will be updated as well. So we can simply remove both bullet 5) and the EN.

Fei Lu (ZTE): Just removing the pending NSSAI works for me.

Lin Shu (Huawei):

1. I have the same comments as Sung, it is a valid case that there is overlapped S-NSSAI(s) between C-SNSSAI and P-NSSAI temporarilly. So just remvoe the 5th existing bullet and the EN is enough.

2. If going to above 1, then cover page needs to be updated.

3. Should be categary F CR.

-

Fei Lu (ZTE): The revision is in the drafts with the following change:

1) cover sheet is updated.

2) the bullet 5) removed.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200790\_was0431\_EN9.docx

The revision tdoc number will be C1-200790

**Decision:** The document was **revised to C1-200790**.

**C1-200790 Pending NSSAI update for the configured NSSAI in the CUC message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1914 rev 1 Cat: C (Rel-16)  
  
 Source: ZTE*

(Replaces C1-200431)

**Decision:** The document was **agreed**.

**C1-200432 Cleanup for NSSAA message and coding**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1915 Cat: F (Rel-16)  
  
 Source: ZTE*

**Discussion:**

Lin Shu (Huawei)I have a concern on defining a new HPLMN S-NSSAI IE format.

The thing is before NSSAA, the HPLMN can already provide its C/A/R-NSSAI to the UE by using the existing NSSAI and S-NSSAI IE coding. I agree that when it provided by the HPLMN, there is no mapped part but per current IE coding, the mapped part was already optional. So when it was provided by the HPLMN, HPLMN will not provide the mapped part.

Also the length of this IE in the message is 2-5, so there is no choice to include the mapped part as well.

If now we defined a new IE for HPLMN S-NSSAI, then people will ask a question: in HPLMN, why the new IE format was not used?

--

Fei Lu (ZTE): As indicated to Sunhee, I am fine to go with the proposal in 0392.

Maybe you can check the 0392 discussion.

--

Fei Lu (ZTE)

Please find the draft revision in the drafts with the following change:

1) the overlaps with C1-200392 has been removed.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200791\_was0432\_cleanup.docx

-

Lin Shu (Huawei)

Now I think the CR only impact the NW, so please untick UE in the cover page. Others are fine for me, thanks.

-

Fei Lu (ZTE)

In the subclause 9.7, the message IEI is updated. This will also impact the UE.

**Decision:** The document was **revised to C1-200791**.

**C1-200791 Cleanup for NSSAA message and coding**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1915 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE*

(Replaces C1-200432)

**Decision:** The document was **agreed**.

**C1-200433 Rejected NSSAI during the initial registration procedure**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1916 Cat: F (Rel-16)  
  
 Source: ZTE*

**Discussion:**

Kaj Johansson (Ericsson): To my understanding when the UE is deregistered over an access then the TAI list is invalid.

Given this I don’t see why the UE shall remove the S-NSSAI from allowed NSSAI as the UE will not have a TAI list available during initial registration i.e. the UE is not aware about any registration area. But of course, because no TAI list and at least no rejected NSSAI for RA the UE could also request S-NSSAIs from configured NSSAI if available.

The UE could just ignore S-NSSAIs associated with "S-NSSAI not available in the current registration area" as it does not make sense that the network sends the reject cause for this use case.

-

Fei Lu (ZTE):

Although the UE does not have the TAI list, the UE knows the TAC of the cell.

If the UE just ignore this rejected NSSAI for the RA, this would mean that the UE will request the S-NSSAI from the allowed NSSAI again, then UE deadlock may happen.

e.g. When the UE is in the 5GMM-DEREGISTERED and the UE has the allowed NSSAI (S-NSSAI-A) and the configured NSSAI,

now UE generates a requested NSSAI only including S-NSSAI-A, however this was rejected by the AMF with the rejection cause #62 and with the rejected NSSAI for the RA. if the UE ignore this rejected NSSAI part, then the UE will generate the requested NSSAI again from the allowed NSSAI (S-NSSAI-A). However this definitely cause the rejection again.

The intention of the CR is to avoid this deadlock.

--

Kaj Johansson (Ericsson):With this I agree that the proposal will avoid deadlock problem better than just to ignore the rejected S-NSSAI. Although the rejected S-NSSAI remains in the configured NSSAI, the UE shall primarily base the requested NSSAI on allowed NSSAI.

I’m ok with the proposal.

--

Yoko Masuda (SHARP)

I have a comment.

> e.g. When the UE is in the 5GMM-DEREGISTERED and the UE has the allowed NSSAI (S-NSSAI-A) and the configured NSSAI,

>now UE generates a requested NSSAI only including S-NSSAI-A, however this was rejected by the AMF with the rejection cause #62 and with the rejected NSSAI for the RA. if the UE ignore this rejected NSSAI part, then the UE will generate the >requested NSSAI again from the allowed NSSAI (S-NSSAI-A). However this definitely cause the rejection again.

The UE may initiate re-registration procedure in other RA than the RA where the UE received S-NSSAI-A as the rejected S-NSSAI for the RA.

In this case, the UE should be able to use S-NSSAI-A as requested NSSAI in the registration request messgae in new RA.

-

Yoko

I understood that the UE can use S-NSSAI-A when the UE move new RA,

and “Just ignoring the rejected NSSAI for the RA” can cause the deadlock of the rejection.

I agree with your proposal.

And I have additional comment.

I think it should be clarified that the step 1) of c) in subclause 4.6.2.2 should be skipped, like as follows:

"S-NSSAI not available in the current registration area"

The UE shall not add the rejected S-NSSAI(s) in the rejected NSSAI for the current registration area and remove the rejected S-NSSAI(s) in the rejected NSSAI for the current registration area from the stored allowed NSSAI for the current PLMN or SNPN as described in subclause 4.6.2.2.

-

Fei Lu (ZTE): There is no need to add 'not addthe rejected S-NSSAI(s) in the rejected NSSAI for the current registration area and' since the rejected NSSAI for the RA will be deleted when the UE enters 5GMM-DEREGISTERED.

Even the UE will add the rejected S-NSSAI to the rejected for the RA, I did not see any proplem and leave it to the implementation.

--

Lin Shu (Huawei)

I agree that current ingoring handling is not so good and better to not go this way.

But I have another proposal to make the UE’s handling simpler and consistent: It is enough just to specify that the UE handle the received Rejected NSSAI for RA as specified in subclause 4.6.2.2 in which everything for NSSAI storage was covered.

So I what I proposed is as below:

"S-NSSAI not available in the current registration area"

The UE shall store the rejected S-NSSAI(s) in the rejected NSSAI for the current registration area as described in subclause 4.6.2.2.”

Similar as below existing handling:

"S-NSSAI is not available due to the failed or revoked network slice-specific authentication and authorization"

The UE shall store the rejected S-NSSAI(s) in the rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization as specified in subclause 4.6.2.2.

Note that if refering sub 4.6.2.2, then what proposed by this CR was covered, also the UE will finally delete the update Reject NSSAI for RA after enter De-registered state. So verything was covered very well.

-

Yoko:

> There is no need to add 'not add the rejected S-NSSAI(s) in the rejected NSSAI for the current registration area and' since the rejected NSSAI for the RA will be deleted when the UE enters 5GMM-DEREGISTERED.

> Even the UE will add the rejected S-NSSAI to the rejected for the RA, I did not see any problem and leave it to the implementation.

I think this is problem that the UE may add the rejected S-NSSAI(s) in the rejected NSSAI for the current registration area, and delete this S-NSSAI(s) immediately.

I think C1-196971 was agreed in CT1#120 because this problem has been agreed.

http://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_120\_Portoroz/Docs/C1-196971.zip

-

Fei Lu (ZTE)

I did not understand your comment on this.

What is the problem if the UE adds it to the rejected NSSAI for the RA and then the UE deletes it immediately. I agree this is not optimisation. However this still can work.

Adding a reference to the 4.6.2.2, I was thinking this is an easy way. The implementation definitely can do the optimisation as above.

-

Kaj Johansson (Ericsson)

I’m almost fine with what is proposed in C1-200795 that was C1-200433, except that at least the summary of change should be aligned.

Question, you don’t think there is a point to align “S-NSSAI not available in the current PLMN or SNPN” part with this approach (i.e. delete “if the UE has registered with the current PLMN over another access”)?

-

Fei Lu (ZTE)

Thanks for your further comments.

Please find the updated version with the following change:

1) the summary has been updated;

2) “S-NSSAI not available in the current PLMN or SNPN” case has also been updated.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200795\_was0433\_UE\_initial\_registration\_Rev.docx

**Decision:** The document was **revised to C1-200795**.

**C1-200795 Rejected NSSAI during the initial registration procedure**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1916 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE*

(Replaces C1-200433)

**Decision:** The document was **agreed**.

**C1-200462 Name of the rejected NSSAI cause values**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1921 Cat: D (Rel-16)  
  
 Source: vivo*

**Discussion:**

Yoko Masuda (SHARP)

This CR is for same intention with one of C1-200584.

In this CR, it is proposed to remove "is" from the rejected NSSAI cause values in subclause 5.4.4.2.

In C1-200462, which I proposed, it is proposed to correct the rejected NSSAI cause values in other subclause based on the current rejected NSSAI cause values in subclause 5.4.4.2.

I have no strong preference.

I’d like to marge C1-200584 into C1-200462.

**Decision:** The document was **revised to C1-200922**.

**C1-200922 Name of the rejected NSSAI cause values**

*Type: CR For: -  
 24.501 v16.3.0 CR-1921 rev 1 Cat: D (Rel-16)  
  
 Source: vivo, SHARP*

(Replaces C1-200462)

**Decision:** The document was **agreed**.

**C1-200494 Prevention of indefinite wait for completion of the network slice-specific authentication and authorization procedure**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1929 Cat: B (Rel-16)  
  
 Source: InterDigital / Atle*

**Discussion:**

Sung Hwan Won (Nokia): An informative note would also work for me.

Chairman

I have not seen any further activity for 494, although it was claimed that comments apply on 494 as well.

Current status is that no updates on 494 have been announced and hence it would be postponed.

Please send email if you see this different.

**Decision:** The document was **withdrawn**.

**C1-200509 Requested NSSAI creation from configured NSSAI excluding pending NSSA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1939 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Decision:** The document was **not pursued**.

**C1-200510 Remove mobility restriction after NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1940 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Discussion:**

Merged into C1-200602 and its revsions

**Decision:** The document was **merged**.

**C1-200511 ENs resolution for revoked or failed NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1941 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Decision:** The document was **revised to C1-200898**.

**C1-200898 ENs resolution for revoked or failed NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1941 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

(Replaces C1-200511)

**Decision:** The document was **agreed**.

**C1-200512 Consistent name for NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1942 Cat: D (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Decision:** The document was **agreed**.

**C1-200572 EPS selection when the UE is deregistered due to NSSAA failure**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1950 Cat: F (Rel-16)  
  
 Source: Samsung/Kundan*

**Discussion:**

Fei Lu (ZTE): I understand the motivation of the CR. However I do not think the change is required since during the de-registration procedure, this option is allowed.

Sunhee

As you already mentioned in reason for changes and in changes in specification, the UE behavior is “MAY”.

When deregistration is triggered due to failure of all S-NSSAI, many possible scenario can be happened as below.

- Disable N1 mode.

- If S1 mode is enable, select the E-UTRAN cell

- Even though deregistration, SMS over NAS can be transferred… (it is depending on UE’s implementation)

- Etc.

But, we do not specify all cases in this specification.

Therefore, I think that It is not recommended to specify only one case.

Also, I think it is technically unnecessary.

Kundan Tiwari (Samsung) @Chair

I postponed this CR as delegates think the current text captures the UE behaviour to select E-UTRAN. However some kind of clarification text is needed. I will discuss this offline with Fei/Sung/other delegates which commented on this.

 Reason for changes.

if a UE NSSAA procedure fails for all S-NSSAI in the allowed NSSAI list then the AMF sends deregistration procedure, this case the UE may select the E-UTRAN cell to connect to the EPS because the UE may have EPS service.

 Changes

The S1 mode capable UE may select E-UTRAN cell and initiate attach procedure to the EPS as per procedure specified in 3GPP TS 24.301[15].

-

Sung Hwan Won (Nokia): I agree with Fei.

--

Kundan Tiwari (Samsung)

Thanks for the response. Fei, regarding your comment, I was reading network initiated deregistration procedure for cause #62, meant for this purpose but I didn’t see any changes related to this. Am I missed any part of specification ? Please let me know which part is capturing this change.

5.5.2.3.1 Network-initiated de-registration procedure initiation

If the network de-registration is triggered due to network slice-specific authentication and authorization failure or revocation as specified in subclause 4.6.2.4, then the network shall set the 5GMM cause value to #62 "No network slices available" in the DEREGISTRATION REQUEST message. In addition, the AMF may include the rejected NSSAI IE in the DEREGISTRATION REQUEST message.

5.5.2.3.2 Network-initiated de-registration procedure completion by the UE

#62 (No network slices available).

The UE shall set the 5GS update status to 5U2 NOT UPDATED and enter state 5GMM-DEREGISTERED.NORMAL-SERVICE or 5GMM-DEREGISTERED.PLMN-SEARCH. Additionally, the UE shall reset the registration attempt counter.

If the UE has a configured NSSAI that contains S-NSSAIs which are not included in the rejected NSSAI as rejected for the current PLMN or SNPN or rejected for the current registration area, the UE may stay in the current serving cell, may apply the normal cell reselection process, and may start an initial registration procedure with a requested NSSAI that includes any S-NSSAI from the configured NSSAI that is not in the rejected NSSAI as rejected for the PLMN or SNPN or rejected for the current registration area. Otherwise, the UE may perform a PLMN selection or SNPN selection according to 3GPP TS 23.122 [5].

-

Kundan Tiwari (Samsung) @Fei

Fei,

The line you have sighted is not so clear in my opinion only captures the 5G registration as the highlighted lines only talk about registration procedure in 5GS and condition . So we need to change a bit wording as below (Blue line as below).

#62 (No network slices available).

The UE shall set the 5GS update status to 5U2 NOT UPDATED and enter state 5GMM-DEREGISTERED.NORMAL-SERVICE or 5GMM-DEREGISTERED.PLMN-SEARCH. Additionally, the UE shall reset the registration attempt counter.

If the UE has a configured NSSAI that contains S-NSSAIs which are not included in the rejected NSSAI as rejected for the current PLMN or SNPN or rejected for the current registration area, the UE may stay in the current serving cell, may apply the normal cell reselection process, and may start an initial registration procedure with a requested NSSAI that includes any S-NSSAI from the configured NSSAI that is not in the rejected NSSAI as rejected for the PLMN or SNPN or rejected for the current registration area. Otherwise, the UE may perform a PLMN selection or SNPN selection according to 3GPP TS 23.122 [5]. The UE may select E-UTRAN radio access technology and proceed with appropriate EMM specific procedures.

It has not excuded the option that the UE performs the attach procedure EPS. From this point, I believe that the EPS attach behaviour is allowed.

Sung Hwan Won (Nokia) It does not add any value and only bring confusion. During the cell reselection or PLMN selection, E-UTRAN can be of choice. No need to only highlight E-UTRAN.

Fei Lu (ZTE) @Kundan

I did not see any need for this and I checked the behaviour for other causes, normally the UE selecting E-UTRA is not specified.

Additionally I believe that there is no need for the UE to select the E-UTRA cell, otherwise the network can send the cause 72 or 27 to the UE.

**Decision:** The document was **postponed**.

**C1-200574 Handling of NSSAA at non suppoting AMF**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1951 Cat: F (Rel-16)  
  
 Source: Samsung/Kundan*

**Discussion:**

Fei Lu (ZTE): As commented during the last meeting, this should be resolved in the CT4 spec.

If the AMF does not support the eNS, then the UDM shall not send the corresponding S-NSSAI to the AMF. This is also clarified in the 23.501.

NOTE 3: Network slice instances supporting an S-NSSAI subject to Network Slice-Specific Authentication and Authorization need to be deployed with AMFs supporting Network Slice-Specific Authentication and Authorization, otherwise S-NSSAIs requiring Network Slice-Specific Authentication and Authorization would be incorrectly allowed without execution of Network Slice-Specific Authentication and Authorization.

Kaj Johansson (Ericsson): If the AMF does not support NSSAA then no related NSSAA at all will be performed.

Kundan Tiwari> Exactly the NSSAA will not be performed. So the AMF needs to reject those S-NSSAI which is subject to NSSAA.

Kaj Johansson (Ericsson): In addition, the UDM shall not send S-NSSAIs subject to NSSAA to non-NSSAA-supporting AMF according to 23.501.

Kundan Tiwari (Samsung): Kundan> The UDM does not know the AMF capability whether the AMF supports the NSSAA or not. UDM is not aware of such capability. So UDM will send it to all AMFs (Rel15/16) alike.

Tsuyoshi Takakura (NEC): Just for my clarification about "the UDM shall not send S-NSSAIs subject to NSSAA to non-NSSAA-supporting AMF according to 23.501.", would you please indicate the requirement in SA2? Is it NOTE 3 in subclause 5.15.3 in TS23501?

Tsuyoshi Takakura (NEC): Kaj also mentioned about the SA2 requirement and now I understand the SA2 "requirement" is NOTE3.

NOTE3 does not define any requirements to any NW function e.g. ,UDM. So I am not sure about the validity of SA2 requirement.

Besides it, I agree that we probably require some discussion in CT4.

And the question for CT4 action could be :

"Why can't this non NSSAA supporting AMF ask NSSF to select another NSSAA supporting AMF that can serve the S-NSSAI subject to NSSAA, according to the AMF selection defined in SA2 requirement and how?

-

Kundan Tiwari (Samsung) provided further replies:

If the AMF does not support NSSAA then no related NSSAA at all will be performed.

Kundan> Exactly the NSSAA will not be performed. So the AMF needs to reject those S-NSSAI which is subject to NSSAA.

In addition, the UDM shall not send S-NSSAIs subject to NSSAA to non-NSSAA-supporting AMF according to 23.501.

Kundan> The UDM does not know the AMF capability whether the AMF supports the NSSAA or not. UDM is not aware of such capability. So UDM will send it to all AMFs (Rel15/16) alike.

--

Kaj Johansson (Ericsson):

About ” Kundan> Exactly the NSSAA will not be performed. So the AMF needs to reject those S-NSSAI which is subject to NSSAA.”

[kaj] But an AMF that does not support NSSAA doesn’t have a clue about what “subject to NSSAA” means and will ignore such information anyways from UDM.

On “Kundan> The UDM does not know the AMF capability whether the AMF supports the NSSAA or not. UDM is not aware of such capability. So UDM will send it to all AMFs (Rel15/16) alike.”

[kaj] If that is the case then an update seems needed on the AMF-UDM interface if this is going to work as expected.

--

Sunhee

I also have question for the clarification on C1-200574.

Regarding to the “AMF not supporting NSSAA procedure”, I think there are two types of AMF not supporting NSSAA procedure.

1. legacy AMF (e.g Rel-15) : legacy AMF does not support NSSAA procedure, this procedure is not needed. We don’t need to specify.

2. Rel-16 but not supporting NSSAA AMF :

If a AMF not supporting NSSAA procedure receives a S-NSSAI subject to the NSSAA in the requested NSSAI IE, then the AMF shall reject the S-NSSAI as rejected NSSAI for the current registration area.

NOTE : The AMF not supporting NSSAA procedure determines that the S-NSSAI is subject to NSSAA via O&M.

I would like to understand what scenario can be happened.

Could you clarify the scenario mentioned in this CR ?

-

Sung Hwan Won (Nokia)

I have the same view as Kaj’s.

--

Kundan Tiwari (Samsung)

The AMF could be rel-15 AMF and Rel-16 AMF not supporting secondary slice authentication.

I read following NOTE sent by Fei and i understood the intention of this Notes. According to the following notes S-NSSAI subject to NSSAA is not deployed to the AMF not supporting NSSAA. In such a case when the AMF receives S-NSSAI subject to NSSAA in the Requested NSSAI, then the AME will reject the S-NSSAI with cause S-NSSAI not supported in the current TAI.

If other delegates have similar understanding as me the then I withdraw the CR.

NOTE 3: Network slice instances supporting an S-NSSAI subject to Network Slice-Specific Authentication and Authorization need to be deployed with AMFs supporting Network Slice-Specific Authentication and Authorization, otherwise S-NSSAIs requiring Network Slice-Specific Authentication and Authorization would be incorrectly allowed without execution of Network Slice-Specific Authentication and Authorization.

--

Tsuyoshi Takakura (NEC)

For my clarification, one is saying that UDM can not handle such issue because it does not know whether or not the AMF support NSSAA. And another is saying AMF can not handle such issue because non NSSAA capable AMF has no clue about it.

Is my understanding correct that we have an issue but this is not under CT1's responsibility?

-

Sung Hwan Won (Nokia):

There is a warning (the note) saying that this feature works well with AMFs supporting NSSAA. This should be considered by network deployers. If you want to call it an issue, then I would not object it, but the issue occurs because a network deployer does not pay enough attention for the warning.

**Decision:** The document was **postponed**.

**C1-200575 PDN connection establishment and NSSAA**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1952 Cat: F (Rel-16)  
  
 Source: Samsung/Kundan*

**Discussion:**

Fei Lu (ZTE): The CR requires the UE to remember the S-NSSAIs in the pending NSSAI even when the UE receives the allowed NSSAI to replace the pending NSSAI. I did not see any requirement on this.

Additionally, the stage 2 requirement is only about the SMF/PGW behaviour and the PGW can reject the PDN connection establishment procedure in the S1 mode. There is no requirement on the UE side for this issue.

Sung Hwan Won (Nokia) I agree with Fei. Furthermore, how is the association between DNN and S-NSSAI stored in the UE? Do you mean URSP? Is it used by the UE is S1 mode?

Kundan> This is stored in the UE in URSP rules and the UE can use this in EPS. This is all UE implementation.

Sung Hwan Won (Nokia): @kundan; First, please give me any text that URSP can be used in EPS. Second, even if URSP can be used in EPS, this idea should impact 24.526, not 24.501.

Fei Lu (ZTE)

Storing whether S-NSSAI subjected to NSSAA procedure is definitely fine. However this is subscription issue. If the subscription has changed, it has not been specified that this should be informed to the UE. This means that the UE can not get service for some S-NSSAI in the EPS if the UE implementation stores the out-dated information.

Therefore I am still NOT convinced that the CR is needed.

**Decision:** The document was **postponed**.

**C1-200576 NSSAA revocation function**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1953 Cat: F (Rel-16)  
  
 Source: Samsung/Kundan*

**Decision:** The document was **agreed**.

**C1-200577 Intersystem selection procedure when all allowed S-NSSAI are subject to NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1954 Cat: F (Rel-16)  
  
 Source: Samsung/Kundan*

**Discussion:**

Fei Lu (ZTE): The CR requires the UE to remember the S-NSSAIs in the pending NSSAI even when the UE receives the allowed NSSAI to replace the pending NSSAI. I did not see any requirement on this.

After the UE received the allowed NSSAI, then UE does not know which S-NSSAI is subjected to the NSSAA procedure.

Therefore the CR is not needed.

Sung Hwan Won (Nokia): I again agree with Fei.

Not just for NSSAA, there are other cases in which no PDU session can be continued in S1 mode, e.g. all PDU sessions are related to DNN or IPv6 multi-homing. Even for those cases, we have not specified any specific UE behavior like this.

**Decision:** The document was **postponed**.

**C1-200579 Correction related the rejected NSSAI due to the failed or revoked NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1955 Cat: F (Rel-16)  
  
 Source: SHARP*

**Discussion:**

Yoko Masuda (SHARP): The part of C1-2000579 has been merged into the revision of C1-200352.

I remove this change.

Please refer to link

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200579\_r1.zip

Fei Lu (ZTE):I made some changes on top of this revision.

1) add->store since the UE need also update the allowed NSSAI;

2) terminology is aligned with the revision of C1-200352.

The revision link is

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200579\_r3.docx

**Decision:** The document was **revised to C1-200883**.

**C1-200883 Correction related the rejected NSSAI due to the failed or revoked NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1955 rev 1 Cat: F (Rel-16)  
  
 Source: SHARP, NEC*

(Replaces C1-200579)

**Discussion:**

Merged into C1-201055

**Decision:** The document was **merged**.

**C1-200582 Correction UE behaviour when the UE recives the pending NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1958 Cat: F (Rel-16)  
  
 Source: SHARP*

**Decision:** The document was **agreed**.

**C1-200584 Correction related the rejected NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1960 Cat: D (Rel-16)  
  
 Source: SHARP*

**Discussion:**

merged into C1-200462 and its revisions

**Decision:** The document was **merged**.

**C1-200601 Discussion on eNS**

*Type: discussion For: (not specified)  
 Source: Samsung R&D Institute UK*

**Discussion:**

Lin Shu (Huawei):

Here are our comments:

Observation 3: the use of the Service area list IE as indicated above (i.e. during NSSAA) seems to be mainly to block all 5GSM requests from the UE.

[Lin] Not exactly as it will block all services rather than all 5GSM requests. Please see below text in sub 5.3.5.2. Further, even not covered in below text but I believe the UE cannot initiate any MO CIOT CP data via UL NAS transport procedure as well.

“2) if the UE is in 5GMM-CONNECTED mode or 5GMM-CONNECTED mode with RRC inactive indication over 3GPP access, the UE:

i) shall not perform the registration procedure for mobility and periodic registration update with Uplink data status IE except for emergency services or for high priority access; and

ii) shall not initiate a service request procedure except for emergency services, high priority access or for responding to paging or notification over non-3GPP access; and

iii) shall not initiate a 5GSM procedure except for emergency services, high priority access or indicating a change of 3GPP PS data off UE status.”

Proposal 1: an access independent solution should be used instead of the Service area list IE. Furthermore, it should result in the UE not initiating any 5GSM procedure except if the procedure is for emergency services, etc.

[Lin] An access independent solution is preferred, but not only restrict all 5GSM procedure, see above.

Observation 4: not only does the use of the Service area list IE make NSSAA access specific, its use does not seem to be necessary. The same outcome can be achieved with the other current indications that are provided to the UE (i.e. "NSSAA to be performed" indicator, pending NSSAI, and the lack of an allowed NSSAI).

Proposal 2: the Service area list IE should not be used during NSSAA. Instead, reception of the "NSSAA to be performed" indicator, pending NSSAI, and the lack of an allowed NSSAI should be used by the UE to determine that no 5GSM request should be sent except for emergency services, etc.

[Lin] We are fine with this alternative but then stage 2 needs to be updated to align with CT1 if this alternative could be agreed in CT1.

Proposal 3: the reception of an allowed NSSAI should remove restrictions on initiating 5GSM requests by the UE.

[Lin] We are fine with this alternative but then stage 2 needs to be updated to align with CT1 if this alternative could be agreed in CT1.

Proposal 4: CT1 should discuss if the UE would be allowed to initiate 5GSM procedures for S-NSSAIs that are subject to re-initiation of NSSAA.

[Lin] I think CT1 can make decision now w/o adding EN as “S-NSSAIs that are subject to re-initiation of NSSAA” will be included in the pending NSSAI via UCU to the UE and as per stage 2 requirement, the UE cannot obtain any services from pending S-NSSAI. So the answer should be: the UE is NOT allowed to request any services over a PDN session which is associated with a pending S-NSSAI.

**Decision:** The document was **noted**.

**C1-200602 Removal of the use of Service area list IE during NSSAA**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1971 Cat: C (Rel-16)  
  
 Source: BEIJING SAMSUNG TELECOM R&D*

**Discussion:**

Lin Shu (Huawei)

We are fine with this alternative but with the comments to the disc paper 601, we want to reword the below text:

“the UE shall not initiate a 5GSM procedure except for emergency services or high priority access.”

To (cope the same text as specified in 5.3.5.2 for non-allowed area for connected mode including your another CR C1-200593 proposal for CIOT CP data)

“The UE:

i) shall not perform the registration procedure for mobility and periodic registration update with Uplink data status IE except for emergency services or for high priority access; and

ii) shall not initiate a service request procedure except for emergency services, high priority access, for responding to paging, notification over non-3GPP access, or sending user data that is related to an exceptional event; and

iii) shall not initiate a 5GSM procedure except for emergency services, high priority access, indicating a change of 3GPP PS data off UE status, or sending user data that is related to an exceptional event; and

iv) shall not initiate the NAS transport procedure to send a CIoT user data container except for sending user data that is related to an exceptional event.”

Also, I would like to indicate that our CR C1-200510 is try to implement the existing stage 2 requirement so it is not technical wrong with our CR. However, we agree with the issues with non-3GPP part so we also would be fine CT1 can find a better alternative cover both 3GPP access and non-3GPP access as well.

Hence, if we would like to merge our CR C1-200510 into the revision of this CR and if our above comment could be taken, then we would like to co-sign the revision as well, thanks.

--

Mahmoud Watfa (Samsung):First, I agree with you that your tdoc C1-200510 that tries to implement current stage 2 is indeed not technically wrong. The issue is with the chosen SA2 solution that is not access agnostic.

If I understand you correctly, you would like to copy the same restrictions from 5.3.5.2 and also the restriction to not send CIoT CP data as suggested below. The UE will follow these restrictions whenever it only has a pending NSSAI. The full text would be as follows:

If the REGISTRATION ACCEPT message:

a) includes the 5GS "NSSAA to be performed" indicator in the 5GS registration result IE;

b) includes a pending NSSAI; and

c) does not include an allowed NSSAI;

the UE:

a) shall not perform the registration procedure for mobility and periodic registration update with Uplink data status IE except for emergency services or for high priority access; and

b) shall not initiate a service request procedure except for emergency services, high priority access, for responding to paging, notification over non-3GPP access, or sending user data that is related to an exceptional event; and

c) shall not initiate a 5GSM procedure except for emergency services, high priority access, indicating a change of 3GPP PS data off UE status, or sending user data that is related to an exceptional event; and

d) shall not initiate the NAS transport procedure to send a CIoT user data container except for sending user data that is related to an exceptional event

If I got you correctly, then I am fine with your proposed way forward.

Kindly confirm and I would be happy to add your company as a co-signer.

-

Kaj Johansson (Ericsson): Should not a modified c) be enough:

c) shall not initiate a 5GSM procedure except for emergency services, high priority access, indicating a change of 3GPP PS data off UE status, or sending user data that is related to an exceptional event; and”

With this I don’t see that the a), b) and d) are needed.

On “a) shall not perform the registration procedure for mobility and periodic registration update with Uplink data status IE except for emergency services or for high priority access; and”

KJ: With c) above the UE will not have any established non-emergency PDU sessions. Given this, this seems not needed.

On “b) shall not initiate a service request procedure except for emergency services, high priority access, for responding to paging, notification over non-3GPP access, or sending user data that is related to an exceptional event; and”

KJ: Same as above.

On “d) shall not initiate the NAS transport procedure to send a CIoT user data container except for sending user data that is related to an exceptional event”

KJ: Same as above.

--

Mahmoud Watfa (Samsung)

I can agree to some of your changes for the initial registration as the UE would still not have had any session established i.e. for initial registration keep only:

c) shall not initiate a 5GSM procedure except for emergency services or high priority access

But for mobility and periodic update, we need all the bullets as suggested. In this case, I have modified bullet c) as follows:

If the REGISTRATION ACCEPT message:

a) includes the 5GS "NSSAA to be performed" indicator in the 5GS registration result IE;

b) includes a pending NSSAI; and

c) does not include an allowed NSSAI;

the UE:

a) shall not perform the registration procedure for mobility and registration update with the Uplink data status IE except for emergency services or for high priority access;

b) shall not initiate a service request procedure except for emergency services, high priority access or for responding to paging or notification over non-3GPP access;

c) shall not initiate a 5GSM procedure except for emergency services, high priority access, indicating a change of 3GPP PS data off UE status, or to request the release of a PDU session; and

d) shall not initiate the NAS transport procedure to send a CIoT user data container except for sending user data that is related to an exceptional event.

The logic behind the modification is the following: NSSAA will either succeed for fail for a PDU session. If it succeeds, then the UE can always release a session. If it fails, the outcome will be the same i.e. the session will be released, and so there is no problem in the UE requesting to release a session for which the S-NSSAI that is undergoing NSSAA.

Lin, all: can you please provide comments so that we can have some progress on this?

Draft can be found in:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200778-draft.docx

-

Lin Shu (Huawei)

I agree with what Mahmoud clarified below, for initial registration it could be fine to only cover 5GSM as there is no active PDU session established. But for mobility and periodic update, the thing is different and should cover all possible cases. For mobility and periodic update, we need to consider S1-N1 mode mobility for single registration mode UE for which there many PDN connections were mapped to PDU sessions and hence, any UL service attempt needs to be restricted.

All in all, we are fine with C1-200778-draft in the draft box.

BTW, it is (Huawei, HiSilicon) to co-sign

-

Fei Lu (ZTE)

My comment was in the subclause 4.6.2.4, the \*\*wording\*\* should be added.

If the REGISTRATION ACCEPT message:

a) includesthe 5GS"NSSAA to be performed"indicator in the 5GS registration result IE;

b) includesapending NSSAI; and

c) does not include an allowed NSSAI;

the UE shall not initiate a 5GSM procedure except for emergency services or high priority access \*\*until the UE receives an allowed NSSAI in the CONFIGURATION UPDATE COMMAND message\*\*.

--

Mahmoud Watfa (Samsung)

I can make the following change and not necessarily tie the reception of allowed NSSAI in the CUC message.

So I will add “until the UE receives an allowed NSSAI”.

Please let me know if you have other comments.

-

Mahmoud Watfa (Samsung)

As no more comments were received, document C1-200778 (which is the revision) has been uploaded.

The revision is based on the email discussions below.

**Decision:** The document was **revised to C1-200778**.

**C1-200778 Removal of the use of Service area list IE during NSSAA**

*Type: CR For: -  
 24.501 v16.3.0 CR-1971 rev 1 Cat: C (Rel-16)  
  
 Source: BEIJING SAMSUNG TELECOM R&D*

(Replaces C1-200602)

**Discussion:**

Mahmoud Watfa (Samsung)

Please note that C1-200778 is now uploaded and it is a revision of C1-200602 and also merges C1-200510.

Kaj Johansson (Ericsson)

For the proposal to mimic the service area restriction there seems to be some parts missing, i.e. the enforcement in the network.

That needs to be covered by the CR.

Mahmoud Watfa (Samsung)

What is the enforcement on the network side?

Please indicate the current enforcement in 24.501 so that I can take it on board. I have not seen an enforcement on the network side in 24.501.

**Decision:** The document was **agreed**.

**C1-200604 Re-initiation of NSSAA for a registered UE**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1972 Cat: C (Rel-16)  
  
 Source: BEIJING SAMSUNG TELECOM R&D*

**Discussion:**

Fei Lu (ZTE): not happy to add the Editor' note for this issue at the current stage. If some work is required for the impact on the 5GSM procedure in the next meeting, then CAT F can be used for the essential correction.

Tsuyoshi Takakura (NEC): If I understand correctly, the CR comes from discussion paper C1-200601(Proposal 4). And looking at "To avoid this unnecessary signalling, these S-NSSAIs can be indicated as pending NSSAI and sent to the UE with the Configuration Update Command message." in the discussion paper, we share the same view as Mahmoud. And, C1-200694 (NEC) is proposing a solution for this.

Mahmoud Watfa (Samsung):

Regarding the EN in my CR, I can revise the CR as indicated in the discussion paper i.e. send a pending NSSAI to the UE containing the S-NSSAIs for which NSSAA is to be re-initiated.

I understand NEC (Tsuyoshi) has a similar proposal which I am also fine to purse if the necessary changes are captured.

To Tsuyoshi: if you can make the necessary changes then I will be OK to merge my CR into yours.

In addition to sending the pending NSSAI to the UE, you should clarify that the UE should not send 5GSM requests for the S-NSSAIs in the receiving pending NSSAI, noting that the UE may actually still have an allowed NSSAI with e.g. 2 S-NSSAIs, for which re-initiation of NSSAA is required.

Lin Shu (Huawei):

Here are our comments which is proposed to the disc paper 601 and also could be applied in this CR.

Proposal 4: CT1 should discuss if the UE would be allowed to initiate 5GSM procedures for S-NSSAIs that are subject to re-initiation of NSSAA.

[Lin] I think CT1 can make decision now w/o adding EN as “S-NSSAIs that are subject to re-initiation of NSSAA” will be included in the pending NSSAI via UCU to the UE and as per stage 2 requirement, the UE cannot obtain any services from pending S-NSSAI. So the answer should be: the UE is NOT allowed to request any services over a PDN session which is associated with a pending S-NSSAI.

Mahmoud Watfa (Samsung):I am fine with the proposal of using the pending NSSAI and therefore the UE will not send any 5GSM request for any of the S-NSSAIs in the pending NSSAI.

However, thinking more about it, I believe the only exception to this would be that the UE should be allowed to release the PDU session if triggered by the UE. The release should be allowed since: a) if NSSAA succeeds, the UE will be allowed to send a request to release, or b) if NSSAA fails, the session will anyways be released by the network.

Please let me know your comments on this and we can avoid the EN and perhaps move forward with NEC’s paper.

**Decision:** The document was **postponed**.

**C1-200605 Additional triggers for deletion of pending S-NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1973 Cat: F (Rel-16)  
  
 Source: Samsung/Anikethan*

**Decision:** The document was **agreed**.

**C1-200683 NW slice authentication and authorization failure and revocation**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1533 rev 5 Cat: C (Rel-16)  
  
 Source: Ericsson /kaj*

(Replaces C1-198772)

**Discussion:**

Tsuyoshi Takakura (NEC): The CR covers the change that I also have in my CR (C1-200694).

Would you be able to undo following change in your CR?

-----------

Removing

Editor’s Note [WI: eNS, CR#1602]: The NSSAI storage update regarding Allowed NSSAI in scenario when re-authentication and re-authorization is challenged for one or more S-NSSAIs in the Allowed NSSAI of a UE is FFS.

-----------

If not, then the clarification is how this EN is resolved in your CR (just removed?)?

#I failed to understand how this EN relates to the scenario captured in the "reason for change" of your CR.

--

Lin Shu (Huawei)

My detail comments are in below revision in the draft box:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200683-Lin.docx

If my comments could be taken, we would like to co-sign the revision.

Also, as indicated in the comments, would be fine for you to undo the specific change which was covered by my CR C1-200511 and I will revise my CR to untouch the EN removal which is covered by your CR.

-

RV Anikethan (Samsung)

Below are our comments wrt the proposed changes:

When the UE:

i) deregisters with the current PLMN using explicit signalling or enters state 5GMM-DEREGISTERED for the current PLMN; or

ii) successfully registers with a new PLMN; or

iii) enters state 5GMM-DEREGISTERED following an unsuccessful registration with a new PLMN;

and the UE is not registered with the current PLMN over another access, the rejected NSSAI for the current PLMN and rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization shall be deleted.

This change is not needed since it is already allowed by local policy for these slices to be re-used.

If network slice-specific authentication and authorization is revoked for an S-NSSAI, the AMF shall:

a) provide the UE with a new allowed NSSAI excluding the S-NSSAI; and

b) include the S-NSSAI in the the rejected NSSAI with the reject cause "S-NSSAI is not available due to the failed or revoked network slice-specific authorization and authentication".

 Providing the UE an allowed NSSAI would not be needed. Just providing the UE with the rejected NSSAI is sufficient. There is already text to remove an S-NSSAI from allowed NSSAI if it is in the received rejected NSSAI.

-

Kaj Johansson (Ericsson)

I’m almost fine with the proposal for improvements and to undo the change you pointed out.

And to add Huawei and HiSilicon as source.

Regarding the EN removal I assume you mean all three, right?

-

Kaj Johansson (Ericsson)

On ”This change is not needed since it is already allowed by local policy for these slices to be re-used. “.

[Kaj]: This is to start from scratch which is in line with the deletion of rejected for the current PLMN and deletion of rejected for registration area.

On “ Providing the UE an allowed NSSAI would not be needed. Just providing the UE with the rejected NSSAI is sufficient. There is already text to remove an S-NSSAI from allowed NSSAI if it is in the received rejected NSSAI.”

[kaj]: I see your point but I prefer that the AMF acts correctly, i.e. as the allowed NSSAI is changed then it should explicitly be provided to the UE. Feels strange not doing so to rely on that the UE will update allowed NSSAI based on rejected NSSAI. What is the problem that AMF provides it? In addition, we have in the current spec following:

In 24.501 subclause 5.4.4.3: If the UE receives a new allowed NSSAI for the associated access type in the CONFIGURATION UPDATE COMMAND message, the UE shall consider the new allowed NSSAI as valid for the associated access type, store the allowed NSSAI for the associated access type as specified in subclause 4.6.2.2 and consider the old allowed NSSAI for the associated access type as invalid; otherwise, the UE shall consider the old Allowed NSSAI as valid for the associated access type.

--

Sung Hwan Won (Nokia)You specified that the AMF would “release all PDU session associated with the S-NSSAI for which network slice-specific re-authentication and re-authorization fails”. I think that this should be covered in section 4.6.3 whish is about SM and now the revision of C1-200704 (https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20eNSc\_was\_0704\_PDU\_session\_release\_due\_to\_NSSAA\_failure\_revocation.docx) covers the SM aspect.

-

RV Anikethan (Samsung)

On ”This change is not needed since it is already allowed by local policy for these slices to be re-used. “.

[Kaj]: This is to start from scratch which is in line with the deletion of rejected for the current PLMN and deletion of rejected for registration area.

[Anikethan]: I think there is a different CR where the comment is that an AMF should not use stored status wrt an S-NSSAI that is subject to NSSAA if a UE requests it afresh. The intent being that a UE is expected to request it when there is a change in the status at upper layers based on an update in the credentials/subscription and in such a case AMF using old status will be wrong. But by making this change on UE side we might end up forcing an AMF to do NSSAA afresh even though there was no update from upper layers at the UE. Since local policy allows for an S-NSSAI with this reject cause to be requested, it is better to allow local policy control the handling for this use case as well instead of mandating it.

On “Providing the UE an allowed NSSAI would not be needed. Just providing the UE with the rejected NSSAI is sufficient. There is already text to remove an S-NSSAI from allowed NSSAI if it is in the received rejected NSSAI.”

[kaj]: I see your point but I prefer that the AMF acts correctly, i.e. as the allowed NSSAI is changed then it should explicitly be provided to the UE. Feels strange not doing so to rely on that the UE will update allowed NSSAI based on rejected NSSAI. What is the problem that AMF provides it? In addition, we have in the current spec following:

In 24.501 subclause 5.4.4.3: If the UE receives a new allowed NSSAI for the associated access type in the CONFIGURATION UPDATE COMMAND message, the UE shall consider the new allowed NSSAI as valid for the associated access type, store the allowed NSSAI for the associated access type as specified in subclause 4.6.2.2 and consider the old allowed NSSAI for the associated access type as invalid; otherwise, the UE shall consider the old Allowed NSSAI as valid for the associated access type.

[Anikethan]: The point is more to do with redundancy when one IE which is being sent can already result in the same behaviour that 2 IE’s can do. I do not have a strong preference. If no one else has a concern wrt this, I am ok with the same.

-

Lin Shu (Huawei)

Anyway, as we discussed, please see the updated revision of our C1-200511 to only take the specific change part without touching any EN removal. Please check to void any overlapping in your revision. Thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20XXXX(rev%20of%200511)\_eNS\_24.501\_EN%20resolution%20for%20NSSAA.docx

BTW, will you co-sign the revision of C1-200511? Please confirm as well, thanks.

--

Kaj Johansson (Ericsson)

I have uploaded a draft revision to the draft folder: ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxx-was200683-was198772-was8075-was7003-was6569-6187-nssaa-failure-and-revocation-v01.zip

The draft is mainly based on feedback from Lin as per below, thank you.

There are still overlaps with C1-200813 (that was C1-200352) in 3.1, 4.6.1 and 4.6.2.2

My proposal:

• 0683: keeps 3.1 and revokes c)3)iii) in 4.6.2; and

• 0813: revoke 3.1, c) in 4.6.1 and align c)3)iii) in 4.6.2. with c)3)iii) in 4.6.2 of draft 0683.

On Anikethan first comments below, this is for the AMF to provide all rejected S-NSSAIs again with a new configured NSSAI to sync all slicing information between UE and NW. Hence it is kept. For the second comment, no action performed.

-

Tsuyoshi Takakura (NEC)

I am afraid to say that I missed discussion. I thought I requested to undo the following change because it looks to me that this EN has nothing to do with NSSAI storage update due to NSSAA failure as you indicated in reason for change; Otherwise, I can not agree with this.

--------

Removing

Editor’s Note [WI: eNS, CR#1602]: The NSSAI storage update regarding Allowed NSSAI in scenario when re-authentication and re-authorization is challenged for one or more S-NSSAIs in the Allowed NSSAI of a UE is FFS.

--------

Lin Shu (Huawei):on 683 and 511

The revision is fine with some very minor comments as below:

(1) The style of below NOTE is not correct and should be “NO” style:

“NOTE: Based on local policies, the UE can remove an S-NSSAI from the rejected NSSAI for the failed or revoked NSSAA.”

(2) “and rejected NSSAI for the failed or revoked NSSAAA” should be “and rejected NSSAI for the failed or revoked NSSAA”

(3) “for en access type” should be “for an access type”

All others are fine.

Also, I would like to say C1-200511 was revised into C1-200898 and is available below, please check it is fine for you or not. @Kaj, as our revision covers the same change as you want to cover, so just to check whether you will co-sign our revision or not, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200898(rev%20of%200511)\_eNS\_24.501\_EN%20resolution%20for%20NSSAA.docx

--

Kaj Johansson (Ericsson)

Thank you for the comments. I will update accordingly.

I’m fine with C1-200898 and would like to co-sign, thank you for asking.

Tsuyoshi Takakura (NEC)

I am afraid to say that I missed discussion. I thought I requested to undo the following change because it looks to me that this EN has nothing to do with NSSAI storage update due to NSSAA failure as you indicated in reason for change; Otherwise, I can not agree with this.

--------

Removing

Editor’s Note [WI: eNS, CR#1602]: The NSSAI storage update regarding Allowed NSSAI in scenario when re-authentication and re-authorization is challenged for one or more S-NSSAIs in the Allowed NSSAI of a UE is FFS.

--------

RV Anikethan (Samsung)

Thanks for the draft. Sorry. But I still stick to my comment that it is not necessary to delete “rejected NSSAI for the failed or revoked NSSAA” every time the UE moves to DEREGISTERED.

A local policy, if implementation sees that as necessary, can have this as one of the triggers.

But this cannot be mandated. Hence Samsung cannot agree to that particular part of the change.

-

Lin Shu (Huawei)

Difficult to understand your comments.

The UE was already in the deregistered state, so can the UE still want to use the S-NSSAI in the rejected NSSAI for the failed or revoked NSSAA, based on local policy?

You means the UE to use it later at initial registration? Well, all rejected one have deleted, so the UE is free to use it.

So I think the change is correct, when go to deregistered state, the rejected NSSAI for the failed or revoked NSSAA needs to be deleted.

-

RV Anikethan (Samsung)

The status of the S-NSSAI which were rejected due to NSSAA failure or revocation has a dependency on subscription/credentials at upper layers. If there is a change then upper layer is aware of this and can request modem to connect to that S-NSSAI. This is where the local policy part comes in. Hence moving to DEREGISTRATION is not in any way a necessary trigger to delete this list.

It is ok for the other two reject causes (PLMN/Registration area) since there is no corresponding upper layer that can influence this decision.

-

Fei Lu (ZTE) @Tsuyoshi

Tsuyoshi,

I did not understand this comment.

My understanding was that if the NSS(re-)A(re-)A procedure is triggered, then after the whole procedure, the AMF updateS the allowed or the rejected NSSAI to the UE.

From this Pov, I think this EN can be removed.

-

Kaj Johansson (Ericsson) @Tsuyoshi

Sorry that I forgot to address this. I have my view on this.

As the time is running out and to have something agreed, I can revoke the removal of the EN mentioned below unless others disagree.

The EN is addressed in other paper(s), TDOC number?

-

Fei Lu (ZTE): Since today is the deadline of uploading the final version, to proceed with the CR, can I propose to add the following note?

NOTE: Whether the UE deletes the rejected NSSAA for the failed or revoked NSSAA when the UE is in 5GMM-DEREGISTERED is implementation specific.

-

RV Anikethan (Samsung)

“Local policy” can be any of these triggers including DEREGISTERED and is implementation specific. It is an open statement. Hence this NOTE would be redundant. Right?

Hence the suggestion that we just remove that part of the change which asks for deletion of these NSSAI when moving to DEREGISTERED. I am ok with the other changes in the CR.

Kaj Johansson (Ericsson) For the progress I am fine to revert the change from the CR without adding a note.

Be aware of if information is stored in the UE when deregistered in addition to 5g-guit, security context etc, it should be stored in the UE context in the network as well.

-

Tsuyoshi Takakura (NEC)

So the EN says

Editor’s Note [WI: eNS, CR#1602]: The NSSAI storage update regarding Allowed NSSAI in scenario when re-authentication and re-authorization is challenged for one or more S-NSSAIs in the Allowed NSSAI of a UE is FFS.

We discussed and inserted this EN at last meeting, Kaj. The scenario of this EN is WHEN the AMF receives the Re-auth event notification from AUSF for the re-NSSAA. So the scenario is not about the impact after the completion of NSSAA (which is the scope of your CR).

BTW, this is the reason(to resolve the EN) that we brought C1-200694.

**Decision:** The document was **revised to C1-201055**.

**C1-201055 NW slice authentication and authorization failure and revocation**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1533 rev 6 Cat: C (Rel-16)  
  
 Source: Ericsson /kaj*

(Replaces C1-200683)

**Decision:** The document was **agreed**.

**C1-200689 No default S-NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1988 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lin Shu (Huawei): Here are our comments:

1. There are 27 instances of “default S-NSSAI” in TS 24.501 but you only removed 4 instances, any speical reasons behind this?

2. There are 3 instance of “(containing one or more S-NSSAIs each of which may be associated with a new S-NSSAI)” in TS 24.501, but you only removed 2 instances, any speical reasons behind this?

3. Also why you removed “(containing one or more S-NSSAIs each of which may be associated with a new S-NSSAI)”, it is better to provide more text in the reason for change, thanks.

RV Anikethan (Samsung):

We have two comments wrt the changes:

1) In changes that say that when UE indicates NSSAA support, provide the default in the allowed NSSAI in registration accept: There needs to be an additional check that the default is not subject to NSSAA.

2) Similarly for the case where UE does not indicate NSSAA support, the default can be included in the allowed NSSAI only if it is not subject to NSSAA.

In general, the default also has to be checked for NSSAA before deciding on including it in the registration accept.

-

Sung Hwan Won (Nokia): I was trying to fix them in the context of eNS. But I found that there are many other places as Lin pointed out. Then it is not in the coverage of eNS but 5GProtoc16, for example. Thus, I postpone the CR.

**Decision:** The document was **postponed**.

**C1-200690 Missing NSSAI storage for rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1989 Cat: F (Rel-16)  
  
 Source: NEC*

**Discussion:**

Merged into C1-200352 and its revisions

Covered by C1-200352

**Decision:** The document was **merged**.

**C1-200691 Updating NSSAI status in AMF**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1990 Cat: F (Rel-16)  
  
 Source: NEC*

**Discussion:**

Roozbeh Atarius (Motorola Mobility): This seems to be related to C1-200694.

Is this proposal needed? IMO, as the S-NSSAI is currently allowed, the AMF can keep it allowed until the NSSAA procedure is completed and then decide whether to 1) keep as allowed or 2) reject it.

Tsuyoshi Takakura (NEC)

Things which is not clear to me is what would be the expected behavior in NW side (AMF/SMF) if a UE requests a PDU session establishment with a S-NSSAI that AMF invokes the NSSAA?

Lin Shu (Huawei)

Based on below SA2 text in 23.501, only the final result (success or failed) will be included in the NSSAA status stored at the AMF, so for the revoking of NSSAA, the AMF needs not to do so.

“After a successful or unsuccessful UE Network Slice-Specific Authentication and Authorization, the UE context in the AMF shall retain the authentication and authorization status for the UE for the related specific S-NSSAI of the HPLMN while the UE remains RM-REGISTERED in the PLMN, so that the AMF is not required to execute a Network Slice-Specific Authentication and Authorization for a UE at every Periodic Registration Update or Mobility Registration procedure with the PLMN.

”

-

Tsuyoshi Takakura (NEC)

Yes, you are correct. And I agree that SA2 only capture the requirement that NW only maintains the final status. The reason(rational) that SA2 came up with this requirement is so that NW(AMF or AAA) can skip unnecessary invocation of NSSAA for the S-NSSAI which is already authorized.

Now the scenario (rational) of C1-200691 is different from above.

The rational is so that NW can react on any request from the UE for the S-NSSAI(pending) appropriately.

-

Sung Hwan Won (Nokia)

It is hard to understand what is the difference between scenarios covered by 0691 and 0694. Do you mean that even if 0694 is not agreed, there is a reason to discuss 0691?

-

Roozbeh Atarius (Motorola Mobility)

I still maintain my position. Please see my other mail which should be realted to this.

Tsuyoshi Takakura (NEC)Yes. They are decoupled.

To our understanding, if not by AAA server, it is only the AMF can maintain the status of NSSAA for specific S-NSSAI in the system.

The AMF requires the status of NSSAA for specific S-NSSA because for re-NSSAA, it is defined that AMF uses an S-NSSAI from allowed NSSAI. If we don't maintain "pending" status in AMF and keep it as "allowed" even if the re-NSSAA is ongoing, there may be such implementation that AMF wrongly uses the S-NSSAI.

Sung Hwan Won (Nokia)

I see. How the AMF handles and stores should be left up to implementation because there is no multi-vendor operability issue. So now I disagree with the CR.

-

Lin Shu (Huawei) @Tsuyoshi

The thing is once an invocation was triggered by the NW (AMF or AAA-S), then the final result will quickly come as there is no much end-to-end signaling exchange needs to be perform, just one message with one indication somehow. So no need for the AMF to temporarily move the S-NSSAI from A-NSSAI to P-NSSAI. The AMF can quickly provide a updated rejected NSSAI to include the invoked S-NSSAI(s) to the UE via UCU, which was already covered by our CR C1-200511.

-

Tsuyoshi Takakura (NEC)

Thank you for your comment. And I understand your point of view.

The requirement(SA2) that I would like to point out is that the S-NSSAI for which NSSAA needs to be performed SHALL be included in pending NSSAI.

So, to align with this requirement, the CR proposes when the NSSAA is determined to invoke, AMF move the S-NSSAI from allowed NSSAI to pending NSSAI.

Sung Hwan Won (Nokia)

IIUIC, the SA2 requirement is about the signaling. The AMF can store it in various ways. The AMF can have a specific container just for the ongoing NSSAA.

Tsuyoshi Takakura (NEC)

My understanding is that the SA2 requirement is not only for signaling because as one of the AMF behaviors for NSSAA, when the AMF determines to perform re-NSSAA, it uses the S-NSSAI from allowed NSSAI. From this reading, I would understand that it is not only for signaling but also for that how AMF maintains the NSSAI status.

Sung Hwan Won (Nokia) Now each of you and I is just saying his own understanding. So, there will be no conclusion.

**Decision:** The document was **postponed**.

**C1-200692 AMF updates the UE NSSAI storage after network slice-specific authentication and authorization is completed**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1991 Cat: F (Rel-16)  
  
 Source: NEC*

**Decision:** The document was **agreed**.

**C1-200693 NSSAI status in AMF**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1992 Cat: F (Rel-16)  
  
 Source: NEC*

**Discussion:**

Roozbeh Atarius (Motorola Mobility): The proposal seems to be fine. But the text does not read well:

“the AMF shall, in the UE 5GMM context, store pending NSSAI containing one or more S-NSSAIs for which network slice-specific authentication and authorization will be performed and, in the REGISTRATION ACCEPT message, include:”

Better split this in 2 sentences.

Tsuyoshi Takakura (NEC): How do you think about updated ver?

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft%20C1-200693v2.docx

--

Lin Shu (Huawei)

1. The 1st change given in sub 4.6.1 was covered by LGE’s CR C1-200352 and hence better to take it out.”

2. For allowed NSSAI, rejected NSSAI and pending NSSAI, as they are allocated by the AMF, so I believe they will be naturally stored as UE’s context in the AMF. That is to say, without you proposed changes, these three NSSAI will be stored at the AMF until, e.g. it needs to be updated, or UE switch-off, or enter deregistered state.

--

Tsuyoshi Takakura (NEC)

About taking the 1st change out, got it.

About 2nd comment, so I feel that we have the same understanding that those three NSSAIs are maintained in the AMF. For clarification it is good to explain how they are stored in the first place because the TS already captures the requirement that AMF manages(moving from pending status to allowed status or rejected status) the status of NSSAI.

How do you think about update ver as follows?

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft%20C1-200693v3.docx

-

Sung Hwan Won (Nokia)

We don’t see a need to specify that AMF stores pending NSSAI in the UE 5GMM context. There are many parameters that are created by the AMF and provided to the UE and it is true that some of the parameters are stored in the AMF. However, unless you make change to all those parameters, this CR only brings confusion.

--

Roozbeh Atarius (Motorola Mobility)

It seems that you are missing an “and” in the first list of your configurations. It also seems that bullet c) in the first list should not be c) but a “-“.

A general comment, is that the spec has the order or

a)

1)

-

-

-

…

2)

3)

…

b)

C)

…

Could you please change your list to the same configuration.

-

Tsuyoshi Takakura (NEC)

Pending NSSAI management in AMF is already captured in TS24.501. For additional clarification, we believe it is good to clarify how in the first place the AMF do that.

-

Sung Hwan Won (Nokia)

I disagree from the perspective of consistency. It bring confusion towards other existing parameters. AMF implementors are not only handling this parameter.

-

Lin Shu (Huawei) @Tsuyoshi

I understand your intention here.

The thing is it is very naturally for the AMF to store the parameters it has allocated to the UE, e.g. GUTI, TAI list, CAG information, etc. But we did not clearly say that the AMF shall store them as it is naturally stored.

Sometimes you highlight something, which implies something is not there by default, but actually it was already there by default.

So I think the CR is correct but is not needed.

-

Tsuyoshi Takakura (NEC)

One of the triggers of CR was while I was looking at CT4 spec(29518), it looked to me that there is no consistency in defining the S-NSSAI data model. And the reason may be because CT1 spec does not define so.

For this reason(I thought I implied this in reason for change of the CR), I believe it is good to have some clarification. -

Kaj Johansson (Ericsson): Just want to say that I share Lin’s view.

**Decision:** The document was **postponed**.

**C1-200694 NSSAI storage at UE – pending NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1993 Cat: B (Rel-16)  
  
 Source: NEC*

**Discussion:**

Lin Shu (Huawei)Here are our comments:

I am NOT so convinced that the AMF needs to include the pending NSSAI in CONFIGURATION UPDATE COMMAND message.

Once the AMF or AAA servier decide to re-NSSAA, then there should be a result of suhc re-NSSAA and finally what the AMF should do is to send the UCU to provide the updated Allowed/Rejected NSSAI to the UE after such re-NSSAA.

It is not so urgent for the AMF to send the pending NSSAI in this case to the UE immediately. Note that actually the UE knows the ongoing re-NSSAA is for which S-NSSAI (see below message coding) so it will not request any services for this S-NSSAI even it currently is in the allowed NSSAI.

--

Tsuyoshi Takakura (NEC): As you stated, I agree with you that it may not be always urgent but also I would say it may be urgent. Who knows what user/upper layer does.

Here is the response to your comment.

- As defined in TS24.501, UE can use any S-NSSAI(associated with PDU session ID) as long as it is included in the allowed NSSAI. And under the scenario we are discussing, it is included in allowed NSSAI. So UE can use the S-NSSAI for the session establishment.

- And as defined in TS24.501, network slice-specific authentication and authorization procedure is transparent to the 5GMM layer i.e., no impact to the NSSAI storage.

Anyhow, we need some kind of mechanism to synchronize the NSSAI status between UE and NW.

--

Mahmoud Watfa (Samsung): I have a similar view like Tsuyoshi.

To Lin: I understand your point that the UE can know which S-NSSAI is undergoing NSSAA based on what you show in the message definition that you included in your email.

However, the problem is that, there may be NSSAA for 4 S-NSSAIs and there can be a few message exchanged between the UE and the network during NSSAA for one S-NSSAI.

E.g. AMF re-starts NSSAA for S-NSSAI 1 and also wants to re-start NSSAA for S-NSSAIs {2,3,4}. While running NSSAA for {1}, the UE can send requests for S-NSSAI 4.

If NSSAA fails, then we would have generated signalling in the entire system and setup UP resources unnecessarily. Then we need additional signalling to release these resources.

Therefore, it makes sense to put these slices in the pending NSSAA when NSSAA is to be re-run.

--

Kaj Johansson (Ericsson): I share the same view as others that pending NSSAI in UCU command is not needed and should not be there.

Stage two is clear about how this is intend to work, refer 4.2.9. 3 in 23.502.

When a S-NSSAI is successfully authorized and in allowed NSSAI, then the UE can establish PDU sessions on the slice.

When a re-auth is triggered one should assume that the result is expected to be successful, otherwise a revocation should take place.

According to the proposal in C1-200694, established PDU sessions will be released during re-NSSAA of an authorized S-NSSAI as the S-NSSAI is removed from allowed NSSAI. That could not be acceptable with such service interruption and is not the intention in stage 2 either to my understanding.

We had the discussion in Reno about pending NSSAI versus rejected NSSAI.

With rejected NSSAI due to NSSAA pending had been more obvious to me. At re-NSSAA, the S-NSSAI is not rejected unless at NSSAA failure.

C1-200683 removes the EN also removed with C1-200694 (overlap), as I don’t see anything is missing in the current specification with regards to the EN.

-

Roozbeh Atarius (Motorola Mobility): We are not sure about the benefit of this proposal. Scenario: a given S-NSSAI is allowed and the AMF decides to perform NSSAA for the S-NSSAI. Why shall the AMF change the S-NSSAI status from “allowed” to “pending” and after NSSAA procedure again change the status from “pending” to “allowed”. One big problem is: what happens with the established PDU Sessions associated with this S-NSSAI? Shall the PDU Sessions be released while the S-NSSAI status is changed from “allowed” to “pending”? I guess no, so there is no need to change the status of the S-NSSAI.

One case which could result in a big problem is: what happens with the established PDU Sessions associated with this S-NSSAI? Shall the PDU Sessions be released while the S-NSSAI status is changed from “allowed” to “pending”? Perhaps not, so there is no need to change the status of the S-NSSAI.

Unless you have some work in SA2 to backup you proposal what we suggest is if an S-NSSAI is currently “allowed”, keep it as “allowed” until the NSSAA procedure runs and only if the NSSAA fails, then change the status from “allowed” to “rejected”.

--

Tsuyoshi Takakura (NEC)

Indeed. S-NSSAI#B is the foreseen scenario used as reasoning in reason for change.

-

Tsuyoshi Takakura (NEC)

As responded to different mail, this precludes the case of the S-NSSAI with already established PDU session.

And the rational is different from SA2 as responded in different mail also. The rational is by updating the status to pending, the NW can take appropriate action for the request from the UE using NSSAI which is pending in NW side. Thing which was not clear to me is what will happen when the AMF receives a PDU session establishment with a S-NSSAI for that AMF invokes the NSSAA. By keeping the status as allowed, AMF thinks that the S-NSSAI is allowed so proceed with session establishment procedure ... or ?

-

John-Luc Bakker (BlackBerry)

This issue was discussed previously and the current specification reflects the agreement that the UE is allowed to initiate 5GSM procedures for such an S-NSSAI. But it seems that it is not clear to everyone, so let us revisit the issue.

The 5GSM procedures from a UE should not be blocked due to re-authentication/authorization. This would be bad for user experience. Re-authentication/authorization is usually just a periodic checking. So there should be no interruption in the 5GSM services for the S-NSSAI.

For those who wants to block new 5GSM requests, do you want to release existing PDU sessions associated with the S-NSSAI for which re-auth is ongoing?

-

Mahmoud Watfa (Samsung)

@ Sung: Regarding your question “For those who wants to block new 5GSM requests, do you want to release existing PDU sessions associated with the S-NSSAI for which re-auth is ongoing?”.

Our answer: NO, we don’t want to release existing PDU sessions that are associated with S-NSSAIs for which re-auth is ongoing.

However, I don’t see an advantage to allow signalling (for setting up of new PDU sessions for which S-NSSAI is subject to re-NSSAA) that may end up requiring more signalling to release these sessions if the associated S-NSSAIs fail NSSAA.

-

Sung Hwan Won (Nokia): @Mahmoud

Thanks for the clarification. It is good that at least we agree on the existing PDU session.

There is an advantage (mostly in terms of user experience) if the re-auth is successful. I think that the re-auth will usually be successful, but I don’t have any good data supporting the idea 😊.

Anyways, I would like to see companies’ views on this as I see no killer argument from both sides. IIUIC,

- New 5GSM procedure allowed: Ericsson, Huawei, LGE, Motorola, Nokia

- No new 5GSM procedure allowed: NEC, Samsung

Anyone else who has a view?

-

Kaj Johansson (Ericsson)

Why do we need different handling for re-NSSAA depending of if there are established PDU sessions or not.

In to stage 2 there is only one variant specified, i.e. the NW updates the UE after the re-NSSAA procedure is completed and the S-NSSAI is not any longer authorized regardless if there are PDU session established or not.

I cannot see that re-NSSAA as such will be frequent and when it takes place it is more likely that the UE has a PDU session established for the initially authorized S-NSSAI and also more likely that the re-NSSAA results in S-NSSAI authorized. Given this I don’t see such optimization motivated.

-

Fei Lu (ZTE)

I share this view from Kaj. Before the re-authentication procedure, there is no need to send the pending NSSAA to the UE.

This is somehow like the handling of the PDU session re-authentication and re-authorization procedure. The SMF only informs the result to the UE after the re-authentication and re-authorization.

-

My comment was only for the configuration update command message.

If the requested S-NSSAI is in the pending NSSAI, then the AMF should send the pending NSSAI to the UE per my understanding.

--

Sunhee:

I would like to ask some questions for my clarification.

I share this view from Kaj. Before the re-authentication procedure, there is no need to send the pending NSSAA to the UE.

Does this include that there is no Pending NSSAI in Registration Accept message ?

The TS23.502 4.2.2.2.2 Step21 ) says that AMF include the Pending NSSAI. Step 21 is Registration Accept message handling section.

If the UE has indicated its support for Network Slice-Specific Authentication and Authorization procedure in the UE MM Core Network Capability in the Registration Request, AMF includes in the Pending NSSAI the S-NSSAIs that map to an S-NSSAI of the HPLMN which in the subscription information has indication that it is subject to Network Slice-Specific Authentication and Authorization, as described in clause 4.6.2.4 of TS 24.501 [25]. In such case, the AMF then shall trigger at step 25 the Network Slice-Specific Authentication and Authorization procedure, specified in clause 4.2.9.2, except, based on Network policies, for those S-NSSAIs for which Network Slice-Specific Authentication and Authorization have already been initiated on another Access Type for the same S-NSSAI(s). The UE shall not attempt re-registration with the S-NSSAIs included in the list of Pending NSSAIs until the Network Slice-Specific Authentication and Authorization procedure has been completed, regardless of the Access Type.

So, I think this issue is only occurs when AAA server triggered Network specific re-authentication and re-authorization procedure in TS23.502 section 4.2.9.3 or AAA server triggered Network slice-specific authorization revocation in TS23.502 section 4.2.9.4.

It is not for initial registration procedure .

Could you clarify my question?

-

Kaj Johansson (Ericsson)

On ” I would like to ask some questions for my clarification.

I share this view from Kaj. Before the re-authentication procedure, there is no need to send the pending NSSAA to the UE.

Does this include that there is no Pending NSSAI in Registration Accept message ?”

[kaj] re-NSSAA is specified in TS 23.502 clause 4.2.9.3 . If AMF for some reason initiates re-NSSAA procedure with a registration procedure, the AMF shall not include the pending NSSAI in registration accept as then a new allowed NSSAI has also to be provided resulting in that any established PDU session(s) will unnecessarily be released.

**Decision:** The document was **postponed**.

**C1-200695 Release of PDU sessions due to revocation from AAA server or re-auth failure**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1994 Cat: B (Rel-16)  
  
 Source: NEC*

**Discussion:**

RV Anikethan (Samsung)Our comment wrt this CR would be the same as that given for C1-200394, C1-200415, C1-200704.

We think there is no need to have a specific 5GSM cause for this use case since the cause associated with the rejected S-NSSAI will be sufficient.

Roozbeh Atarius (Motorola Mobility): We do not believe that there is any need for two Cause values for this case so we object to this CR. The CR which should go forward is C1-200415.

Kaj Johansson (Ericsson):

I think we have slightly different understanding of referred SA2 CR. At least part of it, for revocation I share your understanding.

For re-authentication, C1-200695 seems to discuss a procedure failure while the SA2 CR specifies that the re-authentication fails i.e. the S-NSSAI is no any longer authorized after a successful completion of the NSSAI procedure with a negative result for the UE/application. There will be a new allowed NSSAI, rejected NSSAI and the EAP failure message sent to the UE.

Stage 2 seems not cover procedure failure cases.

My view here, based on stage 2, is that the re-authentication procedure will run in the background and only impact the UE in case of a negative result. And that is similar to revocation, any PDU session established on the slice will be released by the NW.

If the procedure as such fails I don’t see why the UE shall be affected as the UE initially is allowed to use the S-NSSAI. If it for some reason anyways is critical, the AAA-S could in case of re-NSSAA procedure failure initiate the revocation.

As the UE will receive the rejected NSSAI with proper information I don’t see that additional causes are needed with the PDU session release message except what is proposed in some other CR submitted to this meeting.

--

Tsuyoshi Takakura (NEC)

In principle, we share the same basic understanding.

#BTW, I feel that the difference in scenario understanding does not make much of a difference. Anyhow, failure is unexpected outcome and revocation is expected outcome.

I think now at least to me that the discussion comes down to the question "what can we do for the service(slice enabled)".

In detail, unlike Rel15 Rejected NSSAI(not available for PLMN or RA), SA2(TS23.501) defines that for Rel16 Rejected NSSAI, UE can re-attempt the S-NSSAI if the rejection is due to NSSAA failure or revocation based on "local policy". Rejected NSSAI IE contains 1 cause value which does not differentiate the causes. And if we were to define the 5GSM cause in the same way(i.e., 1 5GSM cause), then there is no systematic/reliable approach to feed the error cause to the service.

So, probably the question is shouldn't it better to feed the dedicated error cause for each situation so that "local policy" can be enabled correctly/reliably?

#BTW, I am not saying we should be able to differentiate Rel15 Rejected NSSAI cause and Rel16 Rejected NSSAI cause, because it can probably be done by the associated cause value in Rejected NSSAI IE.

#After all, SA2 defines two separate call flow for revocation and authentication failure in TS23.502. And consequently, they define the 5GSM cause requirement that we need an appropriate 5GSM cause for authentication failure related PDU session release (4.2.9.2 Network Slice-Specific Authentication and Authorization ) and an appropriate 5GSM cause for revocation related PDU session release ( 4.2.9.4 AAA Server triggered Slice-Specific Authorization Revocation ).

-

Tsuyoshi Takakura (NEC)

I guess if I understand correctly, the not need reason is because it is not necessary e.g., redundant "implicitly".

Let's say the UE has following in NSSAI storage

- S-NSSAI#1 as rejected NSSAI with the cause value "S-NSSAI is not available due to the failed or revoked network slice-specific authorization and authentication."

- S-NSSAI#2 as rejected NSSAI with the cause value "S-NSSAI is not available due to the failed or revoked network slice-specific authorization and authentication."

Based on local policy, the UE wants to re-attempt the S-NSSAI which was revoked previously but now OK to be used again after some upper layer service operation.

Thing which is not clear to me is for example in the above case, how the local policy can enable the re-attempt?

--

Roozbeh Atarius (Motorola Mobility)

In detail, unlike Rel15 Rejected NSSAI(not available for PLMN or RA), SA2(TS23.501) defines that for Rel16 Rejected NSSAI, UE can re-attempt the S-NSSAI if the rejection is due to NSSAA failure or revocation based on "local policy". Rejected NSSAI IE contains 1 cause value which does not differentiate the causes. And if we were to define the 5GSM cause in the same way (i.e., 1 5GSM cause), then there is no systematic/reliable approach to feed the error cause to the service.

[Roozbeh] 1) If NSSAA fails it means that the security credentials in the UE associated with the S-NSSAI are not valid. 2) If the NSSAA is revoked it means that the service provider don’t want to provide service to the UE, e.g. due to expired subscription or voucher. In either case 1) or 2) the user of the service needs to contact the 3rd party service provider either to get new credentials or to renew the subscription, but this is on the application layer which is out of scope of 3GPP.

So, probably the question is shouldn't it better to feed the dedicated error cause for each situation so that "local policy" can be enabled correctly/reliably?

#BTW, I am not saying we should be able to differentiate Rel15 Rejected NSSAI cause and Rel16 Rejected NSSAI cause, because it can probably be done by the associated cause value in Rejected NSSAI IE.

#After all, SA2 defines two separate call flow for revocation and authentication failure in TS23.502. And consequently, they define the 5GSM cause requirement that we need an appropriate 5GSM cause for authentication failure related PDU session release (4.2.9.2 Network Slice-Specific Authentication and Authorization ) and an appropriate 5GSM cause for revocation related PDU session release ( 4.2.9.4 AAA Server triggered Slice-Specific Authorization Revocation ).

[Roozbeh] why is it so critical to differentiate re-authentication failure and re-vocation for NSSAA, but it has never been specified to differentiate re-authentication failure and re-vocation for secondary authentication for a PDU session?

Since the NSSAA runs over the NAS MM protocol, it is conceptually correct to differentiate the reject causes in the 5GMM layer for NSSAA errors. If NSSAA re-authentication failure and revocation must be differentiated, then the AMF knows it and can do it in the 5GMM layer. Why should AMF tell this to the SMF and the SMF then tells that to the UE?

Since the secondary authentication for PDU session runs over the NAS SM protocol, it is correct to differentiate the reject causes in the 5GSM layer for errors in the secondary authentication for PDU session. But No one raised this problem, although the secondary authentication for PDN connection exists since 3G.

--

RV Anikethan (Samsung); @ Tsuyoshi

Our understanding if the following:

Be it revocation or authentication failure or any other type of failure which might eventually map to these, upper layer(s) is aware of the specific reason and also the refreshing of the status has to be by the concerned upper layer(applications).

Local policy in this context is that at the upper layers there is now a change in the subscription status or of the credentials and hence that is a trigger to request access to the slice. This will be honoured my 5GMM.

In essence, a part of the local policy is about the upper layers controlling request to access slices rejected due to failed revoked NSSAA.

Based on the above understanding, our opinion is that a 5GSM cause would not really matter since at the application layer there is more specific and granular cause available.

-

Tsuyoshi Takakura (NEC)

Yes that could be one of the options for implementation. But as indicated in different mail, our stance is aligned with SA2 requirement (to define "appropriate cause").

-

Sung Hwan Won (Nokia)

The appropriate cause does not have to be new. And I believe that we will never be able to conclude on what “appropriate” means.

**Decision:** The document was **not pursued**.

**C1-200696 Clarification on the S-NSSAI not subject to NSSAA included in allowed NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1995 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **agreed**.

**C1-200697 Subscribed S-NSSAI marked as default and NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1996 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ricky Kaura (Samsung):

I have a CR in C1-200354 which you have covered in your CR so I am fine to merge my content into it.

Comments/Observations:

1) While the CR further clarifies the case of default S-NSSAIs (requiring NSSAA or not requiring NSSAA) where the requested NSSAI is not included in the registration request or none of the S-NSSAIs in the requested NSSAI are in the subscription, the CR should also consider other cases of default S-NSSAI requiring NSSAA. For example there are cases where an allowed NSSAI can be formed from the contents of the requested NSSAI (either because NSSAA ran on the S-NSSAIs in the requested NSSAI and passed or S-NSSAIs did not require NSSAA and were available), but all the defaults S-NSSAIs are set to requiring NSSAA. What is important is that the AMF needs to have an default S-NSSAI that is available. The reason for this is because there are cases of PDU session establishment with no S-NSSAI, and in such cases how can the AMF insert an S-NSSAI when it finds default S-NSSAIs, but they are all requiring NSSAA? In subclause “5.4.5.2.3 UE-initiated NAS transport of messages accepted by the network”, it indicates clearly that if the user’s subscription contains one default, the AMF shall use the default and if the subscription contains two or more defaults, them the AMF shall use one of the defaults selected by operator policy. However, if there are two defaults in the subscription and both require NSSAA, when is NSSAA then run on the defaults? At the time of registration or at the time of PDU session establishment with no slice? This needs to be addressed. I would be fine if this is addressed by an editor’s note in the contribution.

2) In subclauses 5.5.1.2.4 and 5.5.1.3.4, there is a missing condition c) that needs to be added:

If the UE indicated the support for network slice-specific authentication and authorization, and if:

a) the UE did not include the requested NSSAI in the REGISTRATION REQUEST message or none of the S-NSSAIs in the requested NSSAI in the REGISTRATION REQUEST message are allowed; and

b) one or more subscribed S-NSSAIs marked as default are not subject to network slice-specific authentication and authorization;

c) one or more subscribed S-NSSAIs marked as default are subject to network slice-specific authentication and authorization;

3) Changes in subclause 5.5.1.2.5 are difficult to read. Suggest a rewording to the condition in subclause 5.5.1.2.5 to be:

If the mobility and periodic registration update request is rejected due to all the S-NSSAI(s) included in the requested NSSAI are either rejected for the current registration area or rejected for the current PLMN, or the UE did not request any S-NSSAIs, and:

a) the UE set the NSSAA bit in the 5GMM capability IE to "Network slice-specific authentication and authorization supported", but there are no subscribed S-NSSAIs marked as default; or

b) the UE set the NSSAA bit in the 5GMM capability IE to "Network slice-specific authentication and authorization not supported", but there are no subscribed S-NSSAIs which are marked as default and are not subject to network slice-specific authentication and authorization

the network shall set the 5GMM cause value to #62 "No network slices available" and may include the rejected NSSAI.

4) The last change in subclause 8.2.7.5 is OK however I suggest further “breaking” bullet b into more bullets as the conditions are long can be confused which condition is subject to “or” vs “and”

e.g.

b) if:

- the requested NSSAI was not included in the REGISTRATION REQUEST message or none of the requested NSSAI are present in the subscribed S-NSSAIs; and

- the network has one or more subscribed S-NSSAIs marked as default which are not subject to network slice-specific authentication and authorization that are available.

-

Sung Hwan Won (Nokia): Thanks for the comments and it is really good to hear from Ricky.

Ricky’s comment 1)

I meant to cover the case of default S-NSSAI requiring NSSAA as well. Bullet b) states “b) one or more subscribed S-NSSAIs marked as default are not subject to network slice-specific authentication and authorization;”, which basically means that there can be zero or more subscribed S-NSSAIs marked as default subject to NSSAA but not all subscribed S-NSSAIs marked as default are subject to NSSAA.

Your comment on the PDU session establishment is not related to the CR, but I agree that a CR is needed on the NAS transport procedure. The candidate S-NSSAIs should be not just default ones but default ones not requiring NSSAA or default ones passed NSSAA. I would be happy to work on it with you for the next meeting.

Ricky’s comment 2)

I don’t think that bullet c) is needed. And in fact, the bullet should start with “zero or more”, not “one or more”. But anyways it is redundant.

Ricky’s comment 3) and Lin’s comment (2)

I accepted your suggestion with some minor tweaks.

Ricky’s comment 4)

I reflected your proposal.

Lin’s comment (1)

I reflected your proposal.

Please see the revised paper in: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20eNSa\_was\_0697\_NSSAA\_subscribed\_S-NSSAAI\_mkd\_default.docx.

--

Ricky Kaura (Samsung)

Ricky’s comment 1)

I meant to cover the case of default S-NSSAI requiring NSSAA as well. Bullet b) states “b) one or more subscribed S-NSSAIs marked as default are not subject to network slice-specific authentication and authorization;”, which basically means that there can be zero or more subscribed S-NSSAIs marked as default subject to NSSAA but not all subscribed S-NSSAIs marked as default are subject to NSSAA.

Your comment on the PDU session establishment is not related to the CR, but I agree that a CR is needed on the NAS transport procedure. The candidate S-NSSAIs should be not just default ones but default ones not requiring NSSAA or default ones passed NSSAA. I would be happy to work on it with you for the next meeting.

[Ricky] I think the highlighted text does not cover the issue I wanted to address which was the case where all defaults are set to requiring NSSAA. The issue I wanted to make clear is that only in certain cases do we run NSSAA when all the defaults are requiring NSSAA (i.e. when no R-NSSAI in registration request or when the S-NSSAIs in the registration request are not in the subscribed S-NSSAIs). However, what happens in the case when all defaults require NSSAA where an allowed NSSAI can be formed from the contents of the requested NSSAI? Then the AMF never runs NSSAA on the defaults. So at PDU session establishment for no slice, what is the behaviour of the AMF? Does the AMF reject the PDU session establishment request and trigger NSSAA at that time, or should the AMF at the time of registration always run NSSAA on defaults when all defaults require NSSAA irrespective of whether an allowed NSSAI could or could not be formed from the content of the requested NSSAI. I agree that this particular issue was not specifically related to your CR, but I believe that it would be good to capture this issue somewhere in your CR by an editor’s note. Would you be ok to add an editor’s note as suggested below:

If the UE indicated the support for network slice-specific authentication and authorization, and if:

a) the UE did not include the requested NSSAI in the REGISTRATION REQUEST message or none of the S-NSSAIs in the requested NSSAI in the REGISTRATION REQUEST message are allowed; and

b) one or more subscribed S-NSSAIs marked as default are not subject to network slice-specific authentication and authorization;

the AMF shall in the REGISTRATION ACCEPT message include:

a) pending NSSAI containing one or more subscribed S-NSSAIs marked as default which are subject to network slice-specific authentication and authorization, if any; and

b) allowed NSSAI containing one or more subscribed S-NSSAIs marked as default which are not subject to network slice-specific authentication and authorization.

Editor’s Note: How the AMF runs NSSAA on the default S-NSSAIs when all default S-NSSAIs are marked as requiring NSSAA where an allowed NSSAI can be formed from the contents of the requested NSSAI, needs further study.

Editor’s Note: How to secure that a UE does not wait indefinitely for completion of the network slice-specific authentication and authorization is FFS.

Ricky’s comment 2)

I don’t think that bullet c) is needed. And in fact, the bullet should start with “zero or more”, not “one or more”. But anyways it is redundant.

[Ricky] OK, I missed the “if any” at the end of bullet a), but it does read strange that the inclusion of the pending NSSAI is a “shall” requirement on the AMF, yet the “if any” dictates whether this “shall” requirement is implemented.

Ricky’s comment 3) and Lin’s comment (2)

I accepted your suggestion with some minor tweaks.

[Ricky] Thank you

Ricky’s comment 4)

I reflected your proposal.

[Ricky] Thank you.

--

Sung Hwan Won (Nokia)

I think that the issue that you are considering below is not specifically related to eNS. You can also ask a question on Rel-15 such as:

What does the AMF do when the allowed NSSAI includes no subscribed S-NSSAI marked as default and the UE does not include any S-NSSAI during the PDU session establishment?

The URSP should be secured if the UE is not using default ones

-

Ricky Kaura (Samsung)

Regarding you question (I highlighted it in blue), this does not pose an issue for rel-15.

Regardless of whether the allowed NSSAI contains subscribed S-NSSAIs marked as default or not, there is no issue because we are always covered at time of PDU session establishment, i.e. for PDU session establishment with no slice in rel-15:

• if the subscription contains one default, then this default is chosen

• if the subscription contains two or more defaults, then one default is chosen by policy

However in rel-16, if all the defaults require NSSAA, then the above conditions can only be met when NSSAA has been run on the defaults. The opportunity to do this is only when there are defaults in the subscription marked for NSSAA and the no requested NSSAI was included in the registration request or a requested NSSAI was included but none of the S-NSSAIs were not found in the subscription. Those S-NSSAIs then form part of the allowed NSSAI.

So in rel-16 when the allowed NSSAI can be formed from the contents of the requested NSSAI, then when can NSSAA be run on these defaults?

In summary, in rel-16, if all defaults require NSSAA and NSSAA has not been run on these defaults yet, then the above bulleted conditions cannot be met at time of PDU session establishment.

-

Sung Hwan Won (Nokia)

It is a problem even for Rel-15 if the default one is not included in the allowed NSSAI.

Mahmoud Watfa (Samsung) @Sung

Ricky asked me to follow up on this.

You say “It is a problem even for Rel-15 if the default one is not included in the allowed NSSAI.”

Actually that is not correct because even if a default slice is not in the allowed NSSAI, when the AMF selects one based on its policies, the selected default is not subject to NSSAA in Rel-15.

Now for Rel-16 with NSSAA, if the AMF selects a default slice that is subject to NSSAA, how can the session be established…? Or will it…?

-

Sung Hwan Won (Nokia)

If the allowed NSSAI does not include any default ones and the UE does not include anything for the establishment of a PDU session, could you explain how the AMF select an S-NSSAI for the PDU session?

And before we dig this, don’t you agree that this is not related to the scope of the CR? In the first place, I don’t understand why Ricky is asking me to add an EN for the NAS transport procedure that I did not meant to cover.

-

Lin Shu (Huawei): I am fine with “https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20eNSa\_was\_0697\_NSSAA\_subscribed\_S-NSSAAI\_mkd\_default.docx”

-

Mahmoud Watfa (Samsung)

If the allowed NSSAI does not include any default ones and the UE does not include anything for the establishment of a PDU session, could you explain how the AMF select an S-NSSAI for the PDU session?

[Mahmoud: please see the text below from TS 24.501, section 5.4.5.2.3:

iii) if the AMF does not have a PDU session routing context for the PDU session ID and the UE, and the Request type IE is included and is set to "initial request" or "MA PDU request":

A) the AMF shall select an SMF with following handlings:

If the S-NSSAI IE is not included and the user's subscription context obtained from UDM:

- contains one default S-NSSAI, the AMF shall use the default S-NSSAI as the S-NSSAI;

- contains two or more default S-NSSAIs, the AMF shall use one of the default S-NSSAIs selected by operator policy as the S-NSSAI; and

- does not contain a default S-NSSAI, the AMF shall use an S-NSSAI selected based on operator policy as the S-NSSAI.

]

And before we dig this, don’t you agree that this is not related to the scope of the CR? In the first place, I don’t understand why Ricky is asking me to add an EN for the NAS transport procedure that I did not meant to cover.

[Mahmoud: because your CR addresses default S-NSSAIs that are subject to NSSAA or not, and how the AMF replies to the UE accordingly. Ricky has a point and is asking to consider it. So it is fair to consider Ricky’s comment]

Sung Hwan Won (Nokia): You have copied the right part. Then, if the allowed NSSAI does not include any default S-NSSAI (also meaning that there is a default S-NSSAI for the UE) and the UE does not include any S-NSSAI for PDU session establishment, don’t you see an issue?

Mahmoud Watfa (Samsung)

Please show me where in 24.501 it says that for the case that I copied, the default slice will be in the allowed NSSAI…

And no, I don’t see the issue at all simply because the default slice that the AMF picks requires no NSSAA in Rel-15.

-

Sung Hwan Won (Nokia)

First let us agree that there is no guarantee that the default slices will be in the allowed NSSAI if the UE does not request them.

So I see some fundamental issue with AMF’s deciding S-NSSAI if no S-NSSAI is requested by the UE during PDU session establishment. And I think that it deserves a dedicated CR for this.

-

Mahmoud Watfa (Samsung)

@Sung,

I think Ricky would agree with what you said, hence his request for an EN.

-

Mahmoud Watfa (Samsung)

If your time permits, kindly make the minor addition:

Editor's note [eNS; CR# 1996]: It is FFS how the AMF selects an S-NSSAI for the PDU session if {none of the subscribed S-NSSAIs marked as default is included in the allowed NSSAI and the subscribed S-NSSAIs marked as default are subject to NSSAA} or {all subscribed S-NSSAIs marked as default are subject to NSSAA and no NSSAA for these S-NSSAIs is completed as a success}.

**Decision:** The document was **revised to C1-200958**.

**C1-200958 Subscribed S-NSSAI marked as default and NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1996 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200697)

**Discussion:**

Sung Hwan Won (Nokia)

Isn’t it anyways a problem if no default S-NSSAIs are included in the allowed NSSAI and the AMF has to select one from default S-NSSAIs (irrespective of whether those default ones are subject to NSSAA or not)?

Mahmoud Watfa (Samsung)

UE requests {A,B}

Network allows {A,B} after NSSAA succeeds.

UE tries to setup a PDU session but no S-NSSAI is sent.

AMF checks slices marked as default. They are all subject to NSSAA.

Kaj Johansson (Ericsson)

Indeed this is an interesting topic that the UE could have PDU session associated with S-NSSAI(s) that are not in the allowed NSSAI.

Needs to be looked into.

Mahmoud Watfa (Samsung)

@Kaj, Sung, all,

For the sake of progressing, we are OK with Sung's current tdoc.

Thanks again Sung.

**Decision:** The document was **revised to C1-201049**.

**C1-201049 Subscribed S-NSSAI marked as default and NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1996 rev 2 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200958)

**Decision:** The document was **agreed**.

**C1-200698 Additional conditions to the presence in the subscribed S-NSSAIs**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1997 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **agreed**.

**C1-200702 Definition of pending NSSAI**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1999 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Merged into 0352 and its revisions

**Decision:** The document was **merged**.

**C1-200703 Emergency PDU session handling after NSSAA failure**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2000 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lin Shu (Huawei): 1. CR is ok and prefer to change to “when the UE has an emergency PDU session established”

Fei Lu (ZTE)

"the UE is establishing a PDU session for emergency services." shall not be removed. And it would be fine to change it to "the UE is establishing an emergency PDU session"

Otherwise it will delay the emergency service.

Sung Hwan Won (Nokia): Please find a revision in: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20eNSb\_was\_0703\_emergency\_PDU\_session\_NSSAA\_failure.docx.

Fei Lu (ZTE)

It looks good to me.

**Decision:** The document was **revised to C1-200960**.

**C1-200960 Emergency PDU session handling after NSSAA failure**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2000 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200703)

**Decision:** The document was **agreed**.

**C1-200704 Release of a PDU session due to failure/revocation in NSSAA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2001 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Kaj Johansson (Ericsson):

The SMF given the current 3GPP specifications is not aware of that the AMF initiated the PDU session release due to revocation or failure of network slice-specific authentication and authorization.

Given this, the current proposal cannot be agreed.

However, the SMF could know that a slice (S-NSSAI) has become unavailable when it receives the PDU session release trigger from AMF.

In addition, statement “Upon receipt of the 5GSM cause value #29 "user authentication or authorization failed" in the 5GSM cause IE of the PDU SESSION RELEASE COMMAND message, the UE shall release the PDU session.” seems not needed as it is covered by 6.3.3.3.

Lin Shu (Huawei)

Here are our comments:

1. In principle, I have a concern with below SA2 agreed text enforced at the AMF due to the AMF cannot initiate the PDU session release procedure anymore. Also the AMF cannot include any 5GSM cause value to the UE. What the AMF needs to do is to request the SMF to initiate the PDU session release procedure.

“the AMF shall initiate the PDU Session Release procedure as specified in clause 4.3.4 to release the PDU sessions with the appropriate cause value.”

2. Then I have similar concern as Kaj below, how does the SMF know this spcific reason? Do you have tabled any CT4 CR to cover this?

3. SA2 CR dependency should be added on the cover page.

4. The same as Kaj, the text “Upon receipt of the 5GSM cause value #29 "user authentication or authorization failed" in the 5GSM cause IE of the PDU SESSION RELEASE COMMAND message, the UE shall release the PDU session.” is not needed

5. For below change, it sounds strange that the service was rejected by the network slice. Whether is it by AAA-S? Another thing is currently #29 is used per DNN level while NSSAA is per S-NSSAI level, not sure #29 is appropreiate for this case.

Cause #29 – User authentication or authorization failed

This 5GSM cause is used by the network to indicate that the requested service was rejected by the external DN or network slice due to a failed user authentication, revoked by the external DN or network slice, or rejected by 5GCN due to a failed user authentication or authorization.

RV Anikethan (Samsung):

We have a fundamental concern wrt the PDU session release part where any SMF signalling towards UE will be redundant.

In the current call flow, when AMF receives an indication that NSSAA has failed or when authorization has been revoked, it triggers an update towards the UE to provide a fresh set of allowed/rejected NSSAI and also towards the SMF to release the relevant PDU sessions.

As per existing handling during mobility registration a UE upon receiving updated allowed/rejected NSSAI will release PDU sessions locally which are not in the allowed NSSAI. Below is the CT1 text for the same from the mobility registration section (24.501):

With respect to each of the PDU session(s) active in the UE, if the allowed NSSAI contains neither:

a) an S-NSSAI matching to the S-NSSAI of the PDU session; nor

b) a mapped S-NSSAI matching to the mapped S-NSSAI of the PDU session;

the UE shall perform a local release of all such PDU sessions except for the persistent PDU session(s).

We think this would be the right way to handle for both UE and the network i.e to just release the relevant PDU sessions locally based on the updated allowed NSSAI. SMF need not do an explicit signalling towards the UE for this and hence no cause would be needed.

Text similar to the above existing one can be added to the generic UE configuration update section as well on the UE side.

The very fact that an S-NSSAI is not in the allowed NSSAI will implicitly block PDU related requests associated with that slice.

And the EAP layer already knows the reason for the slice no more being allowed and it can be implementation for the EAP layer to notify application about the same (cause).

-

Roozbeh Atarius (Motorola Mobility)

We have 3 concerns

1) This CR is in contradiction with the SA2 CR S2-2002283, where “shall” is changed to “may”. Thus we should coordinate with the outcome of that CR (when is next week).

2) this is contradicting to C1-200415.

3) The proposed cause value is wrong, as the “5GSM cause value #29 "user authentication or authorization failed"” is used in case of Secondary authentication for PDU Session fails. In case of NSSAA failure, the cause should be “slice unavailable”.

--

Lin Shu (Huawei)

I think what Ani said below has a point, after revocation or failure of an NSSAA, the AMF will provide it in the reject NSSAI and finally the UE will remove it from the allowed NSSSAI. Based on this the UE can perform locally release. AMF knows this situation very well, so AMF can also indicate the SMF to locally release the PDU session.

So IMHO, the locally release could work well without providing any cause value as I do not see any existing cause value is appropriate for this case.

--

Sung Hwan Won (Nokia) on 704, 695, 415

I agree that performing a local release on both sides should work. I would like to draft an LS to SA2 cc-ing CT4 for stage 2-stage 3 synchronization.

- Link to the revised CR: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20eNSc\_was\_0704\_PDU\_session\_release\_due\_to\_NSSAA\_failure\_revocation.docx

- Link to the new draft LS: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20eNSd\_LS\_NSSAA\_failure\_revocation.doc

-

Fei Lu (ZTE)

I agree with what Ani said. There is no need for the SMF to send the SM signalling to the UE.

Regarding the revision of the CR, I think it is better to add the similar text in the configuration update procedure.--

Kaj Johansson (Ericsson)

In the past we had for the similar discussion for legacy NW slicing about local release in the network and UE versus NW initiated PDU session release for the UCU procedure. NW initiated PDU session release was agreed and is in the specification which is aligned with stage 2.

Now a number of companies propose, related to NSSAA to use local release at the UE and the NW which is not aligned with stage 2.

I don’t see why we should have different handlings for similar case depending on NSSAA or not.

And to my understanding it is not possible to change legacy NW slicing as will break backward compatible.

-

RV Anikethan (Samsung)

The discussion here is not actually trying to change any existing behaviour. It just highlights the expected behaviour based on the existing text. The point to note here is that AMF triggers an update of the NSSAI towards the UE and also sends the SMF indication to release PDU sessions.

The existing CT1 text in Registration accept asks a UE to release PDU sessions locally based on an S-NSSAI not being in the allowed NSSAI. The UE is not asked to wait for release from SMF in this use case.

The proposal is simply to extend the same to the UE configuration update as well. It would not be right for the UE to have different set of behaviours for different messages. Additionally in cases where a UE is not reachable when the revocation happens, the UE will get the updated NSSAI when it goes to connected mode next. Would it be reasonable for the AMF or the SMF to hold off releasing PDU session context for the duration for which a UE is unreachable?

Considering these, it looks right for the UE and the SMF to simply release the PDU sessions locally based on the updated allowed/rejected NSSAI.

Additionally, the value addition of an end to end release would be if a particular cause had to be communicated to the UE. That too is not the case here since there is already a cause associated with the slice in the respective rejected NSSAI.

-

Tsuyoshi Takakura (NEC)

The reason that SA2 came with such requirement is so that the UE will be able to understand the cause of release.

Having said that, if we were to send an LS to SA2 then it should simply ask "why", not something like that "we think we don't need it".

BTW, the NW anyhow needs to perform PDU session release (N2 signaling) to release the RAN resources. Right?

-

Sung Hwan Won (Nokia); Which text from UCU?

-

RV Anikethan (Samsung)

We are ok with the contents of the CR.

But we think the LS would not be needed since this does not add any new procedure but rather makes use of an existing procedure in CT1 scope. That said, we are ok to go by whatever is the general consensus wrt the need to send out the LS.

-

Sung Hwan Won (Nokia)

Fei’s comment applies to https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20eNSc\_was\_0704\_PDU\_session\_release\_due\_to\_NSSAA\_failure\_revocation.docx.

And I misunderstood Fei’s comment: I thought that his comment is to add {the similar text in the configuration update procedure} to subclause 4.6.3, but it seems that he meant to add {the similar text in subclause 4.6.3} to the configuration update procedure.

-

Sung Hwan Won (Nokia)

The LS is to indicate that the stage 2 agreement is not aligned with our decision here. Let us see what other companies say.

-

Sung Hwan Won (Nokia)

Thank you for pointing out the current network behavior. It reminds me of the past discussion on the similar topic…

So according to the text (copied below) in subclause 5.4.4.3, it seems that we don’t need any CR (or LS) on this topic. Once NSSAA for an S-NSSAI fails or is revoked, the S-NSSAI will be removed from the allowed NSSAI. And based on the legacy behavior, the PDU session will be released.

If new allowed NSSAI information was included in the CONFIGURATION UPDATE COMMAND message, the AMF shall consider the new allowed NSSAI information as valid and the old allowed NSSAI information as invalid. If new configured NSSAI information was included in the CONFIGURATION UPDATE COMMAND message, the AMF shall consider the new configured NSSAI information as valid and the old configured information as invalid. If there are active PDU sessions associated with S-NSSAI(s) not included in the new allowed NSSAI, the AMF shall notify the SMF(s) associated with these PDU sessions to initiate the network-requested PDU session release procedure according to subclause 6.3.3 in the present specification and subclause 5.15.5.2.2 in 3GPP TS 23.501 [8].

I think that C1-200704, 0695, 0415 need to be rejected.

-

Tsuyoshi Takakura (NEC)

The fact is that there is a difference in Rel15 Rejected NSSAI and Rel16 Rejected NESSAI i.e., UE can re-attempt. Another fact is that SA2 defines that we need "appropriate cause value" as follows.

----------------

If the Network Slice-Specific Re-Authentication and Re-Authorization fails and there are PDU session(s) established that are associated with the S-NSSAI for which the NSSAA procedure failed, the AMF shall initiate the PDU Session Release procedure as specified in clause 4.3.4 to release the PDU sessions with the "appropriate cause value".

If there are PDU session(s) established that are associated with the revoked S-NSSAI, the AMF shall initiate the PDU Session Release procedure as specified in clause 4.3.4 to release the PDU sessions with the "appropriate cause value".

----------------

With the facts above, it is not entirely correct to make a decision based on the feature for Rel15 Rejected NSSAI. In sum, we shall not agree on any CR unless it is clarified in SA2.

--

Tsuyoshi Takakura (NEC)

#I am not sure about goodness of resending the same message, which has been sent in other mail,but I guess this is the consequence of e-meeting.

I think we need an LS (asking about the rational of "appropriate cause value") or some kind of clarification process in SA2. Until then, we shall not agree on any CR.

The fact is that there is a difference in Rel15 Rejected NSSAI and Rel16 Rejected NESSAI i.e., UE can re-attempt. Another fact is that SA2 defines that we need "appropriate cause value" as follows.

----------------

If the Network Slice-Specific Re-Authentication and Re-Authorization fails and there are PDU session(s) established that are associated with the S-NSSAI for which the NSSAA procedure failed, the AMF shall initiate the PDU Session Release procedure as specified in clause 4.3.4 to release the PDU sessions with the "appropriate cause value".

If there are PDU session(s) established that are associated with the revoked S-NSSAI, the AMF shall initiate the PDU Session Release procedure as specified in clause 4.3.4 to release the PDU sessions with the "appropriate cause value".

----------------

With the facts above, it is not entirely correct to make a decision based on the feature for Rel15 Rejected NSSAI. In sum, we shall not agree on any CR unless it is clarified in SA2.

--

Sung Hwan Won (Nokia)Neither of the facts justifies new operation. I see there is a huge gap between the two facts and your conclusion that “it is not entirely correct…”.

Fei Lu (ZTE)

It only specifiied that the AMF indicated the appropriate cause value to the SMF. This does not mean that the SMF needs the signalling to the UE.

Even the 5GSM signalling is needed to the UE, then the appropriate cause value does not mean new cause value.

SA2 will not determine which cause value is used for this case

My comment was to add {the similar text in subclause 4.6.3} to the configuration update procedure.

Then the change in the subclause 4.6.3 is not needed.

The comment is applied only to the draft shared by Sung.

Lin Shu (Huawei): I agree with below Sung’s observation. Stage 3 has already covered the new requirements from stage 2 on failed/revoked NSSAA. So no new work need to be done for this.

-

Chair on 704, 695 and 415

this discussion, having three tdoc numbers in the header is hard to follow.

Sung has commented: I think that C1-200704, 0695, 0415 need to be rejected

Tsuyoshi has commented: In sum, we shall not agree on any CR unless it is clarified in SA2

So the current status here is that all three tdocs get postponed.

--

Tsuyoshi Takakura (NEC)

Although the background of SA2 activity was for the UE to be able to understand the exact cause, we need the causes for the UE.

But that can not be proven with what we have in SA2 spec. Also, I acknowledge your point of existing behavior is enough and the cause is for AMF indicating to SMF.

With that, I withdraw my CR (C1-200695) or it can also be rejected.

--

Sung Hwan Won (Nokia)

>> So the current status here is that all three tdocs get postponed.

I agree.

Roozbeh Atarius (Motorola Mobility): I am fine if everyone wants to postpone these CRs. In the other thread (or perhaps the same but at different time) I expressed our positions. I also believe there should be offline work for this CR for the next meeting, something that I tried to organize before this meeting but for some reason missed some of the companies.

Sung provided some background info

Roozbeh Atarius (Motorola Mobility)

I see and thanks for bringing to my attention. So my take are:

1- We need a new cause value since I do not see any related cause value now. Having said that we can live without.

2- Not sure why LS is needed to ask SA2 about this. The agreement should be made in CT1.

3- We do not agree with Ani saying” SMF need not do an explicit signalling towards the UE for this and hence no cause would be needed.”, SA2 document says clearly that the SMF send a release to the UE.

4- There are two related CRs in CT4 which are proposing having new cause value for Authentication Authorization failure. Should those CRs be dependent to the agreement here? (see C1-200751 and C4-200627).

Sung Hwan Won (Nokia)

1- Please define UE behavior upon receiving a new cause value, which cannot be covered by existing cause values. Or do you want to define a new cause value just FUI (for UE’s information)?

2- Let me clarify that we don’t pursue the LS anymore.

3- I agree with you.

4- Indeed. If no new cause value is defined in N11, the new 5GSM cause values is never justified. Even if new cause value is defined in N11, we need to clarify 1- above.

Roozbeh Atarius (Motorola Mobility)

1- I would like to provide a new 5GSM cause value that the slice is not available for the UE’s information in the release message coming from SMF. I think the UE’s behavior is already defined in 24501. I just do not see any appropriate cause value. Now having said that and if the companies believe there is already a value (that I have missed), then I can live with it.

2- Good and thanks

3- Good and thanks

4- Please see the communication about C4-200751 which is attached. I have not seen any communication related C4-200627 except concerns from Motorola and ZTE. I do not think that C4-200627 will go forward however C4-200751 will most likely go forward since we at Motorola decided not to object to it if it is of benefit for OAM (see the discussion in the attached thread).

On second thought I agree that the proposed CR in C1-200315 is missing procedure for the UE to release the PDU session context which perhaps should be added upon receiving his new cause value (in case everyone wants to add this cause value)

Roozbeh Atarius (Motorola Mobility)

You wrote:

If no new cause value is defined in N11, the new 5GSM cause values is never justified.

Comment:

Perhaps also vice versa. Especially if you want to keep SMF out of this and go against stage 2. A cause value in N11 just for statistic is not justified.

Sung Hwan Won (Nokia) I don’t understand why you assume that I want to go against stage 2.

Roozbeh Atarius (Motorola Mobility)

I am sorry for misunderstanding. I did not mean “you” as you. I should have said “one” or “us” or “CT1”. I pointed out bullet 3 in my original mail which is

“We do not agree with Ani saying ”SMF need not do an explicit signalling towards the UE for this and hence no cause would be needed.”, SA2 document says clearly that the SMF send a release to the UE.”

Fei Lu (ZTE)

Even the new cause value is defined over the N11 interface, we (CT1) should also discuss whether a new 5GSM cause is required to the UE.

-

Roozbeh Atarius (Motorola Mobility)

I do not have any issue with that as I pointed out in bullet 1 of my original mail. As I pointed out I am ok whether to create a new 5GSM case or using an existing one. However my position is to have a 5GSM cause value to be transmitted from the SMF to the UE in the release message which is according to stage 2. As long as we follow this. I am fine either way.

However if something happens and stage 2 changes and then AMF takes charge for it somehow, then I do not think there should be any cause value for N11 for statistical purposes. So if there is so much disagreement in CT1 about the concept in stage 2, then we should perhaps ask CT4 to postpone their CR so we can coordinate

-

RV Anikethan (Samsung)

Re-iterating some details mentioned earlier, as to why explicit release will not work most of the time:

1) In the existing call flow of Stage 2, AMF sends the updated NSSAI to the UE and next asks SMF to release the PDU session in parallel. On the UE side (in 24.501) there is already existing text to release PDU sessions locally when an S-NSSAI is no more part of the allowed NSSAI in REGISTRATION ACCEPT (already present in 24.501). Do we want to revert that and make the UE wait for explicit release? Lets say due to some abnormality the PDU session release does not reach the UE, how long is the UE expected to keep the session even though the S-NSSAI is not part of the allowed list?

2) More importantly, if the UE is not reachable when an actual revocation happens the SMF does not wait to release the context. The SMF will attempt reaching the UE and when not reachable a local release will happen. Subsequently when the UE connects back to the network (lets say via service request) it gets the updated NSSAI. In this case how is the UE supposed to know that the PDU session has already been released? Please note that the PDU session status is not a mandatory IE.

With these as the background, it is more reasonable to just let the UE and the network do a local release based on an S-NSSAI no more being in the allowed NSSAI.

And we still don’t see any value addition in the necessity of a 5GSM cause. The rejected slice is associated with a cause and that is sufficient for the upper layers. Any 5GSM cause cannot convey information that is more granular or even as granular as what the EAP messages convey. Would we have a different perspective here wrt the granularity of information that 5GSM can convey. If yes, do we have an example?

-

Sung Hwan Won (Nokia)

My understanding is that the scenario is specific to the case in which the allowed NSSAI is changed via UCU.

-

RV Anikethan (Samsung)

Thanks. But even for UCU it is more of a missed handling in CT1. The following questions sill remain:

1) Do we want to have a different handling for REGISTRATION ACCEPT and UCU?

2) How do we propose to handle corner cases where UE receives the UCU but goes out of service before receiving PDU release from network? How long do we keep the PDU active without an associated NSSAI. Though these are seemingly corner cases, considering the possible permutations of network conditions and mobility in field, it will not really be corner cases.

3) How do we propose to handle the normal use case of UE being unreachable during revocation?

-

Roozbeh Atarius (Motorola Mobility)

I think you are misreading the call flow. I believe the newly added text to the call flow is for the case when there is an ongoing PDU session and the authentication and authorization fails. To me, you are challenging SA2’s flow which I have different understanding for than yours.

If you believe that the flow is wrong and the UE can locally terminate the session without any involvement with SMF, then you should correct the SA2 flow. I have informed my SA2 colleague bout your concerns and I believe you should do the same.

Although I understand your concern, please do not make a case that a signaling from AMF comes faster to the UE than from SMF since the step is mentioned earlier. Also the error case that a signal may not reach the UE can always exist for any signaling and not only specific network entity.

To make it short, I understand your concerns about the flow and I think your challenge is mainly towards SA2 flow.

All (especially Fei),

I think CT4 should also put their CRs on hold until this is clarified.

-

Chair: just to clarify the latest status of discussion according to the minutes -> have a request from Sung and Tsuyoshi to NOT agree the CR, further Lin indicated that no new work is needed (i.e. CR not needed).

-

RV Anikethan (Samsung): Sorry. I beg to differ here on some aspects (after discussion with my SA2 colleague )

1) First, SA2 has told us that the PDU session has to be released and yes their call flow points to a specific section. But the final decision as to whether it has to be local or an end to end release, in my understanding, is very much in the ambit of CT1’s decision and should be based on the approach that is most efficient and has the least side effects.

2) Second, we have specific scenarios listed where it is definite that waiting for end to end release will have possible side effects. Whereas a local release based on the updated allowed NSSAI has no such disadvantage listed as of now. Is there any disadvantage that we see wrt a local release either on the UE or on the network side?

3) Third, regarding the signalling from SMF coming faster than the one from AMF. Following is the justification. A UE configuration update comes directly from AMF  UE. Whereas a PDU session release in the current use case has the following flow AMF  SMF  AMF  UE. So unless there is an implementation at AMF to not send the UE configuration update until the PDU session is released, it is always the UE configuration update that will first reach the UE.

So our proposal is that we discuss the merits and demerits of both the approaches in CT1 and pick the one that is best.

-

Chairman on 704 695 415

current status for the CRs is that they all will be Postponed.

I suggest some offline work until the next meeting.

-

Roozbeh Atarius (Motorola Mobility)

In my understanding of stage 2, the UE should delete the PDU Session context locally upon reception of NAS MM message (e.g. Registration Accept or Service Accept) containing PDU session status set to PDU SESSION INACTIVE. This is different from Samsung’s opinion that the UE locally deletes the PDU Session status based on the missing S-NSSAI in the Allowed NSSAI. But perhaps there is something that I do not understand.

Anyways, one main point is that the UE can locally delete PDU Session context based on the NAS MM message content (i.e. without a need of NAS SM PDU Session release command).

There can be cases where the SMF can send NAS SM PDU Session release command (with cause ‘slice unavailable’) to the UE before the NAS MM message is sent. E.g., in case of network slice change due to network configuration change (and slice becoming unavailable). Then the AMF can indicate the slice unavailability to the SMF before the AMF performs UE configuration update procedure towards the UE (i.e. sending Configuration Update Command) including the new Allowed NSSAI.

All,

I withdraw my comment that CT4 should be dependent on us and if there is no technical error and no objection, their CR should go forward.

**Decision:** The document was **postponed**.

**C1-200724 Request S-NSSAI pending the NW slice-specific authentication and authorization**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2004 Cat: C (Rel-16)  
  
 Source: Ericsson /kaj*

**Discussion:**

Lin Shu (Huawei), on 724 and 509:

Here are our comments:

1. This has broken SA2 requirement that the UE cannot abtain the services for the pending S-NSSAI;

2. Also, this is not aligned with below SA2 text:

"The UE shall not attempt re-registration with those S-NSSAIs included in the list of Pending S-NSSAIs, regardless of Access Type, until the Network Slice-Specific Authentication and Authorization procedure has been completed."

3. No need to include the pending NSSAI in the requested NSSAI as the NW has already known the pending NSSAI due to the NSSAA is ongoing for pending S-NSSAIs;

We believe the better way is going to another direction as proposed by our CR C1-200509, thanks.

Roozbeh Atarius (Motorola Mobility)

Not a major issue about the content but the writing should be improved. How about starting the paragraph with “If the UE intends to bla bla…”

Andrew Howell (Home Office): What do you mean by ‘intends to’?

Roozbeh Atarius (Motorola Mobility): True perhaps it should not say that either. However the wording can be improved in the CR IMHO. Thanks for the comment

Mahmoud Watfa (Samsung): Our view is aligned with what is proposed in C1-200724 but it requires other updates.

There are different cases to consider:

Case 1: UE is registering over a second access (e.g. UE starts in 3GPP and then also registers over non-3GPP access)

1) UE sends initial registration and gets pending NSSAI.

2) UE attempts registration over non-3GPP. If the UE wants to use the slices that are in the pending NSSAI then it should request them.

a. Otherwise the UE will not be able to get an allowed NSSAI over non-3GPP access, noting that allowed NSSAI is access specific.

What needs to be updated:

• If the UE requests S-NSSAIs that are subject to NSSAA but are currently not in the pending NSSAI, then the AMF has to provide an updated pending NSSAI to the UE in the Reg. Accept that is sent over the second access (i.e. non-3GPP access in this example). This needs to be clarified in the general section

Case 2: UE is registering over the same access (e.g. UE starts in 3GPP access, while NSSAA is ongoing the UE performs another registration procedure)

1) UE sends initial registration and gets pending NSSAI e.g. {A, B}

2) UE may receive a configured NSSAI or may already have one

3) The UE decides to register to other slices (either all new slices {C, D} or partly new {A, B, C})

4) Currently, the UE is allowed to register to new slices at any time and this is covered in bullet i) of 5.5.1.3.2

What needs to be updated:

• The scenarios above need to be captured

• E.g. if the UE requests completely new slices during NSSAA, then the AMF should abort the ongoing NSSAA, and start NSSAA for what is requested if they are subject to NSSAA

• If the UE requests additional slices, then the AMF has to update the pending NSSAI if these additional slices are also subject to NSSAA (similar to case 1 above)

C1-200724 starts in a good direction but should be updated as explained above.

-

Sung Hwan Won (Nokia)

My view is also more aligned with C1-200724 than C1-200509. The UE should be able to request an S-NSSAI in the pending NSSAI and in fact if the UE suddenly does not request an S-NSSAI in the pending NSSAI, the ongoing/imminent NSSAA becomes useless.

However, I believe that the existing text (copied below) should be modified because, based on your current proposal, it is not clear how the requested NSSAI is created e.g. if the UE has no allowed NSSAI for the current PLMN, no configured NSSAI for the current PLMN, neither active PDU session(s) nor PDN connection(s) to transfer associated with an S-NSSAI applicable in the current PLMN, neither active PDU session(s) nor PDN connection(s) to transfer associated with mapped S-NSSAI(s), no default configured NSSAI, and a pending NSSAI: In one places it says “the UE shall include neither Requested NSSAI IE nor Requested mapped NSSAI IE in the REGISTRATION REQUEST message” and the paragraph you added says “the UE shall include the S-NSSAI(s) in the pending NSSAI list, if any, in the Requested NSSAI IE of the REGISTRATION REQUEST message.”

If the UE has allowed NSSAI or configured NSSAI for the current PLMN, the Requested NSSAI IE shall include either:

a) the configured NSSAI for the current PLMN, or a subset thereof as described below, if the UE has no allowed NSSAI for the current PLMN;

b) the allowed NSSAI for the current PLMN, or a subset thereof as described below, if the UE has an allowed NSSAI for the current PLMN; or

c) the allowed NSSAI for the current PLMN, or a subset thereof as described below, plus one or more S-NSSAIs from the configured NSSAI for which no corresponding S-NSSAI is present in the allowed NSSAI and those are neither in the rejected NSSAI for the current PLMN nor in the rejected NSSAI for the current registration area.

and in addition the Requested NSSAI IE shall include S-NSSAI(s) applicable in the current PLMN, and if available the associated mapped S-NSSAI(s) for:

a) each PDN connection that is established in S1 mode when the UE is operating in the single-registration mode and the UE is performing an inter-system change from S1 mode to N1 mode; or

b) each active PDU session.

The Requested mapped NSSAI IE shall include mapped S-NSSAI(s), if available, when the UE does not have S-NSSAI(s) applicable in the current PLMN for:

a) each PDN connection established in S1 mode when the UE is operating in the single-registration mode and the UE is performing an inter-system change from S1 mode to N1 mode to a visited PLMN; or

b) each active PDU session when the UE is performing mobility from N1 mode to N1 mode to a visited PLMN.

NOTE 5: The Requested NSSAI IE is used instead of Requested mapped NSSAI IE in REGISTRATION REQUEST message when the UE enters (E)HPLMN.

For a REGISTRATION REQUEST message with a 5GS registration type IE indicating "mobility registration updating", if the UE is in NB-N1 mode and the procedure is initiated for all cases except case a), c), e), i), s), t), w), and x), the REGISTRATION REQUEST message shall not include the Requested NSSAI IE.

If the UE has:

- no allowed NSSAI for the current PLMN;

- no (BTW, this needs to be fixed?) configured NSSAI for the current PLMN;

- neither active PDU session(s) nor PDN connection(s) to transfer associated with an S-NSSAI applicable in the current PLMN; and

- neither active PDU session(s) nor PDN connection(s) to transfer associated with mapped S-NSSAI(s);

and has a default configured NSSAI, then the UE shall:

a) include the S-NSSAI(s) in the Requested NSSAI IE of the REGISTRATION REQUEST message using the default configured NSSAI; and

b) include the Network slicing indication IE with the Default configured NSSAI indication bit set to "Requested NSSAI created from default configured NSSAI" in the REGISTRATION REQUEST message.

If the UE has:

- no allowed NSSAI for the current PLMN;

- no configured NSSAI for the current PLMN;

- neither active PDU session(s) nor PDN connection(s) to transfer associated with an S-NSSAI applicable in the current PLMN

- neither active PDU session(s) nor PDN connection(s) to transfer associated with mapped S-NSSAI(s); and

- no default configured NSSAI

the UE shall include neither Requested NSSAI IE nor Requested mapped NSSAI IE in the REGISTRATION REQUEST message.

The subset of configured NSSAI provided in the requested NSSAI consists of one or more S-NSSAIs in the configured NSSAI applicable to this PLMN, if the S-NSSAI is neither in the rejected NSSAIs for the current PLMN nor in the rejected NSSAI for the current registration area.

The subset of allowed NSSAI provided in the requested NSSAI consists of one or more S-NSSAIs in the allowed NSSAI for this PLMN.

NOTE 6: How the UE selects the subset of configured NSSAI or allowed NSSAI to be provided in the requested NSSAI is implementation specific. The UE can take preferences indicated by the upper layers (e.g. policies, applications) into account.

NOTE 7: The number of S-NSSAI(s) included in the requested NSSAI cannot exceed eight.

--

Lin Shu (Huawei)

Based on what Mahmoud provided, it seems we need a disc paper for this as the scenarios are not so easy

Also it seems below SA2 requirements cannot be implemented by CT1 if going to the direction of 0724:

“The UE shall not attempt re-registration with those S-NSSAIs included in the list of Pending S-NSSAIs, regardless of Access Type, until the Network Slice-Specific Authentication and Authorization procedure has been completed.”

My understanding of above SA2 text is that once the NSSAA was performing on an access, then the UE cannot initiate an new registration reuqest over another access with including the S-NSSAIs in the R-NSSAI, which were already in the P-NSSAI.

After thinking this more, I could be fine to go the direction of 0724 but I see a key point is how to make sure the latest Pending NSSAI is synchronized between the UE and the NW for both the 3GPP access and non-3GPP access in all cases.

Mahmoud has pointed out two cases for which I agree to cover them, Also I think we need to cover more, e.g.:

(1) In Mahmoud’s case 1, assuming the UE got the P-NSSAI via 3GPP access is {A, B, C}, assuming the UE R-NSSAI in non-3GPP is {B, C, D}.

(2) D needs for NSSAA so the ongoing NSSAA is for {A,B,C,D} but in the accept message sent to the UE over non-3GPP access, the AMF can only include P-NSSAI as {B, C, D} (Note that if R-NSSAI is included and allowed, then P-NSSAI shall only come from R-NSSAI).

(3) As P-NSSAI is access agnostic, so both the UE and the AMF will just store P-NSSAI {B, C, D} in its context, but actually A is also ongoing NSSAA, i.e. A is not in the updated P-NSSAI stored at both the UE and the AMF. So problem: not sure the AMF will still monitor the NSSAA for A.

(4) After all sucessful complettion of NSSAA for {A,B,C,D}, the AMF will include an A-NSSAI {B,C} to the UE over 3GPP access and also include an A-NSSAI {B, C, D} to the UE over non-3GPP access. (Note that as per current text, only S-NSSAIs in the P-NSSAI will be moved to A/R NSSAI after NSSAA).

(5) Problem: A is missing for 3GPP access, which is neither in A-NSSAI, nor in R-NSSAI but the UE has requested it in 3GPP access and NSSAA is success for it at the NW side.

More scenario may need to consider but I have to say it is complicated.

-

Kaj Johansson (Ericsson)

Thank you all for the comments and valuable input.

My understanding from your feedback is that the proposal in C1-200724 is the way forward if necessary updates as indicated below is covered with a reasonable complexity.

As the case list below is somewhat large I need time to digest all the information. I will give it a try and see if I can present a new revision later this week. If not possible then I’m ok to postpone to the next meeting.

-

Kaj Johansson (Ericsson)

I indicated in the phone conference two days ago that I might have to postpone this CR.

Now it is a fact, it is postponed and will be seen again in April, thank you.

**Decision:** The document was **postponed**.

#### 16.2.7 Vertical\_LAN

##### 16.2.7.1 Stand-alone NPN

**C1-200291 CAG information list storage**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1879 Cat: F (Rel-16)  
  
 Source: Ericsson, NTT Docomo, MediaTek, Nokia, Nokia Shanghai Bell / Ivo*

**Discussion:**

Haorui Yang (OPPO): In principle I agree with this CR.

For “- CAG information list, if the UE supports CAG”in Annex C.1, if UE disables and re-enable CAG, the CAG information list will be deleted.

But actually this CAG information list can still be used in this case.

So the condition here seems unnecessary.

Vishnu Preman (Huawei): We are fine with this CR. However , we think that we need to add normative text about the storage of CAG information list to 4.14.3 as below

The CAG information list stored in the UE is kept when the UE enters 5GMM-DEREGISTERED state. The CAG information list, if available, shall be stored in the non-volatile memory in the ME as specified in annex C. This CAG information list is deleted when the USIM is changed or removed.

Ivo Sedlacek (Ericsson)

To Vishnu:

- regarding:

The CAG information list stored in the UE is kept when the UE enters 5GMM-DEREGISTERED state. The CAG information list, if available, shall be stored in the non-volatile memory in the ME as specified in annex C. This CAG information list is deleted when the USIM is changed or removed.

I agree that such information is useful.

However, please note that the preceding sentence and subsequent sentence are informative.

Is there any reason why to make the new sentence normative? The normative requirements would anyway be in the annex C, wouldn't they?

- if you are ok with an informative sentence, I would be happy to add the text below and Huawei, HiSilicon as co-signer.

To Rae:

- intention of the condition "- CAG information list, if the UE supports CAG" is to avoid mandating UEs NOT supporting CAG to be able to store the CAG information list.

- regarding the use case:

For “- CAG information list, if the UE supports CAG”in Annex C.1, if UE disables and re-enable CAG, the CAG information list will be deleted.

But actually this CAG information list can still be used in this case.

If the UE disables CAG and then enables CAG, then there is a danger that the CAG information list was updated in the network while the UE had CAG disabled.

If so, the UE would hold obsolete CAG information list as the network would not be able to send the updated CAG information list while the UE had CAG disabled.

If we want to enable such case, we would likely need more complex handling and I suggest to leave a solution for this case to next meetings.

Thus, I have a preference for keeping the condition above.

However, if you insist on removing the condition above and there are no objections from others, I can do that too.

-

Vishnu Preman (Huawei): Thanks for the feedback. we proposed adding normative text for consistency. If you see our current spec, we have similar normative texts as below.

If available, the configured NSSAI(s) shall be stored in a non-volatile memory in the ME as specified in annex C.

However, we are fine either way and thanks for adding us as co-signing companies.

-

Ivo Sedlacek (Ericsson)

Draft revision can be found at [1].

Main changes:

- additional cosigners added

- "The CAG information list, if available, is stored in the non-volatile memory in the ME as specified in annex C. " added in 4.14.3

Regarding Rae's comments - I have not done any updates yet - I waiting for a response from Rae.

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaca-was-C1-200291-v01.zip

--

Haorui Yang (OPPO)

If the list is deleted just because the UE toggles between CAG enabled and not CAG enabled (and back to CAG enabled), then UE will have no CAG list when CAG enabled is turned back ON. That would be worse than if the list is not up to date.

-

Ivo Sedlacek (Ericsson)

given that Rea has a strong view and none else indicated any other view, I have removed the condition.

Draft revision can be found at [2].

Main changes:

- the condition ", if the UE supports CAG" is removed.

Any comments?

--

Haorui Yang (OPPO)

Thanks for taking my comments into account.

OPPO would like to co-sign this CR.

--

Vishnu Preman (Huawei)

We are fine with this version. A minor comment to add "" around CAG Information list as shown in red below.

The "CAG information list" stored in the UE is kept when the UE enters 5GMM-DEREGISTERED state. The "CAG information list", if available, is stored in the non-volatile memory in the ME as specified in annex C. This "CAG information list" is deleted when the USIM is changed or removed.

Also in Annex C.

The following 5GMM parameters shall be stored in a non-volatile memory in the ME together with the SUPI from the USIM:

- configured NSSAI(s);

- NSSAI inclusion mode(s);

- MPS indicator;

- MCS indicator;

- operator-defined access category definitions;

- network-assigned UE radio capability IDs; and

- "CAG information list".

The "CAG information list" can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME; else the UE shall delete the "CAG information list".

Lena Chaponnière (Qualcomm): I am not ok with removing the condition “if the UE supports CAG”. The UE cannot be mandated to store information for a feature which the UE does not support.

Haorui Yang (OPPO): @Lena, I agree with what you said.

But I think the network will not configure the CAG info list to UE if UE does not support CAG.

Additionally, if UE does not support CAG, UE will not understand this parameter, so naturally will not store this parameter?

-

Lena Chaponnière (Qualcomm)

Normally the network should not send CAG Info to a non-supporting UE. But if you keep a statement just saying the CAG info stored at the without any condition on UE support for the feature, then effectively all Rel-16 UEs are require to support the CAG info and store it. RAN5 could then proceed to define a test on storage of CAG info at the UE without any dependency on UE capability, which would not be right. So the requirement on the UE must be condition to UE support for CAG.

-

Haorui Yang (OPPO)

I realize that the netwok-assigned radio capability ID, i.e. the bullet just above the new bullet in this CR, has no condition on UE supports RACS.

Is there some special reason or should also align with the CAG storage?

-

Lena Chaponnière (Qualcomm)

There is no special reason, the condition on UE support should also be there for the network-assigned radio capability ID. I can bring a Cat F CR under the RACS WI to fix this at the April meeting.

-

Ivo Sedlacek (Ericsson)

thank you all for the discussion.

the updated draft revision can be found at [3].

The main change in comparison to [2] is:

- adding “if the UE supports CAG” in C.1, as requested by Lena

- CAG information list -> "CAG information list", as requested by Vishnu

Any comments?

-

Chen-Ho Chin (OPPO)

1st off, sorry for this late email after so much have been discussed.

I echo what Rae/Haorui indicated about living with having the condition "if the UE supports CAG", but I think I need to clarify better why we prefer not to have that condition.

We were not thinking about RAN5 doing specific test cases and NO, Lena, we are not wishing to mandate a UE not supporting CAG to stor the CAG list if it does not wish to.

What we were trying to capture is the case a UE supporting CAG, stores that information (as per the condition now). Then the UE (by user intervention or other configuration means change to a normal UE i.e a UE not supporting CAG. Then what do we do with that CAG information? We clear that out because the condition "if the UE supports CAG" is no longer applicable?

Then the UE is "toggled " back to UE supports CAG and all that CAG information is gone.

Now UE really has a problem getting onto available CAG cells as there is no longer the PLMN + CAG information.

For avoidance of doubt, we can live with the condition "if the UE supports CAG" and even continue to support the CR with that condition – so, Ivo, please add OPPO as co-source (we have worked on this topic in two WGs and for longer than most folks).

For avoidance of doubt, we are not mandating a UE not supporting CAG to store the CAG Information (in the non-volatile memory) and certainly there is not the expectation that RAN5 will test such storage with or without that condition. In fact I do not believe there is a way the NW can query what the stored CAG information is, so how could a RAN5 test case ascertain 100% that the UE did store the complete or some or part of or just a few of a full CAG list. I recall test cases which test if the UE on a power cycle will after the subsequent power on, get onto some other cell/PLMN/CSG cell assuming the UE has keep some memory of cell/PLMN/CSG cell.

But how do you test if some UE not with a satisfying condition, stores the some list? By the argument that a UE not supporting CAG does not store this, there is not pragmatic way to check if a UE that does not support CAG actually stores the list as such UEs (not supporting CAG) will not power up and go for CAG cells.

Anyhow, let's not spend more time on the RAN5 cases. What RAN5 does on this cannot be a guidance to our needs.

We think our request to remove the condition "if the UE supports CAG" have not been properly understood. We believe without this "if the UE supports CAG" condition, will help cases where UE goes from support to no-support back to support. But if majority in CT1 do not want to go with our proposal, we can live with that.

Let's wait a few years and see what happens.

**Decision:** The document was **revised to C1-200932**.

**C1-200932 CAG information list storage**

*Type: CR For: -  
 24.501 v16.3.0 CR-1879 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson, NTT Docomo, MediaTek, Nokia, Nokia Shanghai Bell / Ivo*

(Replaces C1-200291)

**Decision:** The document was **agreed**.

**C1-200333 Removal of Editor’s note on the use of the NOTIFICATION message in SNPNs**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1882 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

**Decision:** The document was **agreed**.

**C1-200334 Updating length of NID**

*Type: CR For: Agreement  
 24.502 v16.2.0 CR-0115 Cat: C (Rel-16)  
  
 Source: Qualcomm Incorporated, Ericsson, Nokia, Nokia Shanghai Bell / Lena*

**Decision:** The document was **agreed**.

**C1-200464 Clarification of forbidden TAI lists for SNPN**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1923 Cat: F (Rel-16)  
  
 Source: vivo*

**Discussion:**

Ivo Sedlacek (Ericsson): - handling of 5GMM cause #12 should modify "5GS forbidden tracking areas for regional provision of service" (rather than "5GS forbidden tracking areas for roaming")

Yanchao Kang (vivo)

A draft revision is now available at: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/revision%20of%20C1-200464\_C1-20xxxx\_Vertical%20LAN\_Clarification%20of%20forbidden%20%20%20%20.docx

Any further comments?

-

Ivo Sedlacek (Ericsson)

the draft revision looks OK and Ericsson would like to cosign.

-

Vishnu Preman (Huawei)

Thank you for taking care of this issue. It looks good.

One comment: The agreed Tdoc number in the cover sheet shall be C1-196723 instead of C1-196221.

As this CR is fixing the implementation error of our CR , we would also like to co-sign CR, Can you please add Huawei, HiSilicon also as co-signing companies?

-

Yanchao Kang (vivo)

I will add Huawei, HiSilicon as co-source, and fixed the cover page as you suggested.

I will add Ericsson as co-signer.

-

Marko Niemi (Mediatek)

The CR is ok for me too.

Just wondering whether for spec and implementation clarity lists should be renamed e.g. following:

“5GS forbidden tracking areas for roaming in SNPN” and “5GS forbidden tracking areas for regional provision of service in SNPN”

If you support I’m volunteer to bring CR for the next meeting.

-

Yanchao Kang (vivo)

I think the rename of list would help the clarity for implementation.

Considering these two list are also used in other procedures, such as registration procedure, service request procedure, and this paper is only for deregistration procedure, so I prefer you to bring CR for the next meeting

**Decision:** The document was **revised to C1-200834**.

**C1-200834 Clarification of forbidden TAI lists for SNPN**

*Type: CR For: -  
 24.501 v16.3.0 CR-1923 rev 1 Cat: F (Rel-16)  
  
 Source: vivo*

(Replaces C1-200464)

**Decision:** The document was **agreed**.

**C1-200466 Correction to Limited service state for SNPN**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0492 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

**Discussion:**

Lena Chaponnière (Qualcomm): fine with the intent of the CR, but “and the UE does not have any valid entry in the "list of subscriber data”” in “For the item b, if the MS operates in SNPN access mode and the UE does not have any valid entry in the "list of subscriber data"” should be deleted since it is already covered by “For the item b”.

Vishnu Preman (Huawei)

Thank you for your comments. Please find the draft version of the revised document in the below link taking care of the comment.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200abc\_was\_200466\_correction\_to\_limited\_service\_SNPN.zip

Please let me know if you have further comments.

Lena Chaponnière (Qualcomm): I am fine with this revision.

**Decision:** The document was **revised to C1-200943**.

**C1-200943 Correction to Limited service state for SNPN**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0492 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

(Replaces C1-200466)

**Decision:** The document was **agreed**.

**C1-200469 Clarify that access to RLOS is not supported in SNPN**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0494 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

**Discussion:**

Ivo Sedlacek (Ericsson): the CR is misleading. Access to RLOS is not supported in N1 mode, regardless whether the MS is operating in SNPN access mode or not. It would be more appropriate to state "An MS operating in N1 mode never attempts to to access RLOS."

Vishnu Preman (Huawei)

I agree that your proposal is a good to have information, but I feel that it will be an out of place to add this statement to that existing paragraph. The existing paragraph, if you read gives impression that in SNPN mode, the UE supports limited service and it allows access to RLOS. This is what we are trying to clarify here. Please read the SNPN related text in green continuously. So the red is added to clarify this.

If the MS is unable to find a suitable cell to camp on, or the SIM is not inserted, or there is no valid entry in "list of subscriber data" in case the MS is operating in SNPN access mode, or if it receives certain responses to an LR request (e.g., "illegal MS"), it attempts to camp on a cell irrespective of the PLMN identity or the SNPN identity, and enters a "limited service" state in which it can only attempt to make emergency calls or to access RLOS. An MS operating in NB-S1 mode, never attempts to make emergency calls or to access RLOS. An MS operating in SNPN access mode never attempts to make emergency calls or to access RLOS.

If you would like to have the information An MS operating in N1 mode never attempts to to access RLOS , I can add it as a Note below. Will that be OK?

-

Ivo Sedlacek (Ericsson)

RLOS is NOT supported in N1 mode. This is unrelated to whether the UE is in SNPN access mode or not.

Why to document restriction for a UE in N1 mode operating SNPN access mode in a regular statement while documenting restriction for a UE in N1 mode NOT operating in SNPN access mode in a NOTE?

The paragraph already contains a statement on NB-S1 mode and RLOS which is very similar to what I am proposing below.

If the MS is unable to find a suitable cell to camp on, or the SIM is not inserted, or there is no valid entry in "list of subscriber data" in case the MS is operating in SNPN access mode, or if it receives certain responses to an LR request (e.g., "illegal MS"), it attempts to camp on a cell irrespective of the PLMN identity or the SNPN identity, and enters a "limited service" state in which it can only attempt to make emergency calls or to access RLOS. An MS operating in NB-S1 mode, never attempts to make emergency calls or to access RLOS. An MS operating in SNPN access mode never attempts to make emergency calls. An MS operating in N1 mode never attempts to access RLOS.

-

Vishnu Preman (Huawei)

Thanks for further clarification.

With that, I am fine to add the statement as proposed by you. Please find the draft below.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200abc\_was\_200469\_Vertical\_LAN\_SNPN\_Clarification\_to\_access\_RLOS.zip

Please let me know if you have further comments.

-

Ivo Sedlacek (Ericsson)

Looks OK and Ericsson would like to cosign.

One minor issue - can you please consider adding "PARLOS" into "Work item code:" on cover page?

Sung Hwan Won (Nokia) The WIC should be \*changed\* to PARLOS.

**Decision:** The document was **revised to C1-200942**.

**C1-200942 Clarify that access to RLOS is not supported in SNPN**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0494 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

(Replaces C1-200469)

**Decision:** The document was **agreed**.

**C1-200470 Clarification of the rejected NSSAI cause value**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1926 Cat: F (Rel-16)  
  
 Source: vivo*

**Decision:** The document was **agreed**.

**C1-200504 Correction on 5GMM cause #74/#75 for no touching non-3GPP access**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1935 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Discussion:**

Ivo Sedlacek (Ericsson):

- the removed text is applicable:

- when the UE accesses an SNPN via PLMN and receives #74. If #74 is in a integrity protected 5GMM message, the UE should perform the actions both for the 3GPP access and the non-3GPP access (i.e. access to an SNPN via PLMN); or

- when the UE accesses an SNPN via 3GPP access and receives #74. If #74 is in a integrity protected 5GMM message, the UE should perform the actions both for the 3GPP access and the non-3GPP access (i.e. access to an SNPN via PLMN).

Lin Shu (Huawei):

If you search TS 24.501, actually below text was just copied from other cause, e.g. #11. Then the text “over the other access to the same SNPN” is rather confusing. As in other places, “other access” will refer non-3GPP access type (e.g. WiFi) then the people will be easily confused that the same text for SNPN will also refer non-3GPP access type (e.g. WiFi).

" If the message has been successfully integrity checked by the NAS and the UE also supports the registration procedure over the other access to the same SNPN, the UE shall in addition handle 5GMM parameters and 5GMM state for this access, as described for this 5GMM cause value."”

The key point is: in both access SNPN direclty or access SNPN via PLMN, at the UE side, it is only 3GPP access type. We used the term “access type”/”3GPP access”/”non-3GPP access”/”other access” very often in 5G since R15, so now just due to SNPN, we created a lot of confusing on these terms, we need to stop to create more such confusing.

Finally, another key point is: if a UE can already access the SNPN directly, why it has to access the same SNPN via PLMN indrectly? I cannot see such use case actually.

-

Ivo Sedlacek (Ericsson)

from NAS point of view, access to SNPN via PLMN will actually be seen as non-3GPP access, since the NAS message are sent and received via N3IWF and non-3GPP access related NAS handling applies.

thus, I would like to preserve the functionality as in the baseline.

-

Lin Shu (Huawei)

I tend to say you are mixed something here. My CR is not related to the term “non-3GPP access” for SNPN but the term “over the other access to the same SNPN”

It seem you misunderstand the whole CR so let me clarify more as below:

(1) #74/#75 currently can only be received from SNPN, right?

(2) Currently the UE can access to SNPN directly via 3GPP access (e.g. NR) OR indirectly via PLMN.

(3) At the same time for a UE, it needs not to access SNPN directly via 3GPP access (e.g. NR) AND indirectly via PLMN in parallel. I do not see any use case for this and hope you could agree?

(4) Then when receiving #74/#75 from an SNPN, at the UE side, the current access type is always 3GPP access (e.g. NR), either directly or indirectly via PLMN, right?

(5) Then when seeing below existing text we want to remove, what is “other access” in the “over the other access to the same SNPN” refer to? Nothing in my view. So below text is confusing and useless for SNPN. I recalled it just simply copied from other cause value (e.g. #11 for PLMN) by a CR without checking details on this. This is a copy-past error I have to say.

“ If the message has been successfully integrity checked by the NAS and the UE also supports the registration procedure over the other access to the same SNPN, the UE shall in addition handle 5GMM parameters and 5GMM state for this access, as described for this 5GMM cause value.”

Now I hope I have clarified the CR clearer and please check whether you are fine or not. Thanks.

-

Sang Min Park (LG Electronics)

I tend to agree with Lin on this issue.

As Lin pointed out on (3) below, UE cannot access to SNPN directly and via PLMN simultaneously. Even though indirect access utilizes N3IWF (in SNPN side), the access seen from the UE is always 3GPP access. So without the text that Lin proposed to remove, UE will not retry for the same 3GPP access to that SNPN. Actually the text can bring more confusion, so it would be better to remove.

--

Sung Hwan Won (Nokia)

Yes, a UE can. Please see TS 23.501 for the UE capable of simultaneously connecting to an SNPN and a PLMN (annex D.4; the terminology introduced by Huawei!). I don’t understand why this issue is brought up again and again. It is clear that non-3GPP access refers to access to SNPN services via a PLMN in the context of SNPN.

I disagree with changes that are currently proposed by the CR. If you want to revise the CR, then you can add a note similar to the existing ones (examples below) instead of removing the existing text.

5.3.20.3 Requirements for UE in an SNPN

NOTE 1: The term "non-3GPP access" used in the counter for "the entry for the current SNPN considered invalid for 3GPP access" events and the counter for "the entry for the current SNPN considered invalid for non-3GPP access" events, is used to express access to SNPN services via a PLMN.

5.4.1.2.3.1 General

NOTE 2: The term "non-3GPP access" used in the counter for "the entry for the current SNPN considered invalid for 3GPP access" events, is used to express access to SNPN services via a PLMN.

-

Ivo Sedlacek (Ericsson)

I share Sung's concerns.

You can also check my explanation in the mail threat for C1-200505.

-

Lin Shu (Huawei)

@Sung You misunderstood my case

My case is: A UE needs not to access the same SNPN directly via 3GPP access (e.g. NR) AND indirectly via PLMN in parallel

TS 23.501 annex D.4 is the case: The UE is simultaneously connecting to an SNPN and a PLMN.

My case does not touching PLMN access, but touch only SNPN access.

Please check again, thanks.

@Ivo

Ivo,

You still misunderstood my intention of the CR

Again, please check my reply to Sung, my case is totally different from TS 23.501 Annex D.4.

--

Sung Hwan Won (Nokia): I think I did not misunderstood your case.

A UE capable of simultaneously connecting to an SNPN and a PLMN can be registered to both an SNPN and a PLMN. Using IP connectivity obtained via the PLMN, it can reach N3IWF of SNPN. Then, the UE accesses the same SNPN via 3GPP access and via N3IWF.

And that is the key advantage of a UE capable of simultaneously connecting to an SNPN and a PLMN because in this case the UE can transfer a PDU session from 3GPP access to non-3GPP access (which actually is via PLMN) in the edge of SNPN coverage achieving session continuity.

-

Lin Shu (Huawei)

Good you did not misunderstood my case

“Using IP connectivity obtained via the PLMN, it can reach N3IWF of SNPN” does not mean it has to reach SNPN via N3IWF when it has directly accessing SNPN via 3GPP access.

About “the key advantage of a UE capable of simultaneously connecting to an SNPN and a PLMN” you mentioned below, I tend to agree it is the reason why simultaneously connecting to an SNPN was supported. But I do not think it enforces the UE has to access the same SNPN via 3GPP access and via N3IWF at the same time. Once the UE was already simultaneously connecting to an SNPN and a PLMN, the service continuity can be achieved, e.g. when the SNPN NG-RAN coverage is lost, the UE can initiate the registration to SNPN via PLMN and then transfer the PDU session.

Otherwise, the UE shall keep three communication channel to the CN at the same time which will make the UE battery drain soon.

However, I tend to admit that keep three communication is not prevented by 3GPP, so I would live to keep that existing text but as you suggested, a NOTE is required to make it clearer, e.g.

If the message has been successfully integrity checked by the NAS and the UE also supports the registration procedure over the other access to the same SNPN, the UE shall in addition handle 5GMM parameters and 5GMM state for this access, as described for this 5GMM cause value.

NOTE 5: When 5GMM cause #74 is received over 3GPP access, the term "other access" in the "the UE also supports the registration procedure over the other access to the same SNPN" is used to express access to SNPN services via a PLMN.

The complete revision please see below and I have totally reworded the cover page, please see whether this is fine for you or not, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx(rev%20of%200504)\_SNPN\_24.501\_No%20non-3GPP%20access%20for%20%2374%2375.docx

-

Ivo Sedlacek (Ericsson)

I am generally OK with https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx(rev%20of%200504)\_SNPN\_24.501\_No%20non-3GPP%20access%20for%20%2374%2375.docx

Ericsson would like to cosign the CR.

One minor comment - the construct the "the seem strange.

NOTE 4: When 5GMM cause #74 is received over 3GPP access, the term "other access" in the "the UE also supports the registration procedure over the other access to the same SNPN" is used to express access to SNPN services via a PLMN.

Can it be please corrected to state e.g.:

NOTE 4: When 5GMM cause #74 is received over 3GPP access, the term "other access" in "the UE also supports the registration procedure over the other access to the same SNPN" is used to express access to SNPN services via a PLMN.

Same in the other new NOTEs.

**Decision:** The document was **revised to C1-200896**.

**C1-200896 Correction on 5GMM cause #74/#75 for no touching non-3GPP access**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1935 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

(Replaces C1-200504)

**Decision:** The document was **agreed**.

**C1-200505 5GMM cause #72 not used in SNPN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1936 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Discussion:**

Lena Chaponnière (Qualcomm): the same change is also covered in C1-200739.

Ivo Sedlacek (Ericsson): 5GMM cause #72 "Non-3GPP access to 5GCN not allowed" can be used to inform the UE that the access to SNPN via PLMN is not possible (while access to SNPN via 3GPP access is possible)

Lin Shu (Huawei)

Below is the definition of #27, so the term “non-3GPP access” in #72 "Non-3GPP access to 5GCN not allowed" refers the non-3GPP access network (e.g. WIFI), not refers “access to SNPN via PLMN”

“Cause #72 – Non-3GPP access to 5GCN not allowed

This 5GMM cause is sent to the UE if it requests accessing 5GCN over non-3GPP access in a PLMN, where the UE by subscription, is not allowed to access 5GCN over non-3GPP access.”

If you want to cover the UE is not allowed to access SNPN via PLMN, then a new cause value is needed for this.

I do not want to see so many confusing created on the term “non-3GPP access” due to SNPN. I know you will say we have already added some NOTE on this term used for SNPN, but I have to say this is no a good way as you have to repeat such NOTE in all places whereever such term is used for SNPN.

Note #72 was already used since R15 for non-3GPP access network (e.g. WIFI), now for accessing SNPN via PLMN, if the same cause value is reused, then it will create confusing, e.g. in below cases:

(1) The UE supports dual connectivity to both PLMN and SNPN.

(2) The UE is trying to access the PLMN 5GCN via non-3GPP access network (e.g. WIFI) and also to access SNPN 5GCN via PLMN at the same time.

(3) It could happen that PLMN 5GCN and SNPN 5GCN reject the UE request with same #72: PLMN 5GCN reject with #72 due to access WIFI is not allowed, SNPN 5GCN reject with #72 due to access via PLMN is not allowed.

(4) Then how does the UE could work accordingly? Note that SNPN 5GCN reject with #72 is received over 3GPP access, then as per specified below Yellow text, the UE will consider it as an abnormal case.

“#72 (Non-3GPP access to 5GCN not allowed).

If received over 3GPP access the cause shall be considered as an abnormal case and the behaviour of the UE for this case is specified in subclause 5.5.1.2.7.”

to Lena:

I tend to say it is not the case that “the same change is also covered in C1-200739”.

Actually C1-200739 is going to a totally opposite direction than my CR. So it is not the case that the change of my CR was covered by C1-200739. I will provide my comments on 200739 in a separate email.

Note that Ivo has created another email thread on this CR and I have provided my detail clarification in that email, please check, thanks.

-

Ivo Sedlacek (Ericsson)

access to SNPN via PLMN is seen as non-3GPP access since NWu is used and NAS handling for non-3GPP access applies.

Thus, IMO, #72 can be used when the UE attempts to access SNPN via PLMN.

-

Lin Shu (Huawei)

I am not against the SNPN 5GCN to reject the UE request due to accessing SNPN via PLMN is not allowed.

My concern is to re-use the existing #72 for this case as it will create some problems as below:

(1) Even accessing SNPN via PLMN will be treated by the SNPN 5GCN as accessing via "Untrusted non-3GPP access", but at the UE side, it still uses 3GPP access NG-RAN. So at the UE side, it will receive the #72 via NG-RAN and as per current handling at the UE side, it will be considered as an abnormal case.

(2) This is not a future proof way. Even R16 does not support accessing SNPN directly via non-3GPP access (e.g. WiFi), but it may support in R17, right?

(3) Based on (2), then if it was supported in R17, and the SNPN wants to reject the UE due to accessing SNPN directly via non-3GPP access (e.g. WiFi) is not allowed, then to use which cause value?

(4) If now in R16, #72 was used for accessing SNPN via PLMN, it cannot be used in R17 for accessing SNPN directly via non-3GPP access (e.g. WiFi) as it could happen that: a UE is allowed to access SNPN via PLMN, but it still cannot accessing SNPN directly via non-3GPP access (e.g. WiFi)

Hence, to make the UE handling simpler and future proof, we need a new cause value for accessing SNPN via PLMN is not allowed in R16, while reserve #72 for future release in which accessing SNPN directly via non-3GPP access (e.g. WiFi) is not allowed.

--

My concern is to re-use the existing #72 for this case as it will create some problems as below:

(1) Even accessing SNPN via PLMN will be treated by the SNPN 5GCN as accessing via "Untrusted non-3GPP access", but at the UE side, it still uses 3GPP access NG-RAN. So at the UE side, it will receive the #72 via NG-RAN and as per current handling at the UE side, it will be considered as an abnormal case.

(2) This is not a future proof way. Even R16 does not support accessing SNPN directly via non-3GPP access (e.g. WiFi), but it may support in R17, right?

(3) Based on (2), then if it was supported in R17, and the SNPN wants to reject the UE due to accessing SNPN directly via non-3GPP access (e.g. WiFi) is not allowed, then to use which cause value?

(4) If now in R16, #72 was used for accessing SNPN via PLMN, it cannot be used in R17 for accessing SNPN directly via non-3GPP access (e.g. WiFi) as it could happen that: a UE is allowed to access SNPN via PLMN, but it still cannot accessing SNPN directly via non-3GPP access (e.g. WiFi)

Hence, to make the UE handling simpler and future proof, we need a new cause value for accessing SNPN via PLMN is not allowed in R16, while reserve #72 for future release in which accessing SNPN directly via non-3GPP access (e.g. WiFi) is not allowed.

--

Sung Hwan Won (Nokia): You are completely mixing up inner layer and outer layer.

From NG-RAN in the PLMN perspective, the N1 NAS message is not even coming from CP, but UP. So why does the UE considers it as an abnormal case? Does the UE screen UP data?

So from an SNPN point of view, if it wants to block UE’s access to SNPN service via PLMN only, which cause value should be used?

I do not understand your argument that if #72 is used in Rel-16, it cannot be used in the future for genuine non-3GPP access. Why? Does the NAS layer need to care how the UE accesses N3IWF?

--

Lin Shu (Huawei)

Please see my reply inline below.

>>From NG-RAN in the PLMN perspective, the N1 NAS message is not even coming from CP, but UP. So why does the UE considers it as an abnormal case? Does the UE screen UP data?

[Lin] For accessing SNPN via PLMN, I know it comes from UP over PLMN, but then you means the UE NAS is totally not involved the communication between the UE and the SNPN 5GCN? If so, I have some basic questions:

(1) Which entity inside the UE will create the REGISTRATION REQEUST message which then transported over PLMN UP to SNPN 5GCN? and

(2) Which entity inside the UE will handle the received NAS accept/reject message from the SNPN 5GCN?

I think the answer to these questions are key points to know how it works between the UE and the SNPN 5GCN when accessing SNPN via PLMN.

So from an SNPN point of view, if it wants to block UE’s access to SNPN service via PLMN only, which cause value should be used?

[Lin] I prefer to use a new cause value for accessing SNPN via PLMN not allowed cases by the SNPN.

I do not understand your argument that if #72 is used in Rel-16, it cannot be used in the future for genuine non-3GPP access. Why? Does the NAS layer need to care how the UE accesses N3IWF?

[Lin] This is related to the answers to above my questions. If UE NAS layer does not care it, who inside the UE will create the NAS request message and handle the received NAS accept/reject message?

-

Sung Hwan Won (Nokia) @Lin

Don’t you first agree that there are two different NAS stacks? One PLMN NAS stack above PLMN RRC stack and SNPN NAS stack above PLMN UP. SNPN NAS messages do not even go through the PLMN NAS stack.

(1) >> Which entity inside the UE will create the REGISTRATION REQEUST message which then transported over PLMN UP to SNPN 5GCN? and

SNPN NAS satck.

(1) Which entity inside the UE will handle the received NAS accept/reject message from the SNPN 5GCN?

SNPN NAS stack

--

Ivo Sedlacek (Ericsson)

when SNPN is accessed via PLMN, the UE sends the NAS message to SNPN's N3IWF via Nwu connection and SNPN's N3IWF sends the NAS message to SNPN's AMF. SNPN's AMF handles the NAS message as received via non-3GPP access. Also, the UE handles the NAS message as sent via non-3GPP access.

It is true that the Nwu connection is established via 3GPP access of the PLMN, but that is much lower in the stack.

So, for both UE and AMF, when SNPN is accessed via PLMN, NAS messages are handled as over non-3GPP access.

(1) Even accessing SNPN via PLMN will be treated by the SNPN 5GCN as accessing via "Untrusted non-3GPP access", but at the UE side, it still uses 3GPP access NG-RAN. So at the UE side, it will receive the #72 via NG-RAN and as per current handling at the UE side, it will be considered as an abnormal case.

[Ivo]

Actually, the UE sends the NAS message to SNPN's N3IWF via Nwu connection (NOT via SNPN's Uu).

So, the UE will also see it as non-3GPP access.

(2) This is not a future proof way. Even R16 does not support accessing SNPN directly via non-3GPP access (e.g. WiFi), but it may support in R17, right?

[Ivo]

From SNPN's point of view, and from point of view of the NAS part of the UE which accesses the SNPN, there is no difference.

The NAS part of the UE which accesses the SNPN will just use the Nwu connection, in both cases.

(3) Based on (2), then if it was supported in R17, and the SNPN wants to reject the UE due to accessing SNPN directly via non-3GPP access (e.g. WiFi) is not allowed, then to use which cause value?

[Ivo]

All what SNPN sees is the NWu connection, in both cases.

if we need to distinguish the access used to established NWu connection in Rel-17, we can add new means to do so.

(4) If now in R16, #72 was used for accessing SNPN via PLMN, it cannot be used in R17 for accessing SNPN directly via non-3GPP access (e.g. WiFi) as it could happen that: a UE is allowed to access SNPN via PLMN, but it still cannot accessing SNPN directly via non-3GPP access (e.g. WiFi)

See previous.

-

Lin Shu (Huawei)

What you answered is meet my expectation, it is SNPN NAS stack. With your answer, then what your previous said is not fully correct: “Does the UE screen UP data?” “Does the NAS layer need to care how the UE accesses N3IWF?”

So we need to clearly say which UE NAS stack, cannot just say “the UE”/”the NAS layer”, otherwise, it will cause confusing.

Then for SNPN NAS at the UE, it will treat the low layer of accessing SNPN via PLMN as non-3GPP access, even the lower layer is actually NG-RAN, that is fine, I do not against this.

Then if in R17, to access SNPN directly via non-3GPP access (e.g. WiFi) is supported, it is also the SNPN NAS at the UE to handle the NAS messages, right?

Then for SNPN NAS, it will also treat lower layer (e.g. WiFi) as non-3GPP access, right?

Then for the R17 SNPN 5GCN, if it want to reject the UE due to accessing SNPN via WiFi is not allowed, which cause value will be used?

if now in R16 #72 was used for accessing SNPN via PLMN, then it cannot be reused for reject due to accessing SNPN via WiFi not allowed, as the same SNPN NAS at the UE will treat both of them as “non-3GPP access”.

Note that it could be a valid case in R17 that: to access the SNPN via WiFI is allowed but accessing via PLMN is not allowed, and vice versa. IMHO, two cause values are required for these two cases.

That is why I said to reuse #72 for accessing SNPN via PLMN is not a future proof way forward.

\*-

Sung Hwan Won (Nokia)

Even in Rel-15, the NAS layer does not care the type of non-3GPP access.

So your proposal is that, IF there is a need to distinguish accessing to SNPN CN via PLMN from accessing to SPNN CN via “e.g. WLAN”:

- Use #72 for accessing SNPN CN via e.g. WLAN; and

- Use #xx for accessing SNPN CN via PLMN.

Why can’t we go the other way around? I.e.:

- Use #xx for accessing SNPN CN via e.g. WLAN; and

- Use #72 for accessing SNPN CN via PLMN.

Both solutions require clarification on #72 anyways. So I see no big issue of futureproof-ness.

--

Lin Shu (Huawei)

In R15, it is only one type of non-3GPP access, i.e. untrusted non-3GPP access

But in R16, the UE will care different type of non-3GPP access, e.g. untrusted, trusted, wireline

Then in R17, I believe the UE needs to care it as well.

To me your below proposal sounds a little strange that the NW use a different cause for ‘real’ non-3GPP access but re-used the #72 for a pseudonymous non-3GPP access. It is also not consistent between PLMN and SNPN.

--

Ivo Sedlacek (Ericsson)

24.501 states:

h) when accessing SNPN services via a PLMN, access to 5GCN of the SNPN is performed using 5GMM procedures for non-3GPP access and 5GMM parameter for non-3GPP access. When accessing PLMN services via a SNPN, access to 5GCN of the PLMN is performed using 5GMM procedures for non-3GPP access and 5GMM parameter for non-3GPP access;

Given the above, usage of #72 is appropriate

-

Sung Hwan Won (Nokia)

For now I don’t foresee any need to distinguish accessing to SNPN CN via PLMN from accessing to SPNN CN via untrusted.

Anyways, introduction of a new 5GMM cause value is not well-justified.

Lin Shu (Huawei)

As now there is no accessing to SPNN CN via untrusted so naturally no need to distinguish.

But you will not know what will happen in R17 and I do not want to see at that time we will face a very tricky backward compatible issues between R16 and R17 on providing such access restriction for accessing SNPN via non-3GPP access.

As there is no CR proposal on the new cause value for accessing SNPN via PLMN in this meeting, I would like to ask to postpone this topic to the next meet to give a chance to discuss new cause value as an alternative. At least we need to evaluate the pros. and cons. on these two alternative and then to make the final decision.

What do you think? Thanks.

**Decision:** The document was **postponed**.

**C1-200506 Correction on term "non-3GPP access" used in SNPN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1937 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Decision:** The document was **agreed**.

**C1-200507 Correction on term "shared network" definition for SNPN**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0497 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Discussion:**

Lena Chaponnière (Qualcomm): “E-UTRA connected to EPC” should be just “E-UTRAN”.

Lin Shu (Huawei): Done in the below revision, please check whether you are fine, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx(rev%20of%200507)\_SNPN\_23.122\_Shared%20network%20for%20SNPN.docx

Lena Chaponnière (Qualcomm): I am fine with this revision.

**Decision:** The document was **revised to C1-200897**.

**C1-200897 Correction on term "shared network" definition for SNPN**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0497 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

(Replaces C1-200507)

**Decision:** The document was **agreed**.

**C1-200551 UE receives CAG information in SNPN access mode**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1946 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Cristina*

**Discussion:**

Lena Chaponnière (Qualcomm): some editorial issues

**Decision:** The document was **revised to C1-200999**.

**C1-200999 UE receives CAG information in SNPN access mode**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1946 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Cristina*

(Replaces C1-200551)

**Decision:** The document was **agreed**.

**C1-200587 Correlation of SNPN entry stored in ME and USIM**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1963 Cat: F (Rel-16)  
  
 Source: Samsung/Kundan*

**Discussion:**

Lena Chaponnière (Qualcomm)/ prefer the alternative in C1-200686 which leaves USIM selection up to UE implementation in Rel-16.

**Decision:** The document was **postponed**.

**C1-200591 Modification of the allowed CAG list**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1965 Cat: F (Rel-16)  
  
 Source: Samsung/Kundan*

**Decision:** The document was **postponed**.

**C1-200599 Handlig of PLMN specific NID**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1969 Cat: F (Rel-16)  
  
 Source: Samsung/Kundan*

**Discussion:**

Lena Chaponnière (Qualcomm): the terminology proposed by this CR is not aligned with that in CT4 spec TS 23.003 which still talks about globally unique SNPN identity or non-globally unique SNPN identity. Also, “PLMN defined unique SNPN identity” is not defined anywhere. Overall we think that the current wording in TS 24.501 is fine and that the CR is not needed.

Ivo Sedlacek (Ericsson):

- not clear what "PLMN defined unique SNPN identity" is. Assuming "PLMN defined unique SNPN identity" contains a NID of the assignment mode 2 as specified in 23.003 subclause 12.7.1, the CR is not necessary since 24.501 baseline defines "globally-unique SNPN identity" as follows:

--------------

Globally-unique SNPN identity: An SNPN identity with an NID whose assignment mode is not set to 1 (see 3GPP TS 23.003 [4]).

--------------

Sung Hwan Won (Nokia)

I support comment from Ivo and Lena.

**Decision:** The document was **postponed**.

**C1-200600 Handling of LADN infotmation when the UE operating in SNPN access mode**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1970 Cat: F (Rel-16)  
  
 Source: SHARP*

**Discussion:**

Sang Min Park (LG Electronics): I have the following comments on C1-200600 “Handling of LADN infotmation when the UE operating in SNPN access mode” from SHARP.

I understand the intent of this CR. However, I’m not sure if SA2 has discussed on whether LADN is applicable to SNPN. As per current specs and agreed CRs in Jan SA2 meeting, I can’t find any stage 2 requirement on this scenario. Moreover, both LADN and NPN are introduced to support (geographically) localized services. So I’m wondering if there’s any use cases that apply both redundant technologies at the same time.

Yudai Kawasaki (SHARP): I agree with you that SA2 has not discussed on whether LADN is applicable to SNPN.

If there are no scenario that LADN and SNPN are applied at same time, I think it should be specified in CT1 spec that the LADN information shall not be provided to the UE if the UE is operating SNPN mode in order to avoid a misunderstanding.What do you think about it?

--

Sang Min Park (LG Electronics): For either cases whether LADN is applicable to SNPN or not, we need clear guidance from the stage 2, since this is not just a protocol issue but more likely to be a high-level requirements issue.

At this moment, we don’t see any clear stage 2 requirement for your CR, so we would like to propose to postpone this CR in this meeting. Rather, it may be good to ask SA2 about the applicability of LADN within SNPN.

-

Sung Hwan Won (Nokia)

I do not understand why LADN should be prohibited in an SNPN. In a factory, machines in a specific area can be configured to be directed to a specific DN. I don’t see any need for having an artificial restriction. Why?

I’m not saying that LADN should be \*prohibited\* in an SNPN. Some operator or third party consumer may have such a requirement of using SNPN and LADN simultaneously. Since the LADN service area is a set of TA, the use case of “machines in a factory” may not fit into this area granularity. There was some effort to enhance LADN (e.g. cell level LADN area)in R17, but this is not yet specified in stage 2 (WI FLADN is out of the prioritized list), so still the granularity is not so fitting to the LADN within SNPN case.

All this use case and the architectural requirement should be analyzed and defined in SA2 first. Current stage 2 clearly defines LADN as “a service provided by the serving PLMN”. So whether this can be extended to SNPN also should be discussed and specified in the stage 2.

As I said, I’m okay to ask SA2 on this aspect, but not okay to define some functionality without stage 2 analysis and requirements

Sung Hwan Won (Nokia) : Many factories are huge and factories are not the only example. There are many use cases such as mining… So I disagree with your argument on area granularity.

-

Yudai Kawasaki (SHARP)

I have a question.

Do you think we need to ask SA2 whether LADN is applicable to SNPN or not?

In my understanding, SA2 does not specify the relation between LADN and SNPN.

So I understood that LADN can be used even if the UE selects SNPN.

-

Sang Min Park (LG Electronics)

Sung, the argument on the area granularity was of course my personal view. It should be decided by SA2. The thing is that SA2 has never discussed on this aspect. So that’s why I suggested to ask SA2 on this.

For Yudai’s question, in clause 5.6.5 of TS 23.501:

5.6.5 Support for Local Area Data Network

The access to a DN via a PDU Session for a LADN is only available in a specific LADN service area. A LADN service area is a set of Tracking Areas. LADN is a service provided by the serving PLMN. It includes:

- LADN service applies only to 3GPP accesses and does not apply in Home Routed case.

- The usage of LADN DNN requires an explicit subscription to this DNN or subscription to a wildcard DNN.

- Whether a DNN corresponds to a LADN service is an attribute of a DNN and is per PLMN.

Stage 2 is clearly saying that LADN is provided by the \*serving PLMN\*, not mentioning any SNPN applicability. This is stage 2 area and CT1 cannot assume that “LADN is applicable in SNPN since stage 2 didn’t clearly prohibit it”.

-

Sung Hwan Won (Nokia)

OK, I request for you to work on the LS.

Sang Min Park (LG Electronics)

Please find the attached draft LS to SA2. I simply include one question on whether an SNPN can provide LADN service as well. You can find the draft here: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft\_C1-200xxx\_LS\_LADN\_in\_SNPN.doc

Sung Hwan Won (Nokia)

The LS looks good.

Sang Min Park (LG Electronics)

I just checked related guidance in the general exploder. So after I get the Tdoc number for this LS, I’ll move the discussion in the general reflector.

Yudai Kawasaki (SHARP)

Thank you for creating the LS about this topic.

I'm fine with your draft.

I would like to postpone C1-200600 since we need to wait for a response from SA2 regarding the LS which is created by SangMin.

**Decision:** The document was **postponed**.

**C1-200681 Update SNPN key differences**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1985 Cat: F (Rel-16)  
  
 Source: Intel / Thomas*

**Discussion:**

Lena Chaponnière (Qualcomm), editorial comments:

- “is not supported in this release” should be “is not specified in this release”.

- “and” should be added at the end of the second to last bullet

Vishnu Preman (Huawei): We are fine with this CR. Just one comment that the change in bullet d) is not needed. Exiting text in bullet d) itself is clear. If we update bullet d) then there are others bullets like e) that can also be updated in a similar way. So we will prefer not to go this way.

Ivo Sedlacek (Ericsson):

- "handovers" - why plural?

- "and" in wrong place

-

Thomas Luetzenkirchen (Intel)

Many thanks for the comments received so far!

I have revised C1-200681 to C1-200836 which covers the following changes:

Changes based on Lena’s comments:

• Clause 4.14.2 item h): changed “is not supported in this release” to “is not specified in this release”.

• Clause 4.14.2 item k): moved “and”

Changes based on Vishnu’s comments:

• Clause 4.14.2 item d): removed “and emergency services are not supported by SNPN”.

Changes based on Ivos’s comments:

• Clause 4.14.2 item l): changed "handovers" to "handover"

• Clause 4.14.2 item k): moved “and”

C1-200836 is available in https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs.

-

Ivo Sedlacek (Ericsson)

nearly ok.

One minor issue - should "are" below be "is"?

l) handover between SNPNs are not supported.

Assuming the above is addressed, Ericsson would like to cosign.

Lena Chaponnière (Qualcomm)

Same comment as Ivo, the rest looks ok.

-

Thomas Luetzenkirchen (Intel)

Many thanks again for the comment!

I have revised C1-200836 to C1-200923 which covers the change.

C1-200923 is available in https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs.

Vishnu Preman (Huawei)

Thanks for the revision. We are fine with it.

**Decision:** The document was **revised to C1-200836**.

**C1-200836 Update SNPN key differences**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1985 rev 1 Cat: F (Rel-16)  
  
 Source: Intel / Thomas*

(Replaces C1-200681)

**Decision:** The document was **revised to C1-200923**.

**C1-200923 Update SNPN key differences**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1985 rev 2 Cat: F (Rel-16)  
  
 Source: Intel / Thomas*

(Replaces C1-200836)

**Decision:** The document was **revised to C1-201010**.

**C1-201010 Update SNPN key differences**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1985 rev 3 Cat: F (Rel-16)  
  
 Source: Intel / Thomas*

(Replaces C1-200923)

**Decision:** The document was **postponed**.

**C1-200686 UE identifier for SNPN**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0498 Cat: C (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, Qualcomm Incorporated, Vodafone, Charter Communications, NTT DOCOMO, Ericsson*

**Discussion:**

Ly-Thanh Phan (Thales): I have the following comment on C1-200686:

The CR is missing to address the case where the USIM may be used to authenticate to several different SNPNs that differ by their NID parts.

When the IMSI of the USIM is used as identifier, the NID is the missing information in the USIM for the ME to populate its list of subscriber data.

The point is to allow the SNPN network operator to provide sufficient information in the USIM for the ME to have that link.

We propose:

- to put a Note under the SNPN identifier section to indicate that such information is available in the USIM when 3GPP authentication algorithm is used, and

- the proposed CR to CT6 31.102 to store the information of SNPN identity in the USIM, where the USIM may be used to authenticate to the SNPNs, is in C6-200151, http://www.3gpp.org/ftp/tsg\_ct/WG6\_smartcard\_Ex-T3/CT6-98e/Docs/C6-200151.zip

The note is as follow:

[…]

c) an SNPN identity; and

NOTE 3: SNPN identity information, where the USIM may be used for authentication, is available in USIM as specified in 3GPP TS 31.102 [40] if the SNPN uses the EAP based primary authentication and key agreement procedure using the EAP-AKA' or the 5G AKA based primary authentication and key agreement procedure.

[…]

The way the ME is performing the selection is left to implementation.

With the Note, the SNPN network operator can provide via the user subscription in the USIM the information to the ME, when SNPN uses 3GPP authentication algorithms.

--

Lena Chaponnière (Qualcomm)

I don’t understand why the NID information would be needed in the USIM: the NID is stored in the ME in the list of subscriber data and this is sufficient (there is no need for the ME to “populate” this list, it is provisioned to the ME). Hence I don’t the note is needed, and I also do not think the CT6 CR is needed

-

Kundan Tiwari (Samsung)

I have question for clarification regarding this CR.

According to this CR (shaded line) if SUPI Type IMSI is stored in the ME memory then 5G AKA and EAP AKA are not used as credential stored in the ME memory will be used. I clarified with my SA3 colleague IMSI will only use 5G AKA and EAP AKA i.e. it won’t use credential other than EAP AKA’ or 5G-AKA. So the current form of the CR is incorrect. We need to correct it.

a) a subscriber identifier in the form of a SUPI containing a network-specific identifier or an IMSI except when the SNPN uses:

1) the EAP based primary authentication and key agreement procedure using the EAP-AKA'; or

2) the 5G AKA based primary authentication and key agreement procedure;

Sung Hwan Won (Nokia)

I agree with the comments from Lena.

Kundan, authentication method is chosen by the network.

So if the network uses AKA, the text basically says that there is no need to search SUPI in the ME. The SUPI can exist in the ME even in this case, but it is not used. You misinterpreted the CR.

-

Lena Chaponnière (Qualcomm)

According to SA3 reply LS C1-200252, if 5G AKA or EAP-AKA’ are used in an SNPN then the UE must use USIM credentials, see the following text from the LS:

In Rel-16, if the SNPN chooses to use AKA based authentication method for registration to SNPN, then the subscription credential(s) for AKA is required to be stored on the USIM.

Credentials means identifier + keys, not just the keys. So when 5G AKA or EAP-AKA’ are used in an SNPN, then there is no identifier (whether it is an NSI or an IMSI) stored in the ME for the SNPN. Hence the current text in the CR is correct.

**Decision:** The document was **agreed**.

**C1-200735 Correction in UE behavior upon receipt of 5GMM cause value #74 or #75 via a non-integrity protected NAS message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2010 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ivo Sedlacek (Ericsson):

- not aligned with 23.122 stating:

---------------------

The MS shall add an SNPN to the list of "temporarily forbidden SNPNs" and start an MS implementation specific timer not shorter than 60 minutes, if a message with cause value #74 "Temporarily not authorized for this SNPN" (see 3GPP TS 24.501 [64]) is received by the MS in response to an LR request from the SNPN and:

- the message is integrity-protected; or

- the message is not integrity-protected, and the value of the SNPN-specific attempt counter for that SNPN is equal to the MS implementation specific maximum value as defined in 3GPP TS 24.501 [64].

---------------------

as this CR proposes to insert the SNPN into the list even if the message is not integrity-protected, and the value of the SNPN-specific attempt counter for that SNPN is \*less\* than the MS implementation specific maximum value.

- if preference is to change 23.122 along the proposed 24.501 change, then why is T3247 set to a shorter value for #74 (as in "15 minutes and 30 minutes for 5GMM cause value #74") than for other 5GMM causes?

Lin Shu (Huawei)

[Comments]

1. The intention of the CR to align with the same handling for 5GMM #11 is not fully correct as what current specified UE handling for 5GMM #11 the CR want to align is only for VPLMN but SNPN currently does not support roaming. So the current text in 24.501 is correct which is aligned with the current specified UE handling for 5GMM #11 for HPLMN.

2. It seems what needs to be updated is in TS 23.122 to remove the 2nd bullet as shown in the cover page.

-

Sung Hwan Won (Nokia)

I also thought that the 74/75 behavior should be aligned with 11 behavior towards HPLMN not VPLMN and that is why the 74/75 behavior is conforming 11 behavior towards HPLMN. But I changed my view for the following reasons (note that the key difference between 11 behavior towards HPLMN and 11 behavior towards VPLMN is that 11 behavior towards HPLMN does not allow adding the HPLMN in the forbidden list no matter how many times the UE receives non-integrity protected messages but 11 behavior towards VPLMN makes the UE temporarily add the VPLMN in the forbidden list and if the non-integrity protected messages are repeated, then it is semi-permanently included in the forbidden list).

1. There can be multiple entries. To make a comparison, it is like a UE having multiple HPLMNs. So, adding one specific SNPN to the forbidden list should be made available.

2. Especially for 74, the SNPN sending the reject message may not even be the home network for the entry. So why can’t such an SNPN be added to the forbidden list?

And Ivo, do you agree that the text below is aligned with 11 behavior towards VPLMN?

TS 23.122

A VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode if a message with cause value "PLMN not allowed" or "Requested service option not authorized in this PLMN" is received by an MS in response to an LR request from that VPLMN and:

- the MS is configured to use timer T3245 as defined in 3GPP TS 24.008 [23] and 3GPP TS 24.301 [23A];

- the MS is not configured to use timer T3245 and the message is integrity-protected;

- the MS is not configured to use timer T3245, the message is not integrity-protected and the MS does not maintain a list of PLMN-specific attempt counters; or

- the MS is not configured to use timer T3245, the message is not integrity-protected, the MS maintains a list of PLMN-specific attempt counters and the value of the PLMN-specific attempt counter for that VPLMN is equal to the MS implementation specific maximum value as defined in 3GPP TS 24.008 [23], 3GPP TS 24.301 [23A] and 3GPP TS 24.501 [64].

My interpretation on the text in TS 23.122 is that the stage 2 text does not care about temporary addition (while T3247 is running), which is detailed stage 3 operation.

And T3247 should be shorter for 74 because the SNPN ID will be anyways deleted from the temporary list in minimum one hour. The temporary addition/deletion due to non-integrity protected message should be done more frequently.

-

Lena Chaponnière (Qualcomm)

We support the changes in C1-200735, but we agree with Ivo’s comment that the text in TS 23.122 needs to be aligned.

--

Sung Hwan Won (Nokia)

If it is agreeable to everyone, I would like to request s new TDoc # for TS 23.122. The changes will be made on the following parts.

3.1 PLMN selection and roaming

A VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode if a message with cause value "PLMN not allowed" or "Requested service option not authorized in this PLMN" is received by an MS in response to an LR request from that VPLMN and:

- the MS is configured to use timer T3245 as defined in 3GPP TS 24.008 [23] and 3GPP TS 24.301 [23A];

- the MS is not configured to use timer T3245 and the message is integrity-protected;

- the MS is not configured to use timer T3245, the message is not integrity-protected and the MS does not maintain a list of PLMN-specific attempt counters; or

- the MS is not configured to use timer T3245, the message is not integrity-protected, the MS maintains a list of PLMN-specific attempt counters and the value of the PLMN-specific attempt counter for that VPLMN is equal to the MS implementation specific maximum value as defined in 3GPP TS 24.008 [23], 3GPP TS 24.301 [23A] and 3GPP TS 24.501 [64].

If the MS is not configured to use timer T3245, the VPLMN is added to the list of "forbidden PLMNs" in the SIM upon the receipt of the non-integrity-protected message and is removed from the list of "forbidden PLMNs" in the SIM upon expiry of timer T3247 until the PLMN-specific attempt counter reaches the MS implementation specific maximum value.

A VPLMN may be stored in the extension of the "forbidden PLMNs" list if a message with cause value "PLMN not allowed" or "Requested service option not authorized in this PLMN" is received by an MS in response to an LR request from that VPLMN, and the following is valid:

- the MS is not configured to use timer T3245, the message is not integrity-protected, the MS maintains a list of PLMN-specific attempt counters and the value of the PLMN-specific attempt counter for that VPLMN is less than an MS implementation specific maximum value as defined in 3GPP TS 24.008 [23], 3GPP TS 24.301 [23A] and 3GPP TS 24.501 [64].

If the MS is not configured to use timer T3245, the VPLMN is added to the extension of the "forbidden PLMNs" list upon the receipt of the non-integrity-protected message and is removed from the extension of the "forbidden PLMNs" list upon expiry of timer T3247 until the PLMN-specific attempt counter reaches the MS implementation specific maximum value.

4.9.3.0 General

The MS shall add an SNPN to the list of "temporarily forbidden SNPNs" and start an MS implementation specific timer not shorter than 60 minutes, if a message with cause value #74 "Temporarily not authorized for this SNPN" (see 3GPP TS 24.501 [64]) is received by the MS in response to an LR request from the SNPN and:

- the message is integrity-protected; or

- the message is not integrity-protected, and the value of the SNPN-specific attempt counter for that SNPN is equal to the MS implementation specific maximum value as defined in 3GPP TS 24.501 [64].

The SNPN is added to the list of "temporarily forbidden SNPNs" upon the receipt of the non-integrity-protected message and is removed from the list of "temporarily forbidden SNPNs" upon expiry of timer T3247 until the SNPN-specific attempt counter reaches the MS implementation specific maximum value.

The MS shall add an SNPN to the list of "permanently forbidden SNPNs", if a message with cause value #75 "Permanently not authorized for this SNPN" (see 3GPP TS 24.501 [64]) is received by the MS in response to an LR request from the SNPN and:

- the message is integrity-protected; or

- the message is not integrity-protected, and the value of the SNPN-specific attempt counter for that SNPN is equal to the MS implementation specific maximum value as defined in 3GPP TS 24.501 [64].

The SNPN is added to the list of "permanently forbidden SNPNs" upon the receipt of the non-integrity-protected message and is removed from the list of "permanently forbidden SNPNs" upon expiry of timer T3247 until the SNPN-specific attempt counter reaches the MS implementation specific maximum value.

-

Lin Shu (Huawei)

Based on your clarification, I tend to agree with you. For SNPN, actually just due to roaming is not supported and there may be multiple entries in the UE, so when the UE trying to access other SNPNs in the entry but the SNPN configuration at the CN was updated, so reject happens.

Then some minor comments:

1. It would be better you add some text in the cover page as you clarified below.

2. To make it clearer, I would prefer to added below NOTE for non-3GPP access part

“NOTE x: The message "received via non-3GPP access" in this subclause refers to a message received via a PLMN when the UE attempts to access SNPN services via a PLMN.”

About the new CR for TS 23.122, if going to align with #11 for VPLMN, I think now it is aligned between 24.501 and 23.122 for #74/75 on this point.

About you further proposed the changes below to TS 23.122, I would prefer to not cover such DOS attack in stage 2, and to cover it in stage 3 is enough.

Sung Hwan Won (Nokia): Thanks for the further detailed comments. Now it is revised according to them.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vada\_was\_0735\_SNPN\_NIP\_74\_75\_correction.docx

About the stage 2 change (TS 23.122), I have no strong view.

-

Lena Chaponnière (Qualcomm)Hi Sung,

Please find some comments inline on your proposal.

Additionally, there are other pieces of text that need to be modified in TS 23.122 (those starting with “The MS shall remove an SNPN from the list of "temporarily forbidden SNPNs”…” and “The MS shall remove an SNPN from the list of "permanently forbidden SNPNs"…”) to allow removal of an SNPN from the list at T3427 expiry if the counter is less than the MS implementation specific maximum value,

-

Sung Hwan Won (Nokia)

If the changes requested by this CR on TS 24.501 are accepted, then basically UE behavior upon receipt of 5GMM cause value #11 from VPLMN and 5GMM cause value #74/75 are aligned, that is:

Until the counter reaches the maximum value, the following is repeated:

- T3247 is started and the SNPN or VPLMN is added in the forbidden list; and

- As T3247 expires, the SNPN or VPLMN is removed from the list.

And when the counter reaches the maximum value, the SNPN or VPLMN is added in the forbidden list semi-permanently (i.e. treated as if #11 or #74/75 is received via an integrity protected reject message).

So it’s either we need to change all those or we change none.

-

Lena Chaponnière (Qualcomm)

I don’t dispute that, but I still think my comments on the proposed wording below apply.

Sung Hwan Won (Nokia):

With

The MS shall add an SNPN to the list of "temporarily forbidden SNPNs" if a message with cause value #74 "Temporarily not authorized for this SNPN" (see 3GPP TS 24.501 [64]) is received by the MS in response to an LR request and:

- the message is not integrity-protected; and

- the value of the SNPN-specific attempt counter for that SNPN is less than the MS implementation specific maximum value as defined in 3GPP TS 24.501 [64].

it only covers the specific part that is highlighted yellow (please see below).

But for VPLMN, e.g. with

A VPLMN may be stored in the extension of the "forbidden PLMNs" list if a message with cause value "PLMN not allowed" or "Requested service option not authorized in this PLMN" is received by an MS in response to an LR request from that VPLMN, and the following is valid:

- the MS is not configured to use timer T3245, the message is not integrity-protected, the MS maintains a list of PLMN-specific attempt counters and the value of the PLMN-specific attempt counter for that VPLMN is less than an MS implementation specific maximum value as defined in 3GPP TS 24.008 [23], 3GPP TS 24.301 [23A] and 3GPP TS 24.501 [64].

it covers the part that is highlighted green.

I am pointing out asymmetry in the specification. And IMHO stage 2 specification should focus on the green part.

-

Chair:

Actually I am not too happy with a new discussion of a new CR on 23.122 that is not available, and the discussion happening in a thread of a tdoc for 24.501. This is fairly untraceable.

Given that we are already pretty far into the meeting already, I do not support to create a brand new CR now.

I suggest that we park this discussion until the next meeting.

-

Ivo Sedlacek (Ericsson)

I would like to see both 23.122 CR and 24.501 CR at the same meeting.

In 23.122, the situation with #74/#75 is not the same as with #11, since 23.122 contains:

---------------

Optionally the ME may store in its memory an extension of the "forbidden PLMNs" list. The contents of the extension of the list shall be deleted when the MS is switched off or the SIM is removed.

A VPLMN may be stored in the extension of the "forbidden PLMNs" list if a message with cause value "PLMN not allowed" or "Requested service option not authorized in this PLMN" is received by an MS in response to an LR request from that VPLMN, and the following is valid:

- the MS is not configured to use timer T3245, the message is not integrity-protected, the MS maintains a list of PLMN-specific attempt counters and the value of the PLMN-specific attempt counter for that VPLMN is less than an MS implementation specific maximum value as defined in 3GPP TS 24.008 [23], 3GPP TS 24.301 [23A] and 3GPP TS 24.501 [64].

---------------

and we do not have similar text for SNPN access mode.

Thus, my preference is to postpone C1-200735.

-

Sung Hwan Won (Nokia)

I don’t understand why you are OK with the #11 VPLMN text and not OK with the #74/75 text. My understanding one should equally be OK or not OK for both.

And, in fact, I don’t get your point. I can also highlight the similar part. So… what is the key difference that you want to highlight?

The MS shall add an SNPN to the list of "permanently forbidden SNPNs", if a message with cause value #75 "Permanently not authorized for this SNPN" (see 3GPP TS 24.501 [64]) is received by the MS in response to an LR request from the SNPN and:

- the message is integrity-protected; or

- the message is not integrity-protected, and the value of the SNPN-specific attempt counter for that SNPN is equal to the MS implementation specific maximum value as defined in 3GPP TS 24.501 [64].

Ivo Sedlacek (Ericsson)

> I don’t understand why you are OK with the #11 VPLMN text and not OK with the #74/75 text. My understanding one should equally be OK or not OK for both.

23.122 contains different conditions for #72 and #75:

The MS shall add an SNPN to the list of "permanently forbidden SNPNs", if a message with cause value #75 "Permanently not authorized for this SNPN" (see 3GPP TS 24.501 [64]) is received by the MS in response to an LR request from the SNPN and:

- the message is integrity-protected; or

- the message is not integrity-protected, and the value of the SNPN-specific attempt counter for that SNPN is equal to the MS implementation specific maximum value as defined in 3GPP TS 24.501 [64].

and for #11:

Optionally the ME may store in its memory an extension of the "forbidden PLMNs" list. The contents of the extension of the list shall be deleted when the MS is switched off or the SIM is removed.

A VPLMN may be stored in the extension of the "forbidden PLMNs" list if a message with cause value "PLMN not allowed" or "Requested service option not authorized in this PLMN" is received by an MS in response to an LR request from that VPLMN, and the following is valid:

- the MS is not configured to use timer T3245, the message is not integrity-protected, the MS maintains a list of PLMN-specific attempt counters and the value of the PLMN-specific attempt counter for that VPLMN is less than an MS implementation specific maximum value as defined in 3GPP TS 24.008 [23], 3GPP TS 24.301 [23A] and 3GPP TS 24.501 [64].

We need to have entire solution on the table, both for 23.122 and 24.501.

-

Sung Hwan Won (Nokia)

I see. Now I understand your comment and Lena’s comment in this thread.

Then, I think that #11 description is misleading. It reads as if the counter reaches its maximum value, the PLMN is not added to the forbidden list. Thus, I think that all four parts in TS 23.122 that I indicated below needs to be modified.

Anyways, if you agree with the stage 3 principle, we can do the stage 2 alignment later. You know that there are some examples that we made stage 3 change first and asked SA2 to update their stage 2 specification. Even though for this case the same WG, CT1, handles both stage 2 and stage 3 and it would be the best if the changes can be made in the same meeting, currently we don’t have a proper CR to reflect stage 2 update.

-

Ivo Sedlacek (Ericsson)

> Then, I think that #11 description is misleading. It reads as if the counter reaches its maximum value, the PLMN is not added to the forbidden list. Thus, I think that all four parts in TS 23.122 that I indicated below needs to be modified.

For #11, there are two separate descriptions in 23.122 which have differing requirements:

A VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode if a message with cause value "PLMN not allowed" or "Requested service option not authorized in this PLMN" is received by an MS in response to an LR request from that VPLMN and:

- the MS is configured to use timer T3245 as defined in 3GPP TS 24.008 [23] and 3GPP TS 24.301 [23A];

- the MS is not configured to use timer T3245 and the message is integrity-protected;

- the MS is not configured to use timer T3245, the message is not integrity-protected and the MS does not maintain a list of PLMN-specific attempt counters; or

- the MS is not configured to use timer T3245, the message is not integrity-protected, the MS maintains a list of PLMN-specific attempt counters and the value of the PLMN-specific attempt counter for that VPLMN is equal to the MS implementation specific maximum value as defined in 3GPP TS 24.008 [23], 3GPP TS 24.301 [23A] and 3GPP TS 24.501 [64].

Optionally the ME may store in its memory an extension of the "forbidden PLMNs" list. The contents of the extension of the list shall be deleted when the MS is switched off or the SIM is removed.

A VPLMN may be stored in the extension of the "forbidden PLMNs" list if a message with cause value "PLMN not allowed" or "Requested service option not authorized in this PLMN" is received by an MS in response to an LR request from that VPLMN, and the following is valid:

- the MS is not configured to use timer T3245, the message is not integrity-protected, the MS maintains a list of PLMN-specific attempt counters and the value of the PLMN-specific attempt counter for that VPLMN is less than an MS implementation specific maximum value as defined in 3GPP TS 24.008 [23], 3GPP TS 24.301 [23A] and 3GPP TS 24.501 [64].

but for #74 and #76 there is only one.

The MS shall add an SNPN to the list of "temporarily forbidden SNPNs" and start an MS implementation specific timer not shorter than 60 minutes, if a message with cause value #74 "Temporarily not authorized for this SNPN" (see 3GPP TS 24.501 [64]) is received by the MS in response to an LR request from the SNPN and:

- the message is integrity-protected; or

- the message is not integrity-protected, and the value of the SNPN-specific attempt counter for that SNPN is equal to the MS implementation specific maximum value as defined in 3GPP TS 24.501 [64].

I am actually NOT convinced that the UE should act on a single non-integrity protected rejection. Seems too easily misusable by attackers.

Let's have entire solution on the table in Apr 2020 CT1 meeting and decide there.

-

Sung Hwan Won (Nokia)

>> I am actually NOT convinced that the UE should act on a single non-integrity protected rejection. Seems too easily misusable by attackers.

OK, so you are not convinced about the text in 24.501. Let me postpone this (revised to 0970).

**Decision:** The document was **revised to C1-200970**.

**C1-200970 Correction in UE behavior upon receipt of 5GMM cause value #74 or #75 via a non-integrity protected NAS message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2010 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200735)

**Decision:** The document was **postponed**.

**C1-200736 List of SNPNs for which the N1 mode capability was disabled**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0502 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ivo Sedlacek (Ericsson): the last bullet should be performed also when the SNPN's entry in "list of subscriber data" is updated.

Sang Min Park (LG Electronics): I have the following comments on C1-200736 “List of SNPNs for which the N1 mode capability was disabled” from Nokia and Nokia Shanghai Bell.

Similar concern as expressed for C1-200738 will be also applied to this documents as below:

Clearly, SNPN is not supported by EPC. Since the UE in SNPN access mode will only search for 5GS, disabling N1 does not make sense. Thus, managing list of “N1 mode not allowed" SNPN just creates unnecessary burden.

Sung Hwan Won (Nokia): Revised according to your comment: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vabb\_was\_0736\_SNPN\_27\_handling\_23122.docx.

Sung Hwan Won (Nokia) Please see my response in the other thread on 0738.

Ivo Sedlacek (Ericsson)

looks OK.

Can you please add Ericsson as cosigner? Thank you.

-

Sung Hwan Won (Nokia)

I added Ericsson and uploaded it to the server:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs/C1-200847.zip

-

Sung Hwan Won (Nokia) on 736-738

Some explanation on the paper.

If a UE receives #27 (w/ integrity protection) from an SNPN, then the N1 mode capability for the SNPN should be disabled and it should be added in the list of SNPNs for which the N1 mode capability was disabled. This is the motivation of C1-200736.

Then, for the non-integrity protected reject messages, counters for controlling addition/removal of an SNPN from forbidden SNPNs list should be distinguished from counters for controlling addition/removal of an SNPN from the list of SNPNs for which the N1 mod cap was disabled. This is what C1-200737 is about.

C1-200738 is simply addressing UE behavior regarding N1 mode cap disabling/re-enabling for SNPN, which is a simplified version of PLMN.

**Decision:** The document was **revised to C1-200847**.

**C1-200847 List of SNPNs for which the N1 mode capability was disabled**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0502 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

(Replaces C1-200736)

**Discussion:**

Sang Min Park (LG Electronics) We still have some concerns on the scenario itself. But for the progress of WI, we are not objecting this CR if LGE is the only company. So if other companies are okay with 0847, LGE is fine with the CR to be agreed in this meeting.

Note that we need further clarification on the scenario regarding #27 and disabling N1 mode feature for the next meeting.

**Decision:** The document was **agreed**.

**C1-200737 Introduction of SNPN-specific N1 mode attempt counters**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2011 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lin Shu (Huawei)Comments:

1. The reason for change “However, similar to the PLMN, dedicated counters for SNPN-specific N1 mode attempt should be introduced” is not correct, as for PLMN it has different RATs (G/U/L/NGRAN) but for SNPN so far it only has one RAT (NG-RAN). So you cannot just copy the same logic from PLMN to SNPN here.

2. Then, the proposed changes are not needed and to use the existing SNPN-specific attempt counter is enough which is only applied to N1 mode only, i.e. added “SNPN-specific N1 mode attempt counter” = existing “SNPN-specific attempt counter”

Marko Niemi (Mediatek): Wondering why to add new counters for "N1 mode" while there is already existing ones for SNPN over 3GPP access and non-3GPP access... Looks like new ones are unnecessary duplicates. If necessary, would addition of “N1 mode” in the name of existing ones fix the (possible) issue?

-

Sung Hwan Won (Nokia)

So last year I proposed to prohibit the use of #27 in an SNPN because it will bring the basically same effect as #75 as there is no other RAT. But people wanted to allow #27. Why did CT1 decided to allow #27 then?

Currently it is only NG-RAN, but in the future 6G radio access network can be an available RAT for an SNPN. Then, we need to distinguish N1 mode prohibition from SNPN prohibition.

SNPN-specific attempt counters are for managing forbidden SNPNs list and SNPN-specific N1 mode attempt counters are for managing list of SNPNs for which N1 mode cap is disabled.

Then, question back to you: do you want the UE to add the SNPN ID to the forbidden SNPN list if #27 is received rather than the list of SNPNs for which N1 mode cap is disabled? See a relevant discussion in terms of C1-200736.

-

Lin Shu (Huawei)

Then we can add it in 6G as we now added N1 mode in 5G, not in 4G.

#27 is used in SNPN is due to RAT restriction.

#75 is used in SNPN due to subscription restriction.

-

Sung Hwan Won (Nokia)

Then, my question is on the list that the UE should manage.

Upon receipt of #27:

should the SNPN be added to a list of SNPNs for which N1 mode capability is disabled or

should the SNPN be added to temporarily forbidden SNPN list or

should the SNPN be added to permanently forbidden SNPN list?

-

Marko Niemi (Mediatek)

Not sure if I fully understand the concern, but if we are concerned of coming 6G then why we do not rename existing 5G counters:

SNPN-specific attempt counter for 3GPP access

-> SNPN-specific N1 mode attempt counter for 3GPP access

-

Sung Hwan Won (Nokia)

My question below (highlighted yellow) applies irrespective 6G availability.

SNPN-specific counters and SNPN-specific N1 mode counters have different roles:

- SNPN-specific attempt counters are used to determine whether the SNPN should be added to the forbidden SNPNs list as if the reject message is integrity-protected when the reject message is not actually integrity-protected.

- SNPN-specific N1 mode attempt counters are used to determine whether the SNPN should be added to the list of SNPN for which N1 mode cap is disabled as if the reject message is integrity-protected when the reject message is not actually integrity-protected.

-

Lin Shu (Huawei)

Upon receipt of #27:

should the SNPN be added to a list of SNPNs for which N1 mode capability is disabled or

should the SNPN be added to temporarily forbidden SNPN list or

should the SNPN be added to permanently forbidden SNPN list?

[Lin] If the reject message is protected, then the SNPN needs to be added to a list of SNPNs for which N1 mode capability is disabled that your other CRs want to add.

SNPN-specific counters and SNPN-specific N1 mode counters have different roles:

- SNPN-specific attempt counters are used to determine whether the SNPN should be added to the forbidden SNPNs list as if the reject message is integrity-protected when the reject message is not actually integrity-protected.

- SNPN-specific N1 mode attempt counters are used to determine whether the SNPN should be added to the list of SNPN for which N1 mode cap is disabled as if the reject message is integrity-protected when the reject message is not actually integrity-protected.

[Lin] Really difficult to get your logic here. Iet’s make it simpler, if for SNPN, if we used the single SNPN-specific attempt counters for both above cases, what is the problem?

Note that unlike PLMN, received #27 in PLMN will only set the PLMN-specific N1 mode attempt counter while no touch PLMN-specific attempt counter, while receive #11 will impact PLMN-specific attempt counter while no touch PLMN-specific N1 mode attempt counter as #11 will impact all RATs for the current PLMN but #27 just impact N1. But SNPN only has one RAT, i.e. N1, receive #27/#74/#75 can set the single SNPN-specific attempt counters and there is no need to distinguish between #27 and #74/75.

-

Sung Hwan Won (Nokia)

OK, now it is reduced to a single EN. Please check C1-201032

-

Lin Shu (Huawei)

I would prefer to not pursue this CR to go this direction and you can come back directly with CR proposal in the next meeting w/o EN.

**Decision:** The document was **revised to C1-201032**.

**C1-201032 Introduction of SNPN-specific N1 mode attempt counters**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2011 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200737)

**Decision:** The document was **postponed**.

**C1-200738 N1 mode capability disabling and re-enabling for SNPN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2012 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Sang Min Park (LG Electronics): I have the following comments on C1-200738 “N1 mode capability disabling and re-enabling for SNPN” from Nokia and Nokia Shanghai Bell.

Clearly, SNPN is not supported by EPC. So where does it go after “disabling N1 mode capability for a registered SNPN”? there’s no other choice for the UE but staying in DEREGISTERED state for N1 mode. The described behavior seems to be SNPN re-selection, but seems not related to the disabling N1 mode capability mechanism.

-

Lin Shu (Huawei)Comments:

1. This CR depends on C1-200736 to TS 23.122 so better to add the dependency on the cover page.

2. The added text "for a registered PLMN"/"for a registered SNPN" is not fully correct as it could also happen that when the UE moves to a new PLMN/new SNPN (for which the UE has not successfully registered) and got rejected by #27. So better to change to "for a PLMN"/"for an SNPN".

3. Changes to sub 4.9.3 is not needed as SNPN does not support non-3GPP access. Note that the term “non-3GPP access” in sub 4.9.3 only refer to non-3GPP access type (e.g. WiFi). It cannot cover accessing SNPN via PLMN, as for which the UE still using 3GPP access type. I think we need to stop to create such confusing on the term “non-3GPP access” due to SNPN.

-

Sung Hwan Won (Nokia)

I guess Lena’s e-mail with title [16.2.7.1\_C1-200768] is about this paper.

N1 mode capability disabling/re-enabling is per PLMN or SNPN. Let us first agree on this principle. SangMin, you asked “So where does it go after “disabling N1 mode capability for a registered SNPN”?” The answer is: It can go to other SNPN for which N1 mode capability is not disabled.

Lena, you commented to add a note in subclause 4.9.3. I added the following note:

NOTE: The term "non-3GPP access" used in the context of SNPN is to express access to SNPN services via a PLMN.

And some inline responses to Lin below.

The revision can be found in: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vaba\_was\_0738\_SNPN\_N1\_mode\_cap.docx.

1. This CR depends on C1-200736 to TS 23.122 so better to add the dependency on the cover page.

SHW> OK.

2. The added text "for a registered PLMN"/"for a registered SNPN" is not fully correct as it could also happen that when the UE moves to a new PLMN/new SNPN (for which the UE has not successfully registered) and got rejected by #27. So better to change to "for a PLMN"/"for an SNPN".

SHW> OK.

3. Changes to sub 4.9.3 is not needed as SNPN does not support non-3GPP access. Note that the term “non-3GPP access” in sub 4.9.3 only refer to non-3GPP access type (e.g. WiFi). It cannot cover accessing SNPN via PLMN, as for which the UE still using 3GPP access type. I think we need to stop to create such confusing on the term “non-3GPP access” due to SNPN.

SHW> See the note added.

-

Lin Shu (Huawei)

I think to add that NOTE in sub 4.9.3, cannot fly because the disabled/enable N1 mode capability for non-3GPP access in this subclause can only refer the non-3GPP access capability (e.g. WiFi)

For access to SNPN services via a PLMN, at the UE side, its access capability is still 3GPP access, so what disabled/enabled UE's N1 mode capability for SNPN can only be 3GPP access, i.e. in sub 4.9.2.

So sub 4.9.3 need not to be touched, otherwise, it will create confusing.

Some minor one:

1. “a SNPN” should be “an SNPN”

2. Y needs to be ticked below.

-

Sung Hwan Won (Nokia)

What do you think about the following note in sub 4.9.3 instead?

NOTE: The term "N1 mode capability for non-3GPP access" used in the context of SNPN refers to the UE's capability to access SNPN services via a PLMN.

Sang Min Park (LG Electronics)

What I said previously was that the original purpose of the disabling “specific access mode” capability functionality was to select other access mode \*within\* the PLMN. As you specified in the thread for 0737, if we had alternative access within the SNPN e.g. 6G, this “disabling” feature is definitely required. But we only have one choice for SNPN as of Rel-16, i.e. N1 mode.

The UE behavior is technically correct, e.g. enter deregistered state and select another SNPN, but as I said, I’m not sure whether this behavior needs to be introduced as part of “disabling N1 mode for SNPN” functionality.

Alternative way is that add the same behavior under the UE behaviors for reception of 5GMM cause #27. I guess this is somewhat related to the discussion on 0737. We don’t have strong preference on how to handle the SNPN list for which N1 mode is not allowed, e.g. using one of the existing forbidden SNPN list or using UE implementation specific way.

-

Sung Hwan Won (Nokia)

Addition in the forbidden SNPNs list would not fly: There are two different forbidden lists (temporary/permanent) and what should be chosen?

I don’t understand why it should be UE-implementation-specific when we can copy the PLMN behavior. Is there any specific reason why LGE wants the deviation?

Sang Min Park (LG Electronics)

As you said in the discussion for 0737, new list such as “to a list of SNPNs for which N1 mode capability is allowed” might be needed. UE specific method is just a possible example solution, so don’t consider this seriously. If we use the existing list, permanent list seems more appropriate to me.

I have sympathy on your concern regarding the use of #27 and #75 as expressed in the thread of 0737. It is not clear in which case the NW provides cause #27, since the UE behavior is nothing but just selecting another SNPN. As I explained, this is not exactly desired behavior for “disabling specific access mode” functionality.

Lin Shu (Huawei)

This NOTE could work and better to be:

“NOTE: In SNPN, the term "UE’s N1 mode capability for non-3GPP access" in this subclause refers to the UE's N1 mode capability to access SNPN services via a PLMN.”

**Decision:** The document was **revised to C1-200969**.

**C1-200969 N1 mode capability disabling and re-enabling for SNPN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2012 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200738)

**Decision:** The document was **revised to C1-201031**.

**C1-201031 N1 mode capability disabling and re-enabling for SNPN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2012 rev 2 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200969)

**Discussion:**

Sang Min Park (LG Electronics)

We still have some concerns on the scenario itself. But for the progress of WI, we are not objecting this CR if LGE is the only company. So if other companies are okay with 1031, LGE is fine with the CR to be agreed in this meeting.

Note that we need further clarification on the scenario regarding #27 and disabling N1 mode feature for the next meeting.

**Decision:** The document was **agreed**.

**C1-200739 #72 applicable and #31 not applicable in an SNPN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2013 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lin Shu (Huawei)

1. For #72, based on below definition given for #72, the term “non-3GPP access” in #72 "Non-3GPP access to 5GCN not allowed" refers to the non-3GPP access network (e.g. WIFI), not refers to “access to SNPN via PLMN”

“Cause #72 – Non-3GPP access to 5GCN not allowed

This 5GMM cause is sent to the UE if it requests accessing 5GCN over non-3GPP access in a PLMN, where the UE by subscription, is not allowed to access 5GCN over non-3GPP access.”"

2. For #72, reject due to accessing SNPN via PLMN is not allowed, if such reject case is really needed (I am not so sure), then I would prefer to have a dedicated new cause value for it as reusing #72 will create confusing and some problems. Note that SNPN 5GCN reject with #72 is received over 3GPP access at the UE side, then as per specified below Yellow text, the UE will consider it as an abnormal case.

“#72 (Non-3GPP access to 5GCN not allowed).

If received over 3GPP access the cause shall be considered as an abnormal case and the behaviour of the UE for this case is specified in subclause 5.5.1.2.7.”

3. For #31, we believe CIOT can be also support by SNPN as currently it is not explicitly prevented. So, it could be possible the SNPN 5GCN can use this cause value to redirect the UE to EPC. Note that SNPN 5GCN and EPC can be hosted by the same operator. Hence, we would prefer either to keep #31 in EN or to make it supported in SNPN.

-

Lena Chaponnière (Qualcomm): CIoT is not supported in SNPNs in Rel-16 due to no support in RRC signaling. There is a RAN email discussion about whether to add support for this within the scope of the Rel-17 eNPN RAN WI (see the text associated with Q5 in the attached document which states “In Rel-16, the NB-IoT/eMTC connected to 5GC has been supported. However, the connection of NB-IoT/eMTC to a 5G NPN has not been defined (e.g. the broadcast of CAG-ID or NID by NB-IoT/eMTC RAN nodes not supported). This was proposed in [3] in the RAN#86 meeting. Should the support of SNPN and PNI-NPN access for eMTC/NB-IoT be addressed in eNPN?

”). So we support making cause #31 not applicable to SNPNs in Rel-16.

For #72, we would prefer to make it not applicable to SNPNs since SA2 indicated in C1-200234 that “Access to SNPN over Trusted non-3GPP access and Wireline access are not supported in Rel-16. Regarding whether access to SNPN via Untrusted non-3GPP access is supported in Rel-16, SA2 could not reach a consensus”.

-

Lin Shu (Huawei): Thanks Lena for sharing related RAN information.

With this I am fine to make it clear in our spec that CIOT is not supported in SNPN in R16.

Then I just recalled that during the discussion on a set of CR related to adding new UAC category type for SNPN, it has added below EN in the revision of C1-200677. If now we all agree that CIOT is not supported for SNPN, then below EN is not needed and nothing needs to be done for SNPN for UAC for exception data.

“Editor's note [WI: Vertical\_LAN, CR#1938]: It needs to be verified if NB-IoT (MO exception data) is also applicable for SNPN.”

For #72, if I got your below comments correctly, you do support our CR C1-200505 proposal, right?

--

Sung Hwan Won (Nokia): The use of #72 in an SNPN is not for non-3GPP access in the context of untrusted/trusted non-3GPP access or Wireline access. It is about restricting access to SNPN services via a PLMN.

--

Ivo Sedlacek (Ericsson)

I agree with Sung.

I would like to support and co-sign Sung's approach in C1-200739.

-

Lena @sung: Thanks for the additional explanation. As stated during the CT1 conference call today, I am now fine with C1-200739.

-

Yanchao Kang (vivo)

Could please add some clarification for use of #72 in SNPN in subclause A.2:

Cause #72 – Non-3GPP access to 5GCN not allowed

This 5GMM cause is sent to the UE if it requests accessing 5GCN over non-3GPP access in a PLMN, where the UE by subscription, is not allowed to access 5GCN over non-3GPP access.

-

Sung Hwan Won (Nokia)I added notes in subclauses 4.14.2 and A.2. Your review would be very much appreciated.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vaga\_was\_0739\_SNPN\_EN\_31\_72.docx

-

Lin Shu (Huawei)

I still see to reuse #72 for accesses SNPN services via a PLMN is not a future proof way.

Also, I see no value to add below NOTE as currently in R16, “non-3GPP access” for SNPN has only one case: accesses SNPN services via a PLMN.

NOTE: 5GMM cause value #72 "Non-3GPP access to 5GCN not allowed" can be used when a UE accesses SNPN services via a PLMN.

Also, for below NOTE, it really overkill the whole definition of #72, as now it totally changed the scope of #72, from real non-3GPP access to “access to SNPN services via a PLMN” only.

“Cause #72 – Non-3GPP access to 5GCN not allowed

This 5GMM cause is sent to the UE if it requests accessing 5GCN over non-3GPP access in a PLMN, where the UE by subscription, is not allowed to access 5GCN over non-3GPP access.

NOTE 3: The term "non-3GPP access" above, is used to express access to SNPN services via a PLMN.”

-

Sung Hwan Won (Nokia)

>> Also, I see no value to add below NOTE as currently in R16, “non-3GPP access” for SNPN has only one case: accesses SNPN services via a PLMN.

NOTE: 5GMM cause value #72 "Non-3GPP access to 5GCN not allowed" can be used when a UE accesses SNPN services via a PLMN.

I removed the note now.

>> Also, for below NOTE, it really overkill the whole definition of #72, as now it totally changed the scope of #72, from real non-3GPP access to “access to SNPN services via a PLMN” only.

“Cause #72 – Non-3GPP access to 5GCN not allowed

This 5GMM cause is sent to the UE if it requests accessing 5GCN over non-3GPP access in a PLMN, where the UE by subscription, is not allowed to access 5GCN over non-3GPP access.

NOTE 3: The term "non-3GPP access" above, is used to express access to SNPN services via a PLMN.”

Sorry, maybe I did not give enough thought on this. Now it is modified as follows:

Cause #72 – Non-3GPP access to 5GCN not allowed

This 5GMM cause is sent to the UE if it requests accessing 5GCN over non-3GPP access in a PLMN or it requests accessing SNPN service via a PLMN, where the UE by subscription, is not allowed to access 5GCN of the PLMN over non-3GPP access or to access 5GCN of the SNPN over a PLMN.

Please find a revision in the link below.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vaga\_was\_0739\_SNPN\_EN\_31\_72\_r1.docx

**Decision:** The document was **revised to C1-200971**.

**C1-200971 #72 applicable and #31 not applicable in an SNPN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2013 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200739)

**Discussion:**

Sung Hwan Won (Nokia)

OK, then now 0739 is revised to 0971, which addresses 31 only.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200971\_was\_0739\_SNPN\_EN\_31.docx

**Decision:** The document was **agreed**.

**C1-200740 T3245 in an SNPN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2014 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Vishnu Preman (Huawei): CR 1803 was not agreed in the last meeting. Without CR 1803, the proposed changes in C1-200740 looks out of place. So we propose to postpone this CR.

Sung Hwan Won (Nokia)

I see. I would like to postpone the CR.

**Decision:** The document was **postponed**.

**C1-200741 Validity of the USIM for an SNPN and for a specific access type**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2015 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ivo Sedlacek (Ericsson): wording ("USIM as invalid for the current SNPN and for 3GPP access") should be aligned with the one (i.e. "USIM as invalid for 5GS services via 3GPP access") used when the UE does not operate in the SNPN access mode. E.g. (i.e. "USIM as invalid for the current SNPN via 3GPP access")

Sung Hwan Won (Nokia)Fixed. Thank you.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vada\_was\_0741\_SNPN\_USIM\_validity\_per\_access\_type.docx

Ivo Sedlacek (Ericsson)

Looks OK. Can you please add Ericsson as cosigner? Thank you.

Sung Hwan Won (Nokia)

Done. Thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs/C1-200849.zip

**Decision:** The document was **revised to C1-200849**.

**C1-200849 Validity of the USIM for an SNPN and for a specific access type**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2015 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

(Replaces C1-200741)

**Decision:** The document was **agreed**.

**C1-200742 Handling of 5GMM cause values #62 in an SNPN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2016 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ivo Sedlacek (Ericsson):

- CR adds "an entry of the "list of subscriber data" with the SNPN identity of the current SNPN is updated" in a few places in 24.50. However, such addition would be applicable in many other places, including 5GSM congestion control statements. Will the rest of the TS be fixed too?

Sung Hwan Won (Nokia)

As the title of the CR says, for now I would like to focus on the new cause value introduced in the last quarter. However, as a rapporteur, let me bring a cleanup CR for the next meeting, if seen needed.

Ivo Sedlacek (Ericsson)

IMO, it is "seen needed" as the TS should be internally consistent.

If you confirm that you will prepare such cleanup CR for the next meeting, I am OK with C1-200742.

**Decision:** The document was **agreed**.

**C1-200743 No mandate to support default configured NSSAI or network slicing indication**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2017 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lena Chaponnière (Qualcomm): fine with the CR in principle, but in the last change, “the UE operating in SNPN access mode may not support default configured NSSAI or network slicing indication” should be “the default configured NSSAI and the network slicing indication are not supported in SNPNs” instead, since the network will not send them.

Sung Hwan Won (Nokia): Thanks, Lena. I modified the paper in line with your comment.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vaaa\_was\_0743\_SNPN\_slicing.docx

Lena Chaponnière (Qualcomm)

There are some issues with the wording of the bullet:

“x) neither the default configured NSSAI no the network slicing indication is not supported in SNPNs”

It should be instead

“x) neither the default configured NSSAI nor the network slicing indication is supported in SNPNs”

or alternatively

“x) the default configured NSSAI and the network slicing indication are not supported in SNPNs"

-

Sung Hwan Won (Nokia)

My apologies. Now it is corrected according to the first alternative that you gave.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vaaa\_was\_0743\_SNPN\_slicing\_r1.docx

**Decision:** The document was **revised to C1-200921**.

**C1-200921 No mandate to support default configured NSSAI or network slicing indication**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2017 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200743)

**Decision:** The document was **agreed**.

**C1-200744 SNN coding**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2018 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ivo Sedlacek (Ericsson):

- HEXDIG allows both upper case and lower case letters, due to rfc5234 section 2.3. This ambiguity will cause problems in key derivation. The original text did not suffer from this issue.

- according to rfc5234 section 3.7, finite number of repetition of a rule can be expressed using " <a number>rule"

Thus, the only changes needed are:

- to replace "x " with "11";

- to update the Example; and

- to remove the editor's note.

Updated CR addressing the above can be found at C1-200744-ISED.zip [1].

If you are OK with the changes, Ericsson would like to cosign.

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200744-ISED.zip

-

Sung Hwan Won (Nokia)

Thank you. Please see the revision in https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vaea\_was\_0744\_SNPN\_SNN.docx.

-

Ivo Sedlacek (Ericsson)

OK except that there should be no space between "11" and "SNN-hexadecimal-digit"

SNN-NID = 11 SNN-hexadecimal-digit ; NID in hexadecimal digits

it should be either:

SNN-NID = 11SNN-hexadecimal-digit ; NID in hexadecimal digits

or possibly with brackets:

SNN-NID = 11(SNN-hexadecimal-digit) ; NID in hexadecimal digits

but no space after "11".

-Sung Hwan Won (Nokia)

Done. Thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs/C1-200851.zip

**Decision:** The document was **revised to C1-200850**.

**C1-200850 SNN coding**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2018 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200744)

**Decision:** The document was **revised to C1-200851**.

**C1-200851 SNN coding**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2018 rev 2 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200850)

**Decision:** The document was **agreed**.

**C1-200745 5GMM cause value #74 in an SNPN with a globally-unique SNPN identity**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2019 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ivo:

- work item is missing on cover page

- Ericsson would like to cosign.

Sung Hwan Won (Nokia)

Done. Thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vafa\_was\_0745\_SNPN\_74\_gloabally\_unique.docx

**Decision:** The document was **revised to C1-200965**.

**C1-200965 5GMM cause value #74 in an SNPN with a globally-unique SNPN identity**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2019 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200745)

**Decision:** The document was **agreed**.

**C1-200746 Display of the human readable name of an SNPN**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0503 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lena Chaponnière (Qualcomm): The CR assumes that a human readable network name will be configured at the ME, not broadcast in SIB. However the input I got from my RAN2 colleagues is that whether the human readable network name is broadcast in SIB was still FFS as of the end of the Reno November meeting.

Ivo Sedlacek (Ericsson):

- not clear where the HRNN comes from

Sung Hwan Won (Nokia)

My intent was to say that an SNPN displayed to the user can be associated with an HRNN. But I agree that the way that I described is misleading. How about:

The MS indicates to the user one or more SNPNs, which are available and each of them is identified by an SNPN identity in an entry of the "list of subscriber data" in the ME. \*\*Additionally, for each of the indicated SNPNs, the MS may optionally display a human readable name for the SNPN (see 3GPP TS 38.331 [65]).\*\*

Lena Chaponnière (Qualcomm)This would be ok for me.

-

Ivo Sedlacek (Ericsson)

does 38.331 already contain specification of the human readable name?

If not, please remove "(see 3GPP TS 38.331 [65])" and add an editor's note stating e.g. "it is FFS how the human readable name is obtained".

--

Sung Hwan Won (Nokia)

OK. Please check https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vaca\_was\_0746\_SNPN\_HRNN\_r1.docx.

Ivo Sedlacek (Ericsson)nearly ok.

Can we please change the Editor's note to refer to "obtaining human-readable name for SNPN"? The issue is that RAN2 has not specified it yet so NAS layer does not know where to obtain the HRNN.

Editor's note [Vertical\_LAN; CR#0503]: obtaining human-readable name for SNPN is FFS

Sung Hwan Won (Nokia)OK. Done. https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vaca\_was\_0746\_SNPN\_HRNN\_r2.docx

Lena Chaponnière (Qualcomm)

I am fine with the changes in the CR but just noticed that the clauses affected are missing in the coversheet.

Sung Hwan Won (Nokia) I see. Thank you. I updated the field in the coversheet and uploaded the revision (TDoc # is C1-200964).

**Decision:** The document was **revised to C1-200964**.

**C1-200964 Display of the human readable name of an SNPN**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0503 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200746)

**Decision:** The document was **agreed**.

**C1-200762 Work plan for CT aspects of Vertical\_LAN**

*Type: discussion For: Information  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

revised before the meeting

**Decision:** The document was **revised to C1-200767**.

**C1-200767 Work plan for CT aspects of Vertical\_LAN**

*Type: discussion For: Information  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200762)

**Decision:** The document was **noted**.

##### 16.2.7.2 Public network integrated NPN

**C1-200311 CAG-ID not provided to lower layers during NAS signalling connection establishment**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1880 Cat: F (Rel-16)  
  
 Source: Ericsson / Ivo*

**Decision:** The document was **revised to C1-200937**.

**C1-200937 CAG-ID not provided to lower layers during NAS signalling connection establishment**

*Type: CR For: -  
 24.501 v16.3.0 CR-1880 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson / Ivo*

(Replaces C1-200311)

**Discussion:**

Ssung Hwan Won (Nokia) We would like to ask a timeout for the CR. For the change itself in the CR, we do not have any \*technical\* problem. But we don’t want to see any company in RAN2 to use the agreement of this CR as an argument to block per-CAG barring configuration setting, which needs to be made available for isolation of a PNI-NPN.

Ivo Sedlacek (Ericsson)

receiving this comment on Fri afternoon, long after revision deadline, is a bit surprising.

Can you please reconsider your position?

Sung Hwan Won (Nokia): I am truly sorry about this. To my excuse, there has been nothing to comment on the technical issue. I was hoping RAN2 to make any decision before the CT1 meeting deadline, but it seems that they couldn’t.

**Decision:** The document was **postponed**.

**C1-200316 CAG Information in Registration Reject**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1868 rev 1 Cat: F (Rel-16)  
  
 Source: InterDigital / Atle*

(Replaces C1-200111)

**Discussion:**

Lena Chaponnière (Qualcomm): Enabling sending of the CAG information list in a Registration Reject message is dangerous since the Registration Reject message can be sent non-integrity protected, so this could allow a fake network to modify the CAG provisioning at the UE. Moreover, it seems unnecessary since the network could also let the UE successfully register and then update the CAG provisioning info at the UE.

Atle Monrad (Interdigital): I hope the following clarifications will cover your concerns

1. We don’t disagree on threat of Reg Reject non-integrity protected. It shall simply be discarded and should be captured in 24.501 clause 5.3.20

[Lena] For the case when the message is integrity protected, TS 24.501 already contains requirements on the UE to update its stored “CAG information list” upon a reject with cause #76 (for instance, remove the CAG ID from the UE’s Allowed CAG list if the reject is received from a CAG cell). This is sufficient to prevent the UE from retrying on the same cell. If the network wants to update the UE’s provisioning then the network can let the UE register and then perform a generic UE configuration update procedure.

Additionally, I have been informed by my SA2 colleagues that the possibility to include the CAG information list in the Registration Reject message has been proposed in SA2 for Rel-17 and not agreed, so specifying this in CT1 would go against the SA2 decision.

2. We think that whether CAG ID is transmitted or not by the UE is irrelevant for the issue raised in this CR. Same outcome if AMF finds no common element between cell supported CAG (over N2) with UE Allowed CAG ID (from UDM)

[Lena] My comments below did not mention anything about whether the CAG ID is transmitted or not by the UE. Would it be possible for you to clarify how your answer 2. above is related to my comments?

3. The idea of letting registration complete for a UE not authorized to access the CAG cell is not compliant with SA1 requirements regarding protecting the CAG cell.

[Lena] This is entirely up to the operator to decide: they can reject the UE with cause #76, which will prevent the UE from re-trying on the cell, or they can let the UE register and then update the UE’s provisioning (for instance for the bootstrapping scenario when the UE has no CAG provisioning and the user manually selects a CAG cell). I don’t see any conflicts with SA1 requirements given SA1’s answer in reply LS C1-200776.

--

Kundan Tiwari (Samsung)

We support the CR it make sense for the following scenarios. Of course the CAG information IE should be sent integrity protected otherwise the message will be ignored as the UE does for 5GMM Cause #25 and 76.

Scenario 1:

1. UE and network CAG subscription lists are not synchronized, UE was switched for long time.

2. UE camps on a CAG cell whose subscription has expired but the UE was not updated e.g. due to reason in step 1.

3. If the network rejects the registration request and does not provide the updated CAG information then the UE will never get the updated list.

4. The UE will not able to camp on the CAG ID which has been allowed according to the current subscription.

5. The is more serious for the case when the UE is configured as CAG only, in this case the UE can not go to non-CAG cell to get the updated CAG information.

--

Lena Chaponnière (Qualcomm):

3. If the network rejects the registration request and does not provide the updated CAG information then the UE will never get the updated list.

[Lena] Why “never”? The UE will remove the CAG ID from its stored information and try on another cell from the UE’s allowed CAG list. There is also the option of the user manually selecting a CAG ID not in the UE’s allowed list, which we have been discussing since November.

--

Sang Min Park (LG Electronics): We share the concerns expressed by Qualcomm. Providing critical information via “Reject” message is not a good idea. Also as Lena pointed out, we now have an option of manual selection for non-allowed CAG ID… so it seems not worth to increase vulnerability.

-

Sung Hwan Won (Nokia)

The second change in the following CR is aligned with this CT1 CR.

7.7.3 S2-2002144

CR Approval 23.501 CR2045R1 (Rel-16, 'F'): CAG-only indication and empty Allowed CAG list Huawei, HiSilicon Rel-16 Vertical\_LAN Revision of unhandled S2-2000439 from S2#136AH. Confirm CR Revision - CR states 0!

I would like to see a stage 2 agreement first.

-

Kundan Tiwari (Samsung)

There is no vulnerability at all, it is always be provided integrity protected (#76 is always provided integrity protected) we do not see any vulnerability problem. Of course we can wait for the SA2 discussion. SA2 design successful cases, CT1 can design some special cases without going to SA2 if it does not impact architecture. For every small issues CT1 is sending LS or contributions to CT1 this is not good working model as this is creating a lot of dependency on other grps and making the progress of work in CT1 slow.

4.4.4.2 Integrity checking of NAS signalling messages in the UE

Except the messages listed below, no NAS signalling messages shall be processed by the receiving 5GMM entity in the UE or forwarded to the 5GSM entity, unless the network has established secure exchange of 5GS NAS messages for the NAS signalling connection:

a) IDENTITY REQUEST (if requested identification parameter is SUCI);

b) AUTHENTICATION REQUEST;

c) AUTHENTICATION RESULT;

d) AUTHENTICATION REJECT;

e) REGISTRATION REJECT (if the 5GMM cause is neither #31 nor #76);

f) DEREGISTRATION ACCEPT (for non switch off); and

g) SERVICE REJECT (if the 5GMM cause is neither #31 nor #76).

-

Atle Monrad (Interdigital)

I echo Kundans comment that stage-3 must be able to do this kind of minors with or without SA2s ability to document such scenarios in stage-2.

Having said that, I also understand that we need consensus for an agreement, and will need to continue on this topic in the next meeting unless resistance disappear.

-

Ivo Sedlacek (Ericsson)

sorry for jumping late to this discussion.

I support the idea in C1-200316.

C1-200316 allows quicker synch of the UE and the network than UE's attempts to register on a various cells depending on obsolete "CAG information list" or/and manual CAG selection.

Already in the baseline, #76 is only handled when sent integrity-protected, as pointed out by Kundan. So, there is no risk of attacker providing fake "CAG information list" to the UE.

JJ Huang Fu (Mediatek): I agree with Sung that SA2 shall agree this first, and now it looks like the corresponding SA2 CR will most likely be postponed.

-

Kundan Tiwari (Samsung)

This mail came late. I already replied to reflector. IMO, SA2 will ignore the line you are sending until we capture something actionable. CT1 has not discussed the reasoning behind the line so Qualcomm will tell this line was not discussed with Registration reject scenario.

Having said that I will not raise concern on reflector anymore. But we should bring the contribution in CT1. SA2 will not care about this according to the discussion in this meeting.

Atle Monrad (Interdigital)Please mark C1-200316 as Postponed.

**Decision:** The document was **postponed**.

**C1-200335 Signalling of CAG-ID**

*Type: discussion For: Decision  
 Source: Qualcomm Incorporated / Lena*

**Decision:** The document was **noted**.

**C1-200336 Clarification to manual CAG selection**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0489 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

**Decision:** The document was **agreed**.

**C1-200337 Removal of the requirement for NAS to pass the selected CAG-ID to the lower layers**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1883 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

**Discussion:**

Ivo Sedlacek (Ericsson): same changes as C1-200311. Given that C1-200311 has more cosigners, it is proposed that C1-200337 is merged into C1-200311

Lena Chaponnière (Qualcomm): I am fine to merge C1-200337 into C1-200311.

Ivo Sedlacek (Ericsson)

The draft revision of C1-200311 can be found at [1].

The only changes are adding of Huawei, HiSilicon, Qualcomm Incorporated as co-signers.

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iada-was-C1-200311-v01.zip

Merged into C1-200311 and its revisions

Lena Chaponnière (Qualcomm): I am fine with the draft revision.

**Decision:** The document was **merged**.

**C1-200338 Including CAG information list in REGISTRATION ACCEPT message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1884 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

**Discussion:**

Vishnu Preman (Huawei): We are fine with this CR in principle, however we have the following comments.

a) For the reason for change, it would be better to specify the benefits of including the CAG information list IE and not only to use the SA2 text on Mobility restrictions. Mobility restriction is a very general term in SA2 specs which we don’t use as much as in stage 3. We could improve the reason for change by saying that if the CAG list is only included in CUC procedure, then the NW needs to initiate the CUC procedure always and it increases signaling, may delay the registration procedure or the UE moving back to idle mode. So there are benefits of including the CAG information list in the registration accept message which is addressed in the CR.

b) NW handling is missing. We need to specify when the AMF includes the CAG information list in the registration accept message.

c) There are 3 instances of "CAG information list" IE  This should be changed to CAG information list IE . There is no need to use “” for the IE.

d) There are 3 instances of “or any combination of these IEs”  This is not needed as the IEs are under the OR condition. So the combinations are already covered.

Lena Chaponnière (Qualcomm): Thanks for your comments. I have taken them all on board in a draft revision available in the drafts folder at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200338\_v1.zip

Please let me know if you have any remaining comments.

--

Vishnu Preman (Huawei)

Thank you for the revision and taking the comments on board.

We are fine with it. A minor comment to add “stored in the UE” as below.

If the UE has set the CAG bit to "CAG Supported" in the 5GMM capability IE of the REGISTRATION REQUEST message and the AMF needs to update the "CAG information list " stored in the UE, the AMF shall include the CAG information list IE in the REGISTRATION ACCEPT message.

-

Lena Chaponnière (Qualcomm)

Thanks for your feedback, I have made the change you suggested below in the updated draft revision available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200338\_v2.zip

Please let me know if you have any remaining comments.

Lena Chaponnière (Qualcomm)

Thanks for your feedback. The revision has been uploaded to the 3GPP server and the tdoc number for the revision is C1-200840.

-

Sung Hwan Won (Nokia)During the preparation call, didn’t you mention that there was an SA2 paper in the previous meeting? Was the paper re-submitted?

If it was re-submitted, could you please add the linkage?

If it was not re-submitted, is there any particular reason for that?

Lena Chaponnière (Qualcomm)

The SA2 papers were submitted, they are CR 2135 to TS 23.501 (S2-2001846) and CR 2091 to TS 23.502 (S2-2001876). I have revised C1-200840 into C1-200985 to add the linkage. The revision has been uploaded.

Sung Hwan Won (Nokia)

Thank you. Revisions are OK for me.

**Decision:** The document was **revised to C1-200840**.

**C1-200840 Including CAG information list in REGISTRATION ACCEPT message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1884 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

(Replaces C1-200338)

**Decision:** The document was **revised to C1-200985**.

**C1-200985 Including CAG information list in REGISTRATION ACCEPT message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1884 rev 2 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

(Replaces C1-200840)

**Decision:** The document was **agreed**.

**C1-200398 "CAG information list" preventing selection of any available and allowable PLMN**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1898 Cat: F (Rel-16)  
  
 Source: Ericsson / Ivo*

**Decision:** The document was **agreed**.

**C1-200403 Clarification on CAG selection**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0490 Cat: F (Rel-16)  
  
 Source: Intel / Thomas*

**Discussion:**

Lena Chaponnière (Qualcomm): This CR conflicts with the changes in C1-200336. Both CRs try to address the fact that as per SA2’s input in LS C1-200252, the UE will be allowed to register on a cell if at least one of the CAG-IDs broadcast by the cell is in the UE’s allowed list. C1-200336 assumes that there is one selected CAG-ID at the UE (which one is up to UE implementation in automatic CAG selection mode) while C1-200403 assumes that the UE considers all CAG-IDs broadcast by the cell as selected CAG-IDs, which seems to bring unnecessary complexity.

-

Vishnu Preman (Huawei)

We are fine with the CR. But we don’t think the changes in 4.4.3.1.2 are needed due to the following reasons.

a) First change (Upon selection of a PLMN….. ) : This is the case when the user is selecting a CAG-ID and we believe that the user will still only select one “CAG-ID” from the display. So the existing text is correct and also we prefer the changes in C1-200336 as it adds clarity.

b) Second change( Note2): We also think the Note in this section is not needed as the manual selection is still done based on the CAG-ID broadcasted by the CAG cell.

\*-

Ban Al Bakri (NTT DOCOMO)

NTT DOCOMO supports Lena’s comment and prefers the CR in C1-200336

--

Thomas Luetzenkirchen (Intel)

Intel is OK to merge C1-200403 into C1-200336.

**Decision:** The document was **merged**.

**C1-200451 Discussion on limited service on CAG cell**

*Type: discussion For: Discussion  
 23.122 v..  
 Source: Huawei, HiSilicon/Vishnu*

**Discussion:**

Lena Chaponnière (Qualcomm): SA2 has already agreed a CR in S2-2001693 by which Rel-16 UEs that are not CAG capable can camp on a CAG cell in limited service state. The SA2 CR also assumes that legacy UEs (Rel-15 or older) cannot camp on CAG cells in limited service state.

**Decision:** The document was **noted**.

**C1-200452 Limited service state on CAG cell**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0491 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

**Discussion:**

Lena Chaponnière (Qualcomm): Since the SA2 agreement on non-CAG capable UEs being able to camp on a CAG cell in limited service state is only for Rel-16 UEs (see S2-2001693), the second bullet added should be made specific to “MS not supporting CAG, but supporting this release of the specification”.

Ivo Sedlacek (Ericsson):

- 3.5 i) - this is captured in 3.5 a) already

- 3.5 j) - whether a UE not supporting CAG can make an emergency registration on a CAG cell depends on broadcast information provided in AS layer. According to my information, RAN2 expects that the CAG cell will indicate "cellreservedForOtherUse" which might prevent a UE not supporting CAG from camping on the CAG cell. We believe that CT1 should wait for RAN2 decision on whether a UE not supporting CAG can make an emergency registration on a CAG cell.

Vishnu Preman (Huawei)Regarding your first comment

- 3.5 i) - this is captured in 3.5 a) already :-

- 3.5 a) is a very general statement and if you read , all other bullets can be covered by the bullet a) as any of those conditions will lead to the unavailability of a suitable cell. For CAG we need to clarify explicitly like other bullets. That is why bullet i) is added. So we think that bullet i) adds clarity and it is needed.

Regarding your Second comment:-

- Don’t we have already emergency call supported indication in system information that is broadcasted? Cant the same thing be re-used for CAG also. And this bullet aligned with the new SA2 agreement. (see S2-2001693)

Also this is the scenario where the user has no other cells than CAG cells available for the emergency call. It will have very bad consequence if the only CAG cell available for the user will block the emergency call if it indicates “cellreservedForOtheruse”.

But we can wait for RAN2 decision, How about modifying the statement as below and adding an editors note?

j) MS not supporting CAG is camped on a CAG cell when no other non-CAG cells are available and the CAG cell is available for emergency services; and

Editor's note: Determination of availability of CAG-cell for emergency services is subject to RAN2 agreement.

--

Ivo Sedlacek (Ericsson)

bullet i)

- I can accept it, given the explanation below.

- further comments:

- please take into account the manual CAG selection in which the UE can camp and register on a CAG cell which is not in the Allowed CAG list. At least for duration of the registration, the condition in the CR is valid while the UE is NOT in limited service state.

- please consider entire CAG informaton list, which can contain several "Allowed CAG List", one per PLMN.

- please also consider a UE which is camping with selected PLMN X on a non-CAG cell and is configured with indication that the MS is only allowed to access 5GS via CAG cells for the PLMN X.

bullet j) - Ericsson wants to wait for decision of RAN2 on how the emergency calls are done by Rel-16 UEs not support CAG in CAG-only cell. See explanation in C1-200453.

-

Vishnu Preman (Huawei)

Thank you for the comments.

@ Lena, I have added “supporting this release of the specification” as you proposed.

@Ivo, Please find my reply in line below

Please find the draft below

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200abc\_was\_200452\_Vertical\_LAN\_Limited\_Service\_CAG\_Cell.zip

--

Ivo Sedlacek (Ericsson)

- please take into account the manual CAG selection in which the UE can camp and register on a CAG cell which is not in the Allowed CAG list. At least for duration of the registration, the condition in the CR is valid while the UE is NOT in limited service state.

[vishnu] We think we can avoid adding manual selection as it should not really matter how the CAG cell was selected (automatically or manually), what matters is if the CAG cell is in allowed list or not. Also, for ‘Manual PLMN selection’, we don’t have a similar bullet.

[Ivo]

The point was and still is that when the UE performs the manual CAG selection, the UE registers. However, in limited service state, the UE does NOT register.

- please consider entire CAG informaton list, which can contain several "Allowed CAG List", one per PLMN.

[vishnu] Yes, Bullet i) updated to cover this.

[Ivo]

For the comment above, the updated CR goes in the right direction . However, IMO, text should state that none of the CAG ID(s) are present in the list.

i) MS supporting CAG is camped on a CAG cell belonging to a PLMN and the CAG-ID(s) of the CAG cell are not present in the "Allowed CAG list" associated with that PLMN;

- please also consider a UE which is camping with selected PLMN X on a non-CAG cell and is configured with indication that the MS is only allowed to access 5GS via CAG cells for the PLMN X.

[vishnu] Bullet k) added to cover this.

[Ivo]

Generally OK, except that the first comment needs to be addressed in bullet k) too.

bullet j) - Ericsson wants to wait for decision of RAN2 on how the emergency calls are done by Rel-16 UEs not support CAG in CAG-only cell. See explanation in C1-200453.

[vishnu] We have added Editor’s note to cover your concern as your concern is not regarding the limited service state, but that only certain cells will be able to provide emergency service on that. So irrespective of what RAN2 decides, there were will be limited service as specified in J. Do you agree ?

[Ivo]

This is not acceptable.

We need to wait until RAN2 concludes whether the solution for Rel-15 UE is going to be used for Rel-16 UEs as well, or not. See explanation in comments to C1-200453.

I suggest to replace the bullet j) with an editor's note.

--

Sung Hwan Won (Nokia)

There has been some progress on this in RAN2, but according to the information that I received from my colleagues recently, it is very hard to guess what would be the outcome…

So, in order to satisfy Ivo and to make a progress, let us replace bullet j) with an EN. As soon as we hear something from RAN2, we can remove the EN and work on a bullet.

-

Vishnu Preman (Huawei)

Thanks for the comments.

a) EN added to replace the bullet j from previous verion and

b) other changes related to manual CAG selection added to both remaining bullets.

Please find the draft below

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200abc\_was\_200452\_Vertical\_LAN\_Limited\_Service\_CAG\_Cell\_v2.zip

Please let me know if you have further comments.

Ivo Sedlacek (Ericsson)

the CR goes in right direction.

Comments:

- i) and j) should refer to "CAG information list"

- editor's note should make clear that we do not know yet whether there is any requirement.

- i) should end with "and"

- j) should end with full stop

I suggest the following changes:

i) MS supporting CAG is camped on a CAG cell belonging to a PLMN, the CAG-ID of the CAG cell is not manually selected by the user and none of the CAG-ID(s) of the CAG cell are present in the "Allowed CAG list" associated with that PLMN in the "CAG information list"; and

j) MS supporting CAG is camped on a non-CAG cell belonging to a PLMN, the non-CAG cell is not manually selected by the user and the UE is configured with "indication that the MS is only allowed to access 5GS via CAG cells" for that PLMN in the "CAG information list".

Editor's note: FFS whether there is any requirement for MS not supporting CAG, but supporting this release of the specification camping on a CAG cell when no other non-CAG cells are available and the CAG cell is available for emergency services. Details of camping on such a CAG cell and availability of the CAG-cell for emergency services is subject to RAN2 agreement.

With those changes, Ericsson would be happy to cosign.

-

Kundan Tiwari (Samsung)

Just a question for clarification, the NOTE you have added when/how you are targeting to resolve. Are you planning a RAN2 or CT1 CR in next meeting? Sorry for the late comments. I missed some part of this discussion.

-

Vishnu Preman (Huawei)

Thanks for the confirmation.

@Kundan, There are already ongoing discussions in RAN2 as informed by Ivo and we will wait for that discussion to conclude.

C1-200452 is revised to C1-101023

**Decision:** The document was **revised to C1-201023**.

**C1-201023 Limited service state on CAG cell**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0491 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

(Replaces C1-200452)

**Decision:** The document was **agreed**.

**C1-200465 Deletion of all CAG IDs of a CAG cell for 5GMM cause #76**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1924 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

**Decision:** The document was **agreed**.

**C1-200467 Removal of the indication of CAG-ID for N1 NAS signalling connection**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1925 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

**Discussion:**

Lena Chaponnière (Qualcomm): but the same change is covered by C1-200337 and C1-200311.

Ivo Sedlacek (Ericsson): same changes as C1-200311. Given that C1-200311 has more cosigners, it is proposed that C1-200467 is merged into C1-200311

Vishnu Preman (Huawei): we are fine to merge C1-200467 to C1-200311.

Ivo Sedlacek (Ericsson)

The draft revision of C1-200311 can be found at [1].

The only changes are adding of Huawei, HiSilicon, Qualcomm Incorporated as co-signers.

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iada-was-C1-200311-v01.zip

Merged into C1-200311 and its revisions

**Decision:** The document was **merged**.

**C1-200468 Presentation of PLMN with non-CAG cells for manual selection**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0493 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

**Discussion:**

Ivo Sedlacek (Ericsson):

- cover page is incorrect - S1-201068 was not agreed - S1-201068 was revised to S1-201084 [2] and S1-201084 [2] was agreed according to Agenda status Friday 2330 UTC [1].

- cover page is incorrect - the marked text is not contained in the quoted SA1 response in S1-201084. Likely, it should be replaced with "non-CAG cells" :

---------------------

In the LS from SA1 (S1-201068), SA1 clarified that even if the UE is configered as a CAG only UE, if no CAG cells are available, the user shall be preseted with the PLMN IDs always.

Question 4: If the UE is configured to access a PLMN only via CAG cells and a non-CAG cell of the PLMN is available, shall the UE always display the PLMN ID of such a PLMN, or should this be controlled by the PLMN, HPLMN, or both of them?

SA1 answer: the UE always display the PLMN ID of such a PLMN in manual network selection mode.

This implies that there shall be no restriction in the UE to present the PLMN IDs to the user when there are non-CAG cells available on a PLMN.

---------------------

similar issue in consequencies if not approved.

Updated CR addressing the above can be found at C1-200468-ISED [3].

If you are OK with the changes, Ericsson would like to co-sign.

References:

[1] https://list.etsi.org/scripts/wa.exe?A3=ind2002C&L=3GPP\_TSG\_SA\_WG1&E=base64&P=10030&B=--\_004\_1e4048eaf6324df29e154c570375ac99tnonl\_&T=application%2Fvnd.openxmlformats-officedocument.wordprocessingml.document;%20name=%22Agenda%20status%20Friday%202330%20UTC.docx%22&N=Agenda%20status%20Friday%202330%20UTC.docx&attachment=q&XSS=3

[2] https://www.3gpp.org/ftp/TSG\_SA/WG1\_Serv/TSGS1\_89e\_ElectronicMeeting/Docs/S1-201084.zip

[3] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200468-ISED.zip

--

Vishnu Preman (Huawei)

Thank you for the comments. I have taken all on board.

Please find the draft version in the below link

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200abc\_was\_200468\_Presentation\_of\_PLMN\_CAG\_only\_manual\_selection\_v2.zip

Please let me know if you have further comments.

-

Ivo Sedlacek (Ericsson)

C1-200abc\_was\_200468\_Presentation\_of\_PLMN\_CAG\_only\_manual\_selection\_v2.zip is OK. Thanks.

--

Vishnu Preman (Huawei)

Added.

The revised Tdoc is now available as C1-200924 in the below link

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs/C1-200924.zip

**Decision:** The document was **revised to C1-200924**.

**C1-200924 Presentation of PLMN with non-CAG cells for manual selection**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0493 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

(Replaces C1-200468)

**Decision:** The document was **revised to C1-201020**.

**C1-201020 Presentation of PLMN with non-CAG cells for manual selection**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0493 rev 2 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

(Replaces C1-200924)

**Decision:** The document was **agreed**.

**C1-200471 Removal of term CAG access control**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1927 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

**Decision:** The document was **agreed**.

**C1-200508 Reset the registration attempt counter for #76 in service reject**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1938 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Decision:** The document was **agreed**.

**C1-200516 Updates for Manual CAG selection**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1554 rev 5 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

(Replaces C1-198992)

**Discussion:**

Lena Chaponnière (Qualcomm): the CR overlaps with C1-200701 which seems more complete. Preference for C1-200701.

Ivo Sedlacek (Ericsson):

- for registration after manual CAG selection, C1-200516 addresses a part of one case only (the marked part of case-1 below) while C1-200701 addresses both cases (case-1 and case-2 below). IMO, C1-200701 should be progressed as it is more complete.

case-1: when due to manual CAG selection the UE has selected a CAG-ID which is not included in the "allowed CAG list" for the selected PLMN or a CAG-ID in a PLMN for which the entry in the "CAG information list" does not exist

case-2: when the UE has selected, without selecting a CAG-ID, a PLMN for which the entry in the "CAG information list" includes an "indication that the UE is only allowed to access 5GS via CAG cells"

Vishnu Preman (Huawei)

Please mark C1-200516 as merged to the revision of C1-200701.

**Decision:** The document was **merged**.

**C1-200517 Configuration for the presentation of CAG cells for manual CAG selection**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0471 rev 5 Cat: C (Rel-16)  
  
 Source: Huawei, HiSilicon / Vishnu*

(Replaces C1-199010)

**Discussion:**

Lena Chaponnière (Qualcomm):

- The CR overlaps with C1-200700

- there should be a condition in new bullet 2) saying “the CAG-ID is not included in the "Allowed CAG list" of the entry”

Ivo Sedlacek (Ericsson):

- S1-201066 states "The 5G system shall support a mechanism for a PLMN to control whether a user of a UE can manually select a non-public network hosted by this PLMN that the UE is not authorized to select automatically.".

PLMN hosting the non-public network is the PLMN providing CAG-ID on the CAG cell.

Thus, the PLMN providing the CAG-ID on the CAG cell has responsibility for decision whether the a user of a UE can manually select a CAG-ID on CAG cell that the UE is not authorized to select automatically.

The best way to provide the information is an indication in SIB - either HRNN or a new bit.

However, C1-200517 proposes "there exists an entry with the PLMN ID of the PLMN in the "CAG information list" and the CAG cell is allowed to be presented to the user by the PLMN" which does not fit.

Vishnu Preman (Huawei): If I understand your comment correctly, you want to remove the first part of the statement which is “there exists an entry with the PLMN ID of the PLMN in the "CAG information list" and would like to solely put the responsibility on the serving PLMN to allow the user to manually choose the CAG celll?

Just to let you know that I am not against it, however I would like to hear from you and other companies on your view on it? The issue that I see is that, now that the manual CAG indicator is broadcasted, all the CAG ids of the neighboring PLMNs ( even for the ones to which the HPLMN does not have any roaming agreements) will be presented to the user.

Those PLMNs could have set the “manual CAG indicator” for the subscribers with whom they have roaming agreements. Is that an acceptable behavior ?

-

Ivo Sedlacek (Ericsson): > If I understand your comment correctly, you want to remove the first part of the statement which is “there exists an entry with the PLMN ID of the PLMN in the "CAG information list" and would like to solely put the responsibility on the serving PLMN to allow the user to manually choose the CAG celll?

I suggest bullet 2) is reformulated to state "CAG cell broadcasting the CAG-ID for the PLMN also broadcasts that the PLMN allows a user to manually select the CAG-ID"

> The issue that I see is that, now that the manual CAG indicator is broadcasted,

> all the CAG ids of the neighboring PLMNs ( even for the ones to which the HPLMN does not have any roaming agreements) will be presented to the user.

[Ivo]

IMO, this is intended.

> Those PLMNs could have set the “manual CAG indicator” for the subscribers with whom they have roaming agreements. Is that an acceptable behavior ?

If this is in broadcast, then it will take a lot of bandwidth. So, this is not a good idea.

If this is in some kind of UE configuration, then we will hit the problem of UE configuration and network configuration being out-of-sync.

So, I would rather not go in this direction.

One more thing - C1-200517 overlaps with C1-200700 and a merge is needed.

merged to C1-201039 ( or any revision further)

**Decision:** The document was **merged**.

**C1-200549 Clarification on Public Network Integrated NPN in TS 24.501**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1945 Cat: F (Rel-16)  
  
 Source: China Telecom*

**Discussion:**

Ivo Sedlacek (Ericsson): OK to use PNI-NPN in general. However, we should be consistent in its usage. I.e. also the 1st occurence in 4.14.3 should state PNI-NPN and title of 4.14.3 should be updated too.

Michelle Li (China Telecom)

We update the 1st occurence in 4.14.3;but for the

title of 4.14.3 we reserve the existing title to align with the title of 4.14.2.

References:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/ revision of C1-200549 Clarification on Public Network Integrated NPN in TS 24.501\_v1

-

Ivo Sedlacek (Ericsson): nearly OK.

Can you please consider adding the abbreviation into the title, as follows?

4.14.3 Public network integrated non-public network (PNI-NPN)

Reason: if someone does Word search for "PNI-NPN", he/she/it will find the right subclause already in the table-of-content.

**Decision:** The document was **revised to C1-201001**.

**C1-201001 Clarification on Public Network Integrated NPN in TS 24.501**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1945 rev 1 Cat: F (Rel-16)  
  
 Source: China Telecom*

(Replaces C1-200549)

**Decision:** The document was **agreed**.

**C1-200578 Discussion on requirement of sending CAG ID by UE**

*Type: discussion For: Agreement  
 24.501 v..  
 Source: Samsung/Kundan*

**Discussion:**

Lena Chaponnière (Qualcomm):

- Proposal 1 (if the user selects a CAG ID not in the allowed list, the UE registers on that cell) is not acceptable as it is not aligned with SA1’s answer agreed at their electronic meeting which requires this to be subject to control of the serving PLMN control

- Proposal 2 is not needed: there is no need for the UE to send the selected CAG ID to the AMF upon manually selecting a CAG ID not in the allowed list: the AMF does not need to know which CAG ID the UE has selected to determine whether or not to update the CAG information list on the UE. The AMF can simply keep track of when the UE last registered and check if the UE’s subscription info has been updated since then.

-

Vishnu Preman (Huawei):

We fail to understand the problem as described by you.

In the problem description:-

In step 5, you mentioned “ the AMF does not know which CAG cell is selected by the UE”. In our understanding AMF does know the CAG cell , it just does not know which CAG ID of the CAG cell was chosen by the user.

Moreover, AMF does not need to know this information ( CAG ID) as the intention of the CAG Information list is to restrict access to a CAG cell and not to a particular CAG-ID. So as long as any of the CAG-ID broadcasted by the CAG cell is in the allowed list, AMF can accept the registration request on that CAG cell.

In step 6, Again, UE is getting service from a CAG cell and not from a CAG-ID. So there is no real issue here as one of the CAG-ID broadcasted by the CAG cell is in the allowed list of the AMF. (Also its abnormal that the AMF and UE has allowed lists which are not in sync. In normal cases, the AMF would have updated the UE with new list)

As we don’t see any problem, we don’t see the need for the proposals in this paper.

-

Kundan Tiwari (Samsung) provided some replies

In step 5, you mentioned “ the AMF does not know which CAG cell is selected by the UE”. In our understanding AMF does know the CAG cell , it just does not know which CAG ID of the CAG cell was chosen by the user.

Moreover, AMF does not need to know this information ( CAG ID) as the intention of the CAG Information list is to restrict access to a CAG cell and not to a particular CAG-ID. So as long as any of the CAG-ID broadcasted by the CAG cell is in the allowed list, AMF can accept the registration request on that CAG cell.

Kundan> Yes, you are correct the AMF knows the CAG ID(s) of the cell broadcasted by the CAG cell. But in Manual CAG selection procedure, the AMF needs to update the CAG ID if the CAG ID is not in the Allowed CAG ID list. Then when/how to update this CAG ID to the UE? The AMF needs to know the situation when to update the CAG ID. You may be aware of the SA1 LS response regarding manual CAG selection procedure, according to the LS response, when the manual CAG procedure is successful for a CAG ID and the CAG ID is not in the allowed CAG list of the UE then the UE cannot add the CAG ID in the allowed CAG list until the network indicates it. Therefore AMF NEEDS indication from the UE that the registration procedure is for manual and network needs to update the allowed CAG ID.

[vishnu] AMF can still update the allowed CAG list of the UE with any or all of the CAG IDs broadcasted by the CAG cell. There is no additional benefit here for the AMF to know the exact CAG-ID as selected by the user. If the AMF receives a registration request on a CAG cell (where manual CAG selection is allowed by SIB) whose CAG IDs are not present in the Allowed CAG list of the NW, it means that there are 2 possibilities. 1) The user has manually selected a CAG cell 2) the Allowed list in the UE is outdated and the UE attempted automatically on a CAG cell according to its allowed list (this is a rare scenario as NW should have updated the list anyway) . In both these cases, the network can accept the registration, re-configure the UE with new CAG information list. NW can also de-register the UE after the re-configuration. So We don’t see the need to either send the CAG-ID or the indication that it’s a manual selection to the AMF.

In step 6, Again, UE is getting service from a CAG cell and not from a CAG-ID. So there is no real issue here as one of the CAG-ID broadcasted by the CAG cell is in the allowed list of the AMF. (Also its abnormal that the AMF and UE has allowed lists which are not in sync. In normal cases, the AMF would have updated the UE with new list)

Kundan> Manual CAG ID selection is a general procedure defined to add the CAG ID in the allowed CAG list if the UE just buys a CAG subscription. In the current scenario, even if the CAG is not allowed CAG list the UE will be in CM-CONNECTED mode as other CAG IDs are in the allowed CAG list and start accessing the private network corresponding the CAG ID which is not in the subscribed list yet.

[vishnu] We would rather like to see the manual CAG selection as a means for a user/UE to contact the network and the network can decide what to do/how to update the allowed CAG list. . In the scenario you mentioned, where the user manually selects a CAG-ID (which be just bought subscription for) . AMF will gladly accept the registration procedure and will update the CAG information list in the UE by RU or CUC procedure. So we don’t see the problem.

**Decision:** The document was **noted**.

**C1-200581 Handling of manual CAG selection procedure**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1957 Cat: F (Rel-16)  
  
 Source: Samsung/Kundan*

**Discussion:**

Lena Chaponnière (Qualcomm): this CR is not needed because the UE does not need to send its manually selected CAG ID to the network (see comments on C1-200578).

Ivo Sedlacek (Ericsson):

- no need of the CAG selection Type bit in the 5GS update type

- the AMF should send the entire CAG information list, if updated in the network, as in C1-200338

**Decision:** The document was **postponed**.

**C1-200586 CAG only UE and Manual PLMN selection**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1962 Cat: F (Rel-16)  
  
 Source: Samsung/Kundan*

**Discussion:**

Lena Chaponnière (Qualcomm): : this CR overlaps with C1-200468. Would prefer to progress C1-200468 as it updates the details of the manual CAG selection procedure rather than the high-level overview of CAG selection.

Ivo Sedlacek (Ericsson): subclause 3.8 is supposed to contain general description of CAG feature and the proposed text does not fit into this. The proposed text gives details of manual selection and it is more appropriate to put such text into subclause 4.4.3.1.2, as in C1-200468.

merged into 468

**Decision:** The document was **merged**.

**C1-200589 Handling of a CAG UE at non supporting AMF**

*Type: CR For: Approval  
 24.501 v16.3.0 CR-1964 Cat: F (Rel-16)  
  
 Source: Samsung/Kundan*

**Discussion:**

Lena Chaponnière (Qualcomm): this CR does not make sense as it requires an AMF which does NOT support CAG to reject the UE if “the UE’s subscription contains an "indication that the UE is only allowed to access 5GS via CAG cells"”, which effectively means an AMF which does NOT support CAG is expected to somehow understand the "indication that the UE is only allowed to access 5GS via CAG cells" . The CR should be rejected.

Ivo Sedlacek (Ericsson):

- the document is corrupted - when opening the document, Word states "Word found unreadable content in C1-200589.docx. Do you want to recover the contents of this document? If you trust the source of this document, click Yes"

- the document requires that AMF NOT supporting a feature to perform some action related to the feature . This is not OK. Furthermore, Rel-15 AMFs will not do so either.

Vishnu Preman (Huawei): We have the same understanding as Lena on this. An AMF that is not supporting CAG cannot/should not check for the CAG specific parameters. So the CR is not OK.

Kundan Tiwari (Samsung)

Thanks for the response. AMF cab know the subscription using O&M. CAG is an optional feature and a Rel-16 AMF can understand the CAG only subscription if it implements the Rel16 NAS. Rel-16 NAS can be able to reject it. If the AMF is not able to reject it then the UE is able to connect to the network and get the service. The registration request message has to be rejected because the UE is not supposed to attach to a non-CAG cell. We need some mechanism to handle this. IMO the proposed CR is best way to reject it.

We can also send LS to SA2 clarify this scenario when a UE has such subscription then the how it will be handled at non supporting AMF?

Ban Al Bakri (NTT DOCOMO)

I support the previous comments from Lena, Ivo and Vishnu.

The use case does not seem correct and hence the CR. Thus, I do not see a need to ask SA2.

Kundan Tiwari (Samsung)

Thanks for your comments. I would like to ask question from you. What the network will do in following scenarios.

1. UE configuration is changed from PLMN wide coverage to CAG only subscription. The UE is not notified. The UE is in the macro cell coverage.

2. The UE sends registration request message to the AMF not supporting CAG feature.

3. The network will accept the registration request or reject it? If accepts it then UE is able to get service which the UE supposed to not get it in macro cell.

-

chair:

The CR does not open with my word -> word found unreadable content.

The CR needs to be available without any “word” problems.

So far I see 3 companies negative, no company supporting the use case.

Kundan Tiwari (Samsung):

Yes, this tdoc has word format issue and there are 3 companies objecting it. I would like to take it further.

What should be status of the CR withdrawn??

--

Lena Chaponnière (Qualcomm)

I disagree that there is a problem to be solved. It can be ensured that a supporting AMF is selected, for instance by using a dedicated DNN or dedicated slices, see the following text in TS 23.501 subclause 5.30.3.1:

Public network integrated NPNs are NPNs made available via PLMNs e.g. by means of dedicated DNNs, or by one (or more) Network Slice instances allocated for the NPN.

Hence I see no need for an LS to SA2.

-

Kundan Tiwari (Samsung)

I have withdrawn the CR and want to discuss this in F2F meeting. Please see my response to your comment inline.

Public network integrated NPNs are NPNs made available via PLMNs e.g. by means of dedicated DNNs, or by one (or more) Network Slice instances allocated for the NPN.

Kundan: SA2 does not correlated services (S-NSSAI or S-NSSAI and DNN) with CAG. Please see the Note below. In addition to this, Private network will deployed in pockets not everywhere, so this a case where private network is not deployed at all then how the AMF hosting the private network is chosen.

**Decision:** The document was **postponed**.

**C1-200688 CAG information towards the lower layers for paging**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1567 rev 2 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-196737)

**Decision:** The document was **agreed**.

**C1-200700 Manual CAG selection**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0499 Cat: C (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ivo Sedlacek (Ericsson):

- a) 2) ii) does not capture the case of "CAG information list" NOT containing an entry for the PLMN and

- a) 2) ii) "the PLMN allows a user to manually select the CAG-ID" - proposal to reformulate to state "CAG cell broadcasting the CAG-ID for the PLMN also broadcasts that the PLMN allows a user to manually select the CAG-ID"

- a) new paragraph - no need of "an indication that the CAG-ID is allowed" to the user. Instead, those PLMN/CAG-ID combinations should be presented first.

- b) new paragraphs - no need of "indication that the MS is only allowed to access the PLMN via CAG cells" to the user. Instead, those PLMNs should be presented last.

- no need of NOTE 1

Ban Al Bakri (NTT DOCOMO):

Both the CRs in C1-200517 and C1-200700 overlap and trying to reflect what was agreed in the SA1 CR on CAG manual selection.

The 5G system shall support a mechanism for a PLMN to control whether a user of a UE can manually select a non-public network hosted by this PLMN that the UE is not authorized to select automatically.

I have similar comments to Lena’s and Ivo’s on C1-200517:

The text is restrictive in presenting the PLMN ID to being in the CAG information list, that means a UE in a country with no CAG subscription for that country cannot manually access the “allowed” CAG cell.

I have similar comments to Ivo’s on C1-200700, in short:

1- limited to presenting PLMNs in the CAG list.

2- the new 1st paragraph staring with “In addition,..” is not needed.

3- the 2nd new paragraph starting with “In addition,..” is not needed, as in manual selection all PLMNs will be presented to the user.

My suggestion is to have a text in-line with the text marked in red:

In i to v, if the MS supports CAG and is provisioned with a non-empty "CAG information list", for each PLMN/access technology combination of NG-RAN access technology:

a) the MS shall present to the user the PLMN/access technology combination and a list of CAG-IDs composed of one or more CAG-IDs such that for each CAG-ID:

1) there is an available CAG cell which broadcasts the CAG-ID for the PLMN; and

A) there exists an entry with the PLMN ID of the PLMN in the "CAG information list" and the CAG-ID is included in the "Allowed CAG list" of the entry; or

B) there exists an indication in the broadcast system information indicating that any UE supporting CAG may access this CAG cell without necessarily having an entry with the PLMN ID of the PLMN in the "CAG information list" or that the CAG-ID is included in the "Allowed CAG list" of the entry with the PLMN ID;

Editor's note [WI: Vertical\_LAN, CR#xxx]: RAN2 needs to confirm the availability of the indication in the broadcast system information, provided by the PLMN in the CAG cell, to allow UEs supporting CAG to access the CAG cell even if it is not in the allowed CAG list.

Would this be acceptable?

Vishnu Preman (Huawei)

Thank you for the proposal on the way forward. In principle, we are fine with this way forward, however we feel some part of the statement may be redundant ( as it is an OR condition), please see below which I did a strike through.

However I find a problem with approach which I indicated in another email. Will post it here too

Now that the manual CAG indicator is broadcasted, all the CAG ids of the neighboring PLMNs ( even for the ones to which the HPLMN does not have any roaming agreements) will be presented to the user.

Those PLMNs could have set the “manual CAG indicator” for the subscribers with whom they have roaming agreements. So the UEs may try to access the PLMNs which they will get rejected for sure. Is that an acceptable behavior?

One way to get around is to have an indication to the user about the priority of the available CAG-IDs as below.

a) CAG-IDS included in the allowed list.

b) CAG-IDS not included in the allowed list, but the PLMN hosting the CAG has an entry in the CAG information list

c) Other allowed CAG-IDs with the broadcasted system information that allows Manual CAG selection which doesn’t fall in a or b.

Comments?

--

Ban Al Bakri (NTT DOCOMO)

Basically I am fine with your proposal in shortening the sentence, however wouldn’t it be beneficial to add the rest of the text in an informative note?

In regard to the other suggestion for the priority of the available CAG-IDs as below; I find this very good proposal and inline with what we do for Manual PLMN selection.

.. and I feel it is ok to present PLMN to UE where no operator agreement exists with the priority you suggested.

Hope this answers your questions.

One question; are we now merging 700 and 517?

-

Lena Chaponnière (Qualcomm)

We think that your proposal below goes too much into user interface specification and that this should be left to UE implementation. So we would prefer not to add these additional indications to the user.

-

Sung Hwan Won (Nokia): on C1-200700, C1-200517, C1-200586, C1-200468

There are some CRs to 23.122 on manual CAG selection.

Issue 1: Displaying non-allowed CAG-IDs Issue 2: Displaying PLMN IDs restricted by CAG information

0700 O O

0517 O X

0586 X O

0468 X O

On Issue 2, it seems that 0468 is progressing. Thus, we can use 0468 for addressing Issue 2.

On Issue 1, I would like to volunteer to hold the pen, i.e. let us progress with 0700.

-

Sung Hwan Won (Nokia): revision in: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vbaa\_was\_0700\_manual\_CAG\_selection\_r1.docx.

--

Kundan Tiwari (Samsung)

Samsung does not support manual broadcasting indicator. It should be configured based on the agreement between roaming partners and by default the UE shows the CAG ID for the PLMN for which no configuration exists.

-

Ban Al Bakri (NTT DOCOMO)

Thank you for providing an update.

In general the conditions in the updated version are ok, but the way they are written is a bit complex.

What we have the conditions simplified for a UE to access the CAG cell if:

1- Cell broadcasting CAG id

2- Then a UE supports CAG can access if, either :

a. A UE supporting the CAG id in the allowed CAG cell

b. The UE supporting CAG and the PLMN indicates in the SIB that any CAG UE can access the cell.

I prefer adding the option to provide a human readable CAG-id to the user in a separate paragraph (applicable for Manual and Automatic CAG selection) and not include it in the conditions for Manual CAG selection.

You can see the discussion on the reflector related to the CRs in 700 and 517 showing proposed text.

-

Ivo Sedlacek (Ericsson)

Ban has a point. Could the bullet 2 state:

2) the following is true:

i) there exists an entry with the PLMN ID of the PLMN in the "CAG information list" and the CAG-ID is included in the "Allowed CAG list" of the entry; or

ii) the available CAG cell broadcasting the CAG-ID for the PLMN also broadcasts that the PLMN allows a user to manually select the CAG-ID.

I also agree that the HRNN can be described is a separate paragraph.

-

Sung Hwan Won (Nokia)

OK, I revised according to Ban’s and Ivo’s comments.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vbaa\_was\_0700\_manual\_CAG\_selection\_r2.docx

-

Lena Chaponnière (Qualcomm)

We cannot accept the mandatory requirement on the UE to present the list of {PLMN/access technology combination, CAG-ID, HRNN} in a specific order. There are no stage 1 or stage 2 requirements defining this tier 1 and tier 2 type of combination which you introduced in the CR. Moreover, this is going too much into user interface implementation details. We could accept a note making a recommendation about the ordering.

Sung Hwan Won (Nokia) Now the normative text is converted to a note.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vbaa\_was\_0700\_manual\_CAG\_selection\_r3.docx

-

Sung Hwan Won (Nokia) @Kundan

Then, how can the RPLMN control it? Please note that CAG configuration is updated by HPLMN only. Do you mean that a VPLMN needs to contact HPLMN whenever there is any change in the manual CAG selection policy for a PNI-NPN hosted by the VPLMN?

-

Vishnu Preman (Huawei)

Some comments:

a) In bullet a) why is the ‘list of’ removed ? The MS shall present to the user the list of CAG-IDs and for each CAG-ID which satisfies 1 and 2. Now it reads in a strange way that only PLMN + one CAG-ID is presented. Instead it shall be PLMN + list of CAG ids belonging to PLMN which satisfies 1 and 2.

b) ‘that’ is missing in the below statement a)-2)-ii)

ii) the available CAG cell broadcasting the CAG-ID for the PLMN also broadcasts that the PLMN allows a user to manually select the CAG-ID.

c) In the first statement of the Note, it says that the presentation of CAG-ID is optional and in the tier 1 and tier 2, it says the presentation of HRNN is optional. In my understanding presentation of the CAG-ID is not optional.

-

Kundan Tiwari (Samsung)

<<Then, how can the RPLMN control it? Please note that CAG configuration is updated by HPLMN only. Do you mean that a VPLMN needs to contact HPLMN whenever there is any change in the manual CAG selection policy for a PNI-NPN hosted by the VPLMN?>>

Kundan> In all most all roaming cases, VPLMN provides service based on agreement with HPLMN excerpt for RLOS which is not the case here. All the time HPLMN should be aware of the services provided by VPLMN and control it. That’s why SoR is defined. IMO, HPLMN VPLMN should contact the HPLMN for any change in roaming services.

-

Ban Al Bakri (NTT DOCOMO): Thanks for the revision.

1- Similar to Vishnu, I have the comment on why you changes the first condition to singular (removing the list), it should be one or more instances of CAG-Ids per PLMN per cell.

2- For the second condition, provided by Ivo:

ii) the available CAG cell broadcasting the CAG-ID for the PLMN also broadcasts the PLMN allows a user to manually select the CAG-ID.

If we consider the first condition “In i to v, if the MS supports CAG and is provisioned with a non-empty "CAG information list", for each PLMN/access technology combination of NG-RAN access technology:”, then there are cases where the UE supports CAG but has empty CAG information list, and in this case it should be able to manually select the CAG cell if SIB indicates it is ok for all. Therefore I suggest to have a totally new bullet for this! I would also like to have a note clarifying that; a UE supporting CAG can access this CAG cell without necessarily having an entry with the PLMN ID of the PLMN in the "CAG information list" or that the CAG-ID is included in the "Allowed CAG list" of the entry with the PLMN ID.

3- Again, for the HRNN, if it is valid for both the manual and Automatic modes, then it should be added in a common clause.

4- The way the Note 0 is written is complex. Can’t we have it as suggested by Vishnu earlier, and please do not mix it with HRNN :o) :

One way to get around is to have an indication to the user about the priority of the available CAG-IDs as below.

a) CAG-IDS included in the allowed list.

b) CAG-IDS not included in the allowed list, but the PLMN hosting the CAG has an entry in the CAG information list

c) Other allowed CAG-IDs with the broadcasted system information that allows Manual CAG selection which doesn’t fall in a or b.

Ban Al Bakri (NTT DOCOMO)

I do not agree that this should be configured based on the agreement between roaming partners.

This can be dynamic and it is impossible to keep track across all roaming partners in the world.. and imagine how much efforts it will cost operators to do so!!

Kundan Tiwari (Samsung) Thanks for the response. Allowed CAG ID comes from the UDM. Then this setting can come from UDM also?? What is the extra effort? In reality CAG is designed mainly for the factory. Why a factory will have so many UEs from other countries? In practical scenario a UE will not be roaming to all factories of other countries

-

Ivo Sedlacek (Ericsson)

Stage-1 requirements expect control by the RPLMN. It can be achieved either by using HRNN as in 731 or by a new bit in SIB.

-

Kiran

I have expressed my comments over broadcasting by SIB whether the manual CAG selection is allowed or not. IMO, we need F2F discussion to handle this case. It has dependency on RAN2.

ii) the available CAG cell broadcasting the CAG-ID for the PLMN also broadcasts the PLMN allows a user to manually select the CAG-ID.

Editor's note: RAN2 needs to confirm if there will be modification in the radio interface in order to enable a CAG cell's broadcasting that the PLMN allows a user to manually select a CAG-ID supported by the CAG cell.

-

Lena Chaponnière (Qualcomm)

We agree that an indicator in SIB is the easiest way to achieve control by the RPLMN. We have a preference for using a new bit in SIB rather than using the HRNN.

-

Sung Hwan Won (Nokia)

Now the revision is in: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vbaa\_was\_0700\_manual\_CAG\_selection\_r4.docx.

Even though it loses dynamical per-CAG-ID manual CAG selection control, the configuration-based solution which Kundan supports can be one way of achieving the stage 1 requirement. So let us not assume SIB-based solution for now. Since we will send an LS to RAN2 anyways, there will be a clarification. So I modified the bullet to: “ii) the PLMN allows a user to manually select the CAG-ID.”

And some inline responses below.

-

Ivo Sedlacek (Ericsson)

> Even though it loses dynamical per-CAG-ID manual CAG selection control, the configuration-based solution which Kundan supports can be one way of achieving the stage 1 requirement.

> So let us not assume SIB-based solution for now. Since we will send an LS to RAN2 anyways, there will be a clarification.

> So I modified the bullet to: “ii) the PLMN allows a user to manually select the CAG-ID.”

S1-201066 included in SA1 LS C1-200776 clearly states:

The 5G system shall support a mechanism for a PLMN to control whether a user of a UE can manually select a non-public network hosted by this PLMN that the UE is not authorized to select automatically.

It is the VPLMN which makes a decision, not the HPLMN.

We have had configuration based solution in Nov 2019 CT1 meeting and it was not progressed.

So, C1-20vbaa\_was\_0700\_manual\_CAG\_selection\_r4 is not acceptable.

I suggest to use the text from the previous version and the editor's note, e.g. as follows:

-----------------------

In i to v, if the MS supports CAG and is provisioned with a "CAG information list", for each PLMN/access technology combination of NG-RAN access technology:

a) the MS shall present to the user the PLMN/access technology combination and a CAG-ID such that for the CAG-ID:

1) there is an available CAG cell which broadcasts the CAG-ID for the PLMN; and

2) the following is true:

i) there exists an entry with the PLMN ID of the PLMN in the "CAG information list" and the CAG-ID is included in the "Allowed CAG list" of the entry; or

ii) the available CAG cell broadcasting the CAG-ID for the PLMN also broadcasts the PLMN allows a user to manually select the CAG-ID;

Editor's note [Vertical\_LAN; CR# 0499]: RAN2 needs to confirm if there will be modification in the radio interface in order to enable a CAG cell's broadcasting that the PLMN allows a user to manually select a CAG-ID supported by the CAG cell.

b) the MS shall present to the user the PLMN/access technology combination without a list of CAG-IDs, if:

1) there is no entry with the PLMN ID of the PLMN in the "CAG information list"; or

2) there exists an entry with the PLMN ID of the PLMN in the "CAG information list" but the "indication that the MS is only allowed to access 5GS via CAG cells" is not included in the entry;

and there is an available NG-RAN cell which is not a CAG cell for the PLMN; and

-----------------------

If the above is not acceptable, then we need to replace bullet a) 2) ii) entirely with an editor's note.

One additional technical issue - the "and" at the end of bullet b) 2) seems superfluous and should be replaced with fullstop.

-

Sung Hwan Won (Nokia)

OK, let me try this again:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vbaa\_was\_0700\_manual\_CAG\_selection\_r5.docx

If this is not agreeable, then I will try “If the above is not acceptable, then we need to replace bullet a) 2) ii) entirely with an editor's note.”

-

Lena Chaponnière (Qualcomm)

I support this version rather than replacing bullet a) 2) ii) entirely with an editor's note. Our view is that an indication in SIB is the most straightforward way to achieve the SA1 requirement.

-

Ban Al Bakri (NTT DOCOMO)Thank you for providing the updates and the answers.

I am still not happy with how the Note 0 is written. I find it complex for a note. I prefer a simple listing, and again no need to mix the HRNN with it, as it is optional and clear from the sentence above.

-

Chairman

as of now, none of the CRs in C1-200700, C1-200517, C1-200586, C1-200468 would go forward, as we have open comments against each of them.

At one point, there was a suggestion to merge

- 517 in 700 and

- 586 in 486

You may want to consider whether there is any chance of merging proposals one or the other way. Remember, deadline for uploading revisions is roughly 6 hours away …..

-

Vishnu Preman (Huawei)

I agree with Ban that the Note looks more like a normative text than informative text and is complex to read. Also the Note needs to tell only how the CAG cells are presented to the user. I don’t think we need to specify bullet b) at all in the Note. If there are no CAG cells, the PLMN is presented anyway according to b) . This is also the normal behavior.

I would propose the below.

Note 0: if there are CAG cells available for Manual selection, the CAG-IDs of those CAG cells can be presented with an indication in the below order

a) CAG-IDs of the CAG cell belonging to a PLMN, the CAG-ID is present in the Allowed CAG list of that PLMN.

b) CAG-IDs of the CAG cell belonging to a PLMN, the CAG-ID is not present in the Allowed CAG list of that PLMN and the PLMN allows the CAG cell to be presented to the user.

c) CAG-IDs of the CAG cell belonging to a PLMN, the PLMN has no Allowed CAG list, but the PLMN allows the CAG cell to be presented to the user.

@Chair: I would like to kindly inform you that there is no objection to C1-200468 ( revised to C1-200924 and now to C1-201020 (forgot to add Samsung as co-signing company due to the merge of C1-200586)) . The ongoing discussion is not relevant to this CR.

--

Sung Hwan Won (Nokia)

My understanding is that, if:

- For PLMN A

o a UE is only allowed to access PLMN A via a CAG cell; and

o CAG A-1 is allowed.

- For PLMN B

o a UE is allowed to access PLMN B via a non-CAG cell;

o CAG B-1 is allowed

then, there are available PLMN IDs and CAG-IDs as follows:

PLMN A Null

PLMN A CAG A-1

PLMN A CAG A-2

PLMN B Null

PLMN B CAG B-1

PLMN B CAG B-2

In this case, the highlighted rows should be prioritized.

Do you agree?

If you agree, then do you find any simpler text?

-

Vishnu Preman (Huawei)

In my understanding what we are trying to achieve with the Note is to give implementers information on the order in which the CAG IDs are presented to the user.

In your below example, of course with the normative text we added, we will present the highlighted cells to the user. I don’t see any use of Note here.

PLMN is always presented to the user in the order as specified in bullets from i) to v) which is: HPLMN, UC-PPLMN, OC-PPLMN, High quality PLMN, Low quality PLMN…

So what we need to specify in the Note is how the CAG-IDs belonging to each of the PLMN are presented to the user.

For example: In the below case , if PLMN A is HPLMN, PLMN B is PPLMN, if the system information broadcasts that CAG B-2 is allowed for manual CAG selection, the the order of presentation to the user is as below

1) PLMN A + CAG A-1 ( as it is HPLMN and CAG A-1 is in Allowed list)

2) PLMN B

3) PLMN B + CAG B-1 ( as it is PPLMN and CAG B-1 is in the Allowed list)

4) PLMN B + CAG B-2 ( as it is PPLNM and CAG B-2 is allowed for manual CAG selection according to SIB)

If this cannot be concluded now, I will prefer to remove the Note completely and keep the normative text so that the CR is not blocked.

-

Ban Al Bakri (NTT DOCOMO)

I was trying to provide some text for the Note, but I can see that we can leave it out for now due to the short time left for uploading documents.

Just for info and maybe for consideration for the next meeting, my quick proposal would be:

Note 0: if there are CAG cells available for Manual CAG selection, the CAG-IDs of those CAG cells can be presented to the user for each PLMN in the following order:

a) The CAG-ID present in the Allowed CAG list of that PLMN.

b) The CAG-ID is not present in the Allowed CAG list of that PLMN entry, the UE is allowed to access PLMN B via a non-CAG cell and the PLMN allows the CAG cell to be presented to the user.

c) The CAG-ID is not present in the Allowed CAG list of that PLMN entry, the UE is not allowed to access PLMN B via a non-CAG cell and the PLMN allows the CAG cell to be presented to the user

d) There is no PLMN entry in the “CAG information List”, but the PLMN allows and indicates that the CAG cell to be presented to the user.

--

Lena Chaponnière (Qualcomm)

I am not happy with the wording of the EN in C1-201039 which makes it sounds like normative work in the prioritization of the lists is needed. As mentioned previously, there are no SA1 requirements for this and this is going into user interface specification. So either there is no EN at all, or we suggest rewording the EN to:

Editor's note [Vertical\_LAN; CR# 0499]: It is FFS whether prioritization in the list (e.g. a CAG-ID allowed to the UE is displayed above a non-allowed CAG-ID) is needed, and, if it is needed, how it can be achieved,.

-

Kundan Tiwari (Samsung)

Thanks a lot for the revision and drafting the CR. here are final comments.

1. The LS from S1 came very late when the CT1 tdoc submission deadline has passed. So Samsung didn’t get enough time to study the LS and contribute this requirement from RAN2.

2. There can be a better solution than this e.g. configuration by HPLMN like we have in CSG or some other procedure.

3. There is a security problem with this solution, any fake base station can alter the setting, e.g. the fake base station broadcast the opposite settings.

We would like to get more time to discuss this issue. We think next F2F meeting is better to discuss the solution against the requirement raised by SA1. I believe my request is reasonable.

-

Vishnu Preman (Huawei)

I can understand you may have a point to block the LS to RAN2 , but I am not sure If I understand why you want to block this CR in CT1. We (including you) have been trying to get Manual CAG selection (outside allowed CAG list) into 23.122 since the October meeting. Please see my reply in line.

1. The LS from S1 came very late when the CT1 tdoc submission deadline has passed. So Samsung didn’t get enough time to study the LS and contribute this requirement from RAN2.

a. [vishnu] You had submitted few CRs on Manual CAG selection based on the reply in SA1 LS in this meeting. In addition, you submitted a discussion paper (C1-200578) based on this LS which says

This will discuss the outcome of SA1 discussion S1-201068 and LS S2-2001616 received from the SA2.

So I am slightly surprised to hear the reason that the SA1 LS came late after CT1 deadline. In this CR, we have a clear Editors note that RAN2 needs to confirm. So if RAN2 doesn’t confirm the new bullet is never valid as there is no broadcast information. So not sure what is the real concern here ?

2. There can be a better solution than this e.g. configuration by HPLMN like we have in CSG or some other procedure.

[vishnu]We have tried this way forward which was rejected by SA1. This was exactly the solution that was agreed in the CT1 CR in the November meeting.

3. There is a security problem with this solution, any fake base station can alter the setting, e.g. the fake base station broadcast the opposite settings.

[vishnu] Problem with Manual CAG selection was that the CAG cells radio resources are limited and the operators want to limit access to it. If the cell is fake, no one needs to bother about the radio resource? Even if the UE tries to access the fake CAG cell via manual CAG selection, it is not worse than the UE trying to access a fake non-CAG cell. So I don’t any additional problem here.

CR 201052 clearly states the dependency on RAN2 for the complete solution. So of course, we can have more discussion in the next meeting based on RAN 2 progress. I would request you to re-consider your position on this.

**Decision:** The document was **revised to C1-200972**.

**C1-200972 Manual CAG selection**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0499 rev 1 Cat: C (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200700)

**Decision:** The document was **revised to C1-201037**.

**C1-201037 Manual CAG selection**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0499 rev 2 Cat: C (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200972)

**Decision:** The document was **revised to C1-201039**.

**C1-201039 Manual CAG selection**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0499 rev 3 Cat: C (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-201037)

**Decision:** The document was **revised to C1-201052**.

**C1-201052 Manual CAG selection**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0499 rev 4 Cat: C (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-201039)

**Decision:** The document was **postponed**.

**C1-200701 Triggering mobility registration update due to manual CAG selection**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1998 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ivo Sedlacek (Ericsson)

- "or" needs to be removed from the bullet y.

- I prefer C1-200701 above competing C1-200516, as C1-200701 is more complete.

- Ericsson would like to cosign.

Kundan Tiwari (Samsung)

Samsung supports this CR (This is in line with the proposal Samsung submitted in Portroz and Reno meeting). Samsung would like to co-sign the tdoc.

**Decision:** The document was **revised to C1-200973**.

**C1-200973 Triggering mobility registration update due to manual CAG selection**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1998 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200701)

**Decision:** The document was **agreed**.

**C1-200728 Rejection of non-emergency PDU session establishment with 5GMM cause #76**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2007 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lena Chaponnière (Qualcomm): the proposed addition does not yield any benefit, since the MM layer does nothing with the info that the message was not forwarded to the SMF due to CAG access restrictions. So a more generic cause value (like routing failure) can be used instead.

-

Ivo Sedlacek (Ericsson): the scenario addressed in the CR does not seem to be possible as if the UE is non-emergency registered and attempts to camp on:

- a non-CAG cell of a PLMN to which the UE is only allowed to access via a CAG cell; or

- a non-allowed CAG cell;

then the UE should not be able to sent UL NAS TRANSPORT message carrying a PDU SESSION ESTABLISHMENT REQUEST - e.g. either SERVICE REQUEST or REGISTRATION REQUEST would be rejected with 5GMM cause #76 or transition from RRC\_INACTIVE to RRC\_CONNECTED would not be successful. See 24.501 5.30.3.4 as updated by S2-2001614.

-

Vishnu Preman (Huawei): We have a question on the scenario itself, as how it is possible ? If none of the CAG cells are in the allowed list the UE cannot be registered for normal service via those CAG cells and so UE will never send any request for non-emergency PDU sessions.

Same reasoning when the UE is configured as a CAG only UE as well.

So we don’t think this CR is needed.

-

Sung Hwan Won (Nokia): CAG information list is updated, but before the AMF initiates UCU, the AMF receives UL NAS TRANSPORT message including an SM request. Then, the AMF should reject the request rather than forwarding the 5GSM message. It would not happen often and that is why it is an abnormal case.

Routing failure would also work, but I don’t understand why the existing cause value should not be used. It can be seen that bullet b1) of subclause 6.4.1.6 specifies the same behavior as the routing failure case, but CT1 chose to use to indicate service area restriction as the cause.

--

Ivo Sedlacek (Ericsson)

> CAG information list is updated, but before the AMF initiates UCU, the AMF receives UL NAS TRANSPORT message including an SM request. Then, the AMF should reject the request rather than forwarding the 5GSM message. It would not happen often and that is why it is an abnormal case.

This seems to be rather rare race condition.

Wouldn't it be more appropriate to silently discard the received 5GSM message and perform UCU? This would trigger the UE to select a new cell and then the 5GSM procedure can continue, upon 5GSM timer expiration.

Also, this would work for any type of payload, not just 5GSM.

Or?

Sung Hwan Won (Nokia) @Ivo

No information is delivered towards the 5GSM sublayer and the 5GSM procedure will be retried. That should be avoided.

-

Sung Hwan Won (Nokia)

And this is not just rare race condition for the reason that you stated in the other mail thread

<snip>

AMF sending CONFIGURATION UPDATE COMMAND to the UE might not be performed immediately after reception of the CAG information list from UDM, e.g. due to UE using MICO mode.

<snap>

-

Ivo Sedlacek (Ericsson)

> And this is not just rare race condition for the reason that you stated in the other mail thread

> <snip>

> AMF sending CONFIGURATION UPDATE COMMAND to the UE might not be performed immediately after reception of the CAG information list from UDM, e.g. due to UE using MICO mode.

> <snap>

The case above does not apply in the scenario of C1-200728 - when the UE is in MICO mode (meant in 5GMM-IDLE mode with MICO mode), the AMF does not get any 5GSM messages from the UE. Or?

> No information is delivered towards the 5GSM sublayer and the 5GSM procedure will be retried. That should be avoided.

Doesn't the UCU with CAG information list trigger the UE to move to a new cell?

And if so, retransmission of the 5GSM procedure would be OK.

Or do I miss anything?

-

Sung Hwan Won (Nokia)

OK, not for the MICO mode.

However, why should the UE retry the 5GSM procedure after moving to a new cell? This should be aborted.

Ivo Sedlacek (Ericsson)if the AMF silently discards the 5GSM message, performs UCU with the new CAG information list, which forces the UE to move to a new cell, then the UE's 5GSM layer can continue as in any other situation when a cell is changed during 5GSM procedure.

There is no need to force abort (if not forced already according to the current procedures).

The new cell is a normal suitable cell, so in principle the 5GMS procedure can continue on the new cell (unless abort is forced already according to the current procedures).

Or do I miss anything?

Sung Hwan Won (Nokia)

I see. OK, let me withdraw this one.

**Decision:** The document was **withdrawn**.

**C1-200729 Handling of a UE with an emergency PDU session in terms of CAG**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2008 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lena Chaponnière (Qualcomm): - The text on AMF not performing CAG access control needs to be changed to AMF not checking CAG restrictions to align with the terminology changes proposed in C1-200471

- Typo: “the UE does not pass CAG access control is not a pass”

Ivo Sedlacek (Ericsson):

- 5.4.4.2 - local release should take place when the AMF gets new CAG information list from the UDM (rather than when the AMF sends CONFIGURATION UPDATE COMMAND to the UE).

Reason: AMF sending CONFIGURATION UPDATE COMMAND to the UE might not be performed immediately after reception of the CAG information list from UDM, e.g. due to UE using MICO mode.

- 5.6.1.4.1 - "if the UE does not pass CAG access control is not a pass. " -> not English

-

Lin Shu (Huawei)

Comments:

1. General comment: how this (below bullet b)) could happen for UCU as the UE was already in the connected mode and why the AMF does not reject the UE's NAS request (e.g. service request) with #76 which triggers the UE moving from the idle mode to the connected mode.

"b) is in

1) a CAG cell and none of the CAG-ID(s) supported by the CAG cell is included in the "allowed CAG list" for the current PLMN in the updated "CAG information list"; or

2) a non-CAG cell and the entry for the current PLMN in the updated "CAG information list" includes an "indication that the UE is only allowed to access 5GS via CAG cells";;

"

2. Change in 4.14.3 to add the condition “and the UE has set the CAG bit to "CAG Supported" in the 5GMM capability IE of the REGISTRATION REQUEST message” is not needed as the AMF will never update CAG information to the UE with a CUC procedure if the CAG bit in REGISTRATION REQUEST message was not set. The current text “If the AMF needs to update the "CAG information” for UCU has already implied that the UE has set that bit in the in REGISTRATION REQUEST message.

3. For change in sub 5.5.1.3.4, rather than to add new text, it is better to update below existing text to cover CAG restrictions as well. In sub 5.6.1.4.1, there is no existing below text but I think the same restrictions need to be applied to SR procedure as well.

"If due to regional subscription restrictions or access restrictions the UE is not allowed to access the TA, but the UE has an emergency PDU session established, the AMF may accept the REGISTRATION REQUEST message and indicate to the SMF to release all non-emergency PDU sessions when the registration procedure is initiated in 5GMM-CONNECTED mode."

4. For all released PDU session, should add the restriction that "associated with 3GPP access" as CAG is only applicable for 3GPP access.

5. In sub 5.4.4.3 bullet a.2.i), in the text "the "allowed CAG list" for the current PLMN in the received "CAG information list"", the ""allowed CAG list"" should be "entry" as well.

6. "CAG access control" should be "CAG restrictions" as proposed by our CR C1-200471.

7. “if the UE does not pass CAG access control is not a pass”, confusing text.

Sung Hwan Won (Nokia)The revision is in: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vbba\_was\_0729\_CAG\_access\_control\_exceptions.docx.

>> The text on AMF not performing CAG access control needs to be changed to AMF not checking CAG restrictions to align with the terminology changes proposed in C1-200471 (from Lena)

Please see modified changes on subclauses 5.5.1.3.4 and 5.6.1.4.1. Those are aligned with Lin’s comment 3.

>> Typo: “the UE does not pass CAG access control is not a pass” (from Lena) & 5.6.1.4.1 - "if the UE does not pass CAG access control is not a pass. " -> not English (from Ivo)

Thank you for spotting the mistake.

>> 5.4.4.2 - local release should take place when the AMF gets new CAG information list from the UDM (rather than when the AMF sends CONFIGURATION UPDATE COMMAND to the UE). (from Ivo)

Now it is modified as follows. It does not have any dependency towards the previous sentence.

If the AMF needs to update the "CAG information list" and the UE:

a) has an emergency PDU session; and

b) is in

1) a CAG cell and none of the CAG-ID(s) supported by the CAG cell is included in the "allowed CAG list" for the current PLMN in the updated "CAG information list"; or

2) a non-CAG cell and the entry for the current PLMN in the updated "CAG information list" includes an "indication that the UE is only allowed to access 5GS via CAG cells";

the AMF shall perform a local release of all PDU sessions associated with 3GPP access except for an emergency PDU session.

>> 1. General comment: how this (below bullet b)) could happen for UCU as the UE was already in the connected mode and why the AMF does not reject the UE's NAS request (e.g. service request) with #76 which triggers the UE moving from the idle mode to the connected mode.

While the UE is in connected mode, CAG subscription can change.

>> 2. Change in 4.14.3 to add the condition “and the UE has set the CAG bit to "CAG Supported" in the 5GMM capability IE of the REGISTRATION REQUEST message” is not needed as the AMF will never update CAG information to the UE with a CUC procedure if the CAG bit in REGISTRATION REQUEST message was not set. The current text “If the AMF needs to update the "CAG information” for UCU has already implied that the UE has set that bit in the in REGISTRATION REQUEST message.

I deleted “and the UE has set the CAG bit to "CAG Supported" in the 5GMM capability IE of the REGISTRATION REQUEST message” in subclause 5.4.4.2.

>> 3. For change in sub 5.5.1.3.4, rather than to add new text, it is better to update below existing text to cover CAG restrictions as well. In sub 5.6.1.4.1, there is no existing below text but I think the same restrictions need to be applied to SR procedure as well.

Please check the revision if it is OK with you.

>> 4. For all released PDU session, should add the restriction that "associated with 3GPP access" as CAG is only applicable for 3GPP access.

OK.

>> 5. In sub 5.4.4.3 bullet a.2.i), in the text "the "allowed CAG list" for the current PLMN in the received "CAG information list"", the ""allowed CAG list"" should be "entry" as well.

Fixed. Thanks.

>> 6. "CAG access control" should be "CAG restrictions" as proposed by our CR C1-200471. 7. “if the UE does not pass CAG access control is not a pass”, confusing text.

These are not applicable anymore.

-

Ban Al Bakri (NTT DOCOMO) @Sung

Few comments:

1- Do you have a reference for and agreed SA2 CR that provides this requirement? It would be good to add it on the cover page.

2- First change “the UE is allowed to perform the initial registration for emergency services….”, my question is when is the UE allowed/not allowed to perform Emergency services, especially in this context?

3- Editorial: you have several instances of “….associated with 3GPP access except for an emergency PDU session.”. Should be “….associated with 3GPP access except for the emergency PDU session.”.

4- Another editorial/question: In the first change you use the AMF shall locally release of all PDU sessions…etc,.. where in the last change you use different wording explaining that the AMF informs the SMF,..etc.. isn’t this also a local release by the AMF for the PDU sessions with the addition of AMF informing the UE via the PDU session status IE in the SERVICE ACCEPT message. If yes, then wouldn’t be better to use the same wording if it means the same action?

-

Sung Hwan Won (Nokia)

Thanks for the comments.

1- I modified the cover page.

2- It is always allowed.

3- Fixed.

4- I made an alignment.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vbba\_was\_0729\_CAG\_access\_control\_exceptions\_r1.docx

Ban Al Bakri (NTT DOCOMO)

Follow-up on:

1- I learned before CT1#122e meeting, that there was some SA2 offline discussions to revisit and re-discuss S2-2001522. Do you know if this discussion was taken to the SA2 meeting? and if so, does this has impact on the requirement of this CR?

2- This is why I asked, because the text as it is written can reflect that the UE is allowed/not allowed!!! Therefore I suggest to simply say: the UE is performing the initial registration for emergency services….

Sung Hwan Won (Nokia)

1- I don’t think so because the UE w/ an emergency PDU session should not be suddenly deregistered from the network due to change in the CAG information.

2- I changed it to “the UE may perform”.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20vbba\_was\_0729\_CAG\_access\_control\_exceptions\_r2.docx

-

Ban Al Bakri (NTT DOCOMO)

Thanks for the updates.

The text reads a bit strange, as C) does not read as an enabler!

The key enablers for the CAG in the NAS layer are as follows;

a) CAG selection (see 3GPP TS 23.122 [5]);

b) provisioning of a "CAG information list" as specified in 3GPP TS 23.122 [5], from network to UE via the generic UE configuration update procedure; and

c) the UE may perform the initial registration for emergency services via a non-CAG cell in a PLMN for which the UE has an "indication that the UE is only allowed to access 5GS via CAG cells" or via a CAG cell that is not included in the "Allowed CAG list" for the selected PLMN.

If a UE having an emergency PDU session is camping on:

Proposal: What do you think about removing C and simply adding it in a new paragraph, as:

The UE may perform the initial registration for emergency services via a non-CAG cell in a PLMN for which the UE has an "indication that the UE is only allowed to access 5GS via CAG cells" or via a CAG cell that is not included in the "Allowed CAG list" for the selected PLMN.

-

Ivo Sedlacek (Ericsson)

nearly Ok with me.

One comment:

- in 4.14.3, "the AMF shall release all non-emergency PDU sessions associated with 3GPP access, if any"

- in 5.4.4.2, "the AMF shall indicate to the SMF to perform a local release of all non-emergency PDU sessions" which misses the bit about "PDU sessions associated with 3GPP access". Similar applies for 5.5.1.3.4 and 5.6.1.4.1.

Is this intentional?

Sung Hwan Won (Nokia)

In C1-201035, I accepted proposal from Ban and I fixed subclauses 5.4.4.2, 5.5.1.3.4, and 5.6.1.4.1 that Ivo pointed out.

**Decision:** The document was **revised to C1-200975**.

**C1-200975 Handling of a UE with an emergency PDU session in terms of CAG**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2008 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200729)

**Decision:** The document was **revised to C1-201035**.

**C1-201035 Handling of a UE with an emergency PDU session in terms of CAG**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2008 rev 2 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200975)

**Discussion:**

Ivo

The newly added bullet list in the subclause 4.14.3 can be understood to imply that a UE NOT supporting CAG can make an emergency call on a CAG cell:

------------------

The UE may perform the initial registration for emergency services via a non-CAG cell in a PLMN for which the UE has an "indication that the UE is only allowed to access 5GS via CAG cells" or via a CAG cell that is not included in the "Allowed CAG list" for the selected PLMN. If a UE having an emergency PDU session is camping on:

a) a CAG cell and none of the CAG-IDs of the CAG cell are included in the "Allowed CAG list" for the current PLMN in the UE’s subscription; or

b) a non-CAG cell in a PLMN for which the UE’s subscription contains an "indication that the UE is only allowed to access 5GS via CAG cells";

the AMF shall release all non-emergency PDU sessions associated with 3GPP access, if any. The AMF shall not release the emergency PDU session.

NOTE: The emergency services for CAG only UE can be subject to local regulation.

------------------

A UE NOT supporting CAG making an emergency call on a cell identified as CAG cell according to 23.122 is not supported by RAN2 so far, and I do not want to influence any RAN2 decision on this topic by C1-201035.

Thus, please postpone C1-201035.

We can work on a revision for CT plenary, where "supporting CAG" would be added after "UE" in 1st and 2nd sentences.

Sorry for not spotting it earlier.

**Decision:** The document was **postponed**.

**C1-200730 Determination of CAG cell**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0500 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **agreed**.

**C1-200731 Discussion to manual CAG selection**

*Type: discussion For: (not specified)  
 Source: Ericsson / Ivo*

**Discussion:**

Lena Chaponnière (Qualcomm): don’t think it is a good way forward to re-use the HRNN as indication of whether the CAG ID can be displayed to the user if the CAG ID is not in the UE’s allowed CAG list. The HRNN was defined with a different purpose. And the proposed solution would prevent an operator who does not want to allow the user to select a CAG ID not in the UE’s allowed CAG list from broadcasting an HRNN.

Similar comments apply to the related CRs in C1-200732 and C1-200733.

--

Vishnu Preman (Huawei):

We also think that using the HRNN is NOT a good way forward due to the below reasons

a) According to SA2, HRNN is an optional information that is broadcasted in the system information. Now in the CR C1-200733, it is added as a mandatory parameter in the CAG information list that is received from the CN. So this is not aligned with the SA2 specification.

b) HRNN can also be used by the user to not select a CAG cell ?. E:g if NW want the user to know that he should not select a particular cell (HRNN shows “Military cell – do not choose” ) , this information broadcasted by the NW will let the user know exactly which cell he should not choose.

With your proposal, if the HRNN is broadcasted , it means that manual selection is allowed whereas the manual selection may not be allowed and the real intention is to prevent the selection by broadcasting a name ??

So we are not OK with both the CRs C1-200732 and C1-200733.

-

Sung Hwan Won (Nokia)

Do you still want to pursue the solution? It is confusing because to see your comment on 0700 that “- a) 2) ii) "the PLMN allows a user to manually select the CAG-ID" - proposal to reformulate to state "CAG cell broadcasting the CAG-ID for the PLMN also broadcasts that the PLMN allows a user to manually select the CAG-ID"”, it seems that you are seeking for a solution for RPLMN control on manual CAG selection that has nothing to do with UE configuration.

**Decision:** The document was **noted**.

**C1-200732 Manual CAG selection**

*Type: CR For: (not specified)  
 23.122 v16.4.0 CR-0501 Cat: C (Rel-16)  
  
 Source: Ericsson / Ivo*

**Decision:** The document was **postponed**.

**C1-200733 Manual CAG selection - providing HRNN**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-2009 Cat: C (Rel-16)  
  
 Source: Ericsson / Ivo*

**Decision:** The document was **postponed**.

##### 16.2.7.3 Time sensitive communication

**C1-200329 Support for per-stream filtering and policing**

*Type: other For: Agreement  
 Source: Intel / Thomas*

**Discussion:**

Ivo Sedlacek (Ericsson)

- 9.xz - it should be stated that this is a type 6 IE

- Figure 9.xz.2 - in order to enable adding additiona parameters to the table, the Figure 9.xz.2 should start with length field

- pCR should be against 24.519

- 9.xz - it should be stated that this is a type 6 IE

- Figure 9.xz.2 - in order to enable adding additional parameters to the table, Figure 9.xz.2 should start with a length field

- pCR should be against 24.519

- Figure 9.zz.2 - Length of Stream gate instance contents should take 2 octets, given that PSFPAdminControlListLength value takes 2 octets

- Table 9.zz.1 - "

PSFPAdminControlList contents (octets 21 to a-12)

This field contains the concatenation of PSFPAdminControlListLength entries, each encoded as a PSFPGateControlEntry as specified in IEEE 802.1Q [7] table 12-33.

" - "PSFPAdminControlListLength entry" does not seem to be defined.

- Figure 9.zz.2 - mandatory fixed length fields (PSFPAdminCycleTime value, PSFPTickGranularity value) should preferably be located before fields with variable length or optional fields

--

Cristina Qiang (Huawei): Speak as contributor of C1-200570, which also proposes to add PSFP parameters. One comment on the length of “PSFPAdminControlListLength”, according to the definition in IEEE 802.1 , “PSFPAdminControlListLength” needs to occupy 4 octets rather than 2 octets.

--

Thomas Luetzenkirchen (Intel)

According to IEEE 802.1Q table 12-33, PSFPAdminControlListLength is the number of PSFPGateControlEntry instances in PSFPAdminControlList.

The coding of ieee8021PSFPStreamGateEntry in TLV format is specified in IEEE 802.1Q clause 17.7.24:

ieee8021PSFPAdminControlList OBJECT-TYPE

SYNTAX OCTET STRING

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The administrative value of the ControlList parameter for the gate. The octet string value represents the contents of the control list as an ordered list of entries, each encoded as a TLV, as follows. The first octet of each TLV is interpreted as an unsigned integer representing a gate operation name:

0: SetGateAndIPV

1-255: Reserved for future gate operations

The second octet of the TLV is the length field, interpreted as an unsigned integer, indicating the number of octets of the value that follows the length. A length of zero indicates that there is no value (i.e., the gate operation has no parameters). The third through (3 + length -1)th octets encode the parameters of the gate operation, in the order that they appear in the definition of the operation in Table 8-4. Three parameter types are defined:

- StreamGateState:

A GateState parameter is encoded in a single octet, and is interpreted as an integer value. The value 1 indicates open; the value 2 indicates closed.

- IPV:

An IPV is encoded in four octets as a 32-bit signed integer. A negative denotes the null value; zero or positive values denote internal priority values.

- TimeInterval:

A TimeInterval is encoded in 4 octets as a 32-bit unsigned integer, representing a number of nanoseconds.The first octet encodes the most significant 8 bits of the integer, and the fourth octet encodes the least significant 8 bits.

- IntervalOctetMax:

An integer representing the maximum number of MSDU octets that are permitted to pas the gate during the specified TimeInterval. If this parameter is omitted, there is no maximum. The value of this object MUST be retained across reinitializations of the management system."

REFERENCE "8.6.8.4, 8.6.9.4, 12.31.3"

::= { ieee8021PSFPStreamGateEntry 7 }

Accordingly, each ieee8021PSFPStreamGateEntry TLV consists of at least 2 octets (operation name + length field ). Please note that PSFPAdminControlList is part of MANAGE ETHERNET PORT COMMAND message. We have a limitation that the complete MANAGE ETHERNET PORT COMMAND message cannot exceed 65535 octets (see Port management information container contents maximum length as specified in clause 9.11.4.27 of 3GPP TS 24.501). Therefore there is no need to have more than 2 octets for coding of PSFPAdminControlListLength.

-

Cristina

Now I understand your point, thanks for proving further information. With the length limitation of MANAGE ETHERNET PORT COMMAND message, the length of “PSFPAdminControlList” won’t exceed 2^15, hence 2 octets is enough for the parameter of “PSFPAdminControlListLength”. That makes sense to me, but I’m worried about that such misalignment design with IEEE (in which 4 octets is required) may lead to compatibility issues. Sooner or later we have to face this problem.

Thomas Luetzenkirchen (Intel)

I think this is not a problem as long as the bridge reports the supported maximum values in StreamParameterTable to TSN AF as specified in IEEE 802.1Q Table 17-30.

ieee8021PSFPStreamParameterTable StreamParameterTable, 8.6.5, 8.6.5.1,

12.31.1

ieee8021PSFPMaxStreamFilterInstances MaxStreamFilterInstances, 8.6.5,

8.6.5.1, 12.31.1

ieee8021PSFPMaxStreamGateInstances MaxStreamGateInstances, 8.6.5,

8.6.5.1, 12.31.1

ieee8021PSFPMaxFlowMeterInstances MaxFlowMeterInstances, 8.6.5,

8.6.5.1, 12.31.1

ieee8021PSFPSupportedListMax SupportedListMax, 8.6.5, 8.6.5.1,

12.31.1

12.31.1.4 SupportedListMax

The maximum value supported by this Bridge component of the AdminControlListLength and

OperControlListLength parameters. It is available for use by schedule computation software to determine

the Bridge component’s control list capacity prior to computation.

-

Thomas Luetzenkirchen (Intel)

Many thanks for the comments received so far!

I have revised C1-200329 to C1-200835 and uploaded a draft version with the following changes based on Ivo’s comments:

a) Title sheet: Changed pCR against 24.519 v1.0.1 instead of 24.5xy V0.1.0

b) Clause 9.xz and 9.xz: The IEs are now stated as type 6 IE

c) Figure 9.xz.2: added a length field to support adding of additional parameters in future releases.

d) Figure 9.zz.2: changed Length of Stream gate instance contents to 2 octets

e) Figure 9.zz.2: Moved PSFPAdminCycleTime and PSFPTickGranularity fields before PSFPAdminControlListLength

@Ivo: Not covered in this revision is your comment regarding the missing definition of “PSFPAdminControlListLength entry":

• The meaning of “PSFPAdminControlListLength entries” is the same as “X entries” where X = the value of PSFPAdminControlListLength.

• Please note PSFPAdminControlListLength is defined in IEEE802.1Q Table 12-33. If you are using the pdf version of IEEE Std 802.1Q-2018 you may need to search without trailing ‘h’ like “PSFPAdminControlListLengt”.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200835 was C1-200329\_TS 24.5xy rel16 Support for per-stream filtering and policing - V6.doc

-

Ivo Sedlacek (Ericsson)

Updated CR is nearly OK.

On:

• The meaning of “PSFPAdminControlListLength entries” is the same as “X entries” where X = the value of PSFPAdminControlListLength.

I still consider "This field contains the concatenation of PSFPAdminControlListLength entries, each encoded as a PSFPGateControlEntry as specified in IEEE 802.1Q [7] table 12-33" rather difficult to read.

Can you please consider reformulation as follows?

---------------------

PSFPAdminControlList contents (octets 2134 to a-12)

This field contains the concatenation of entries, each encoded as a PSFPGateControlEntry as specified in IEEE 802.1Q [7] table 12-33. PSFPAdminControlListLength field indicates number of entries in this field.

---------------------

Cristina

Reporting “PSFPSupportedListMax” does solve compatibility issue. But note that “PSFPSupportedListMax” is not in current supported PSFP parameter list. Hence the following revision may need to be considered:

Option1: add one parameter more – “PSFPSupportedListMax”;

Option2: follow up IEEE’s design, using “4 octets” as the length of “PSFPAdminControlListLength”.

As I mentioned in former email, C1-200570 also proposes the similar content. If the above revision suggestion can be taken, we would like to merge C1-200570 into C1-200329 and co-authoring.

-

Thomas Luetzenkirchen (Intel)

According to the stage2 CR in S2-2001508 and S2-2001830 the “Maximum length of the PSFPAdminControlList” will be added as part of the Bridge Information:

The bridge information of 5GS Bridge is used by the TSN network to make appropriate management configuration for the 5GS Bridge. The bridge information of 5GS Bridge includes at least the following:

- Information for 5GS Bridge:

- Bridge Address (unique MAC address that identifies the bridge used to derive the bridge ID);

- Bridge Name;

- Number of Ports;

- list of port numbers.

- Capabilities of 5GS Bridge as defined in 802.1Qcc [95]:

- 5GS Bridge delay per port pair per traffic class, including 5GS Bridge delay (dependent and independent of frame size, and their maximum and minimum values: independentDelayMax, independentDelayMin, dependentDelayMax, dependentDelayMin), ingress port number, egress port number and traffic class.

- Propagation delay per port (txPropagationDelay), including transmission propagation delay, egress port number.

- Topology of 5GS Bridge as defined in IEEE 802.1AB [97]:

- Chassis ID subtype and Chassis ID of the 5GS Bridge.

- Traffic classes and their priorities per port as defined in IEEE 802.1Q [98].

- Stream Parameters as defined in clause 12.31.1 in IEEE 802.1Q [98], in order to support PSFP information:

- Maximum number of filters, which defines the maximum number of streams that the bridge can handle;

- Maximum number of gates, which can be equal or less than the maximum number of filters;

- Maximum number of meters (optional) if meassurements are required;

- Maximum length of the PSFPAdminControlList parameter that can be handled.

Please note bridge information is sent by the AMF to TSN AF as specified in 23.502 clause F.1 item 2.

2. The SMF sends the 5GS Bridge information to the TSN AF via PCF to establish/modify the 5GS Bridge. The TSN AF stores the binding relationship between 5GS Bridge ID, MAC address of the DS-TT, the DS-TT port number, NW-TT port number for the 5GS Bridge for future configuration.

There is no stage2 requirement for adding PSFPSupportedListMax to the port management information in TS 23.501 Table 5.28.3.1-1.

However, Intel is fine to merge C1-200570 into C1-200329 and add Huawei as co-signer.

-

Cristina

Thanks for providing detailed information. Huawei is ok with it now, and would like to merge C1-200570 into C1-200329, and cosign the merged version.

**Decision:** The document was **revised to C1-200835**.

**C1-200835 Support for per-stream filtering and policing**

*Type: other For: Agreement  
 Source: Intel, Huawei, HiSilicon*

(Replaces C1-200329)

**Decision:** The document was **postponed**.

**C1-200330 Support for traffic forwarding**

*Type: other For: Agreement  
 Source: Intel, Nokia, Nokia Shanghai Bell*

**Decision:** The document was **agreed**.

**C1-200331 Additional LLDP parameters**

*Type: other For: (not specified)  
 Source: Intel / Thomas*

**Decision:** The document was **agreed**.

**C1-200339 Update of text on time synchronization**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1885 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

**Decision:** The document was **agreed**.

**C1-200411 Port management corrections**

*Type: other For: Agreement  
 Source: Intel / Thomas*

**Discussion:**

Lena Chaponnière (Qualcomm): fine with the CR except for the following:

- last change is also covered in Huawei’s C1-200566

- in subclause 8.5.1, “UE-initiated” should be “DS-TT-initiated“

Cristina Qiang (Huawei): Follow up Lena’s comment, I’m ok to merge C1-200566 and C1-200411 together.

Thomas Luetzenkirchen (Intel)

Based on the comments I have revised C1-200411 to C1-200832. This revision covers the following changes:

a) Merged the changes from C1-200566 and added Huawei, HiSilicon as co-signers.

b) Changed “UE-initiated” to “DS-TT-initiated“ in subclause 8.5.1 as suggested by Lena.

C1-200832 is available in https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs.

**Decision:** The document was **revised to C1-200832**.

**C1-200832 Port management corrections**

*Type: other For: Agreement  
 Source: Intel / Thomas*

(Replaces C1-200411)

**Decision:** The document was **agreed**.

**C1-200493 Definition alignment for UE-DS-TT residence time**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1928 Cat: F (Rel-16)  
  
 Source: vivo*

**Decision:** The document was **agreed**.

**C1-200564 Establish PDU session to transfer port management information containers**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1947 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Cristina*

**Discussion:**

Lena Chaponnière (Qualcomm): don’t think this CR is needed:

- The requirement for the UE to establish the PDU session as always-on is already covered by existing text in the same subclause:

If the UE requests to establish a new PDU session as an always-on PDU session (e.g. because the PDU session is for TSC), the UE shall include the Always-on PDU session requested IE and set the value of the IE to "Always-on PDU session requested" in the PDU SESSION ESTABLISHMENT REQUEST message.

NOTE 4: Determining whether a PDU session is for TSC is UE implementation dependent.

- The requirement for UE to request SSC mode 1 is not justified: the stage 2 says that only SSC mode 1 is supported, it does not say the UE shall always request SSC mode 1. The UE may also omit the SSC mode IE (this IE is optional in the PDU session establishment request message) and the network would then set up the PDU session with SSC mode 1 (the Selected SSC mode IE is mandatory in the PDU session establishment accept message)

-

Ivo Sedlacek (Ericsson):

- no need to add normative text on inclusion of Always-on PDU session requested IE in the bullet list starting with "If the UE requests to establish a PDU session of "Ethernet" PDU session type and the UE supports transfer of port management information containers, the UE shall:" as this is already captured in "If the UE requests to establish a new PDU session as an always-on PDU session (e.g. because the PDU session is for TSC), the UE shall include the Always-on PDU session requested IE and set the value of the IE to "Always-on PDU session requested" in the PDU SESSION ESTABLISHMENT REQUEST message."

--

Cristina Qiang (Huawei)

to Lena: I partially agree with you, but have different view on “SSC mode” stuff. You’re right, “SSC mode” IE is optional in PDU session establish request message but mandatory in the PDU session establishment accept message. So does the ”PDU session type“ IE, it couldn’t become the reason.

For “PDU session type”, we already have the following statement to guarantee only “Ethernet” type can be used for TSC PDU session. However, there is no guarantee that only “SSC mode1” will be used for TSC PDU session in stage3 specification so far. Such related statement is necessary no matter in bullet list, or general part, or in the form of note. If you think put that into bullet list is too strict, we can consider do just like the “PDU session type” did. Thanks.

“If the UE requests to establish a PDU session of "Ethernet" PDU session type and the UE supports transfer of port management information containers, the UE shall:” [refer to 6.4.12 of TS 24.501]

--

Lena Chaponnière (Qualcomm): My point is that the network can always establish the PDU session with SSC mode 1, regardless of what the UE asked for. The restriction to SSC mode 1 for TSC PDU session is already captured in stage 2, so I don’t think anything additional is needed. At the most, a note could be added in stage 3 stating something like “Only SSC mode 1 is supported for TSC PDU sessions”.

\*

Cristina: I’m ok with move “SSC mode 1” from bullet list to note. Will provide updated version later. Thanks.

Cristina:

A new version of C1-200564 has been uploaded to solve all comments received so far. The number is C1-200855 available through https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs/C1-200855.zip

Major updates are:

1- Remove “always-on PDU session” and “SSC 1 mode” from bullet list

2- Add an note below for “SSC mode 1” clarification.

--

Ivo Sedlacek (Ericsson)

in general, Ericsson is OK with C1-200855.zip and would like to cosign.

However, there are the following minor issues:

- the CR is not based on the correct baseline - there is not "[general part to check if already covered]" in 24.501. This text should be present in the CR.

- there should be no changes indicated in the cover sheet

--

Ivo Sedlacek (Ericsson)

(correcting)

Hello,

in general, Ericsson is OK with C1-200855.zip and would like to cosign.

However, there are the following minor issues:

- the CR is not based on the correct baseline - there is not "[general part to check if already covered]" in 24.501. This text should NOT be present in the CR.

- there should be no changes indicated in the cover sheet

-

Lena Chaponnière (Qualcomm)

Same comment as Ivo, plus the new NOTE 3 does not read well. To be consistent with existing wording in the same subclause, I suggest:

NOTE 3: Only SSC mode 1 is supported for a PDU session which is for TSC.

Cristina

An updated version has been uploaded, which is available through http://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs/C1-200993.zip. Compared with former version:

 change indications in cover sheet , as well as the text “[general part to check if already covered]” have been removed--[comment from Ivo and Lena]

 text in Note is improved as suggestion--[comment from Lena]

 add Ericsson as co-signers--[comment from Ivo]

 correct the sequence number of Note from “3” to “5”

Lena Chaponnière (Qualcomm)

This version addresses my comments.

Ivo Sedlacek (Ericsson) ok

**Decision:** The document was **revised to C1-200855**.

**C1-200855 Establish PDU session to transfer port management information containers**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1947 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Cristina*

(Replaces C1-200564)

**Decision:** The document was **revised to C1-200993**.

**C1-200993 Establish PDU session to transfer port management information containers**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1947 rev 2 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Cristina*

(Replaces C1-200855)

**Decision:** The document was **agreed**.

**C1-200566 Correction on port management message direction**

*Type: pCR For: Agreement  
 24.519 v1.0.1  
 Source: Huawei, HiSilicon/Cristina*

**Discussion:**

Lena Chaponnière (Qualcomm):

- “UE-initiated” should be changed to “DS-TT-initiated”

- The same change is covered in C1-200411

Cristina Qiang (Huawei): Thanks Lena, will consider to merge together.

Merged into 411

**Decision:** The document was **merged**.

**C1-200570 Add PSFP parameters**

*Type: pCR For: Agreement  
 24.519 v1.0.1  
 Source: Huawei, HiSilicon/Cristina*

**Discussion:**

Lena Chaponnière (Qualcomm) : the changes in this CR overlap with those in C1-200329. Preference for the encoding proposed in C1-200329

merged into 329

**Decision:** The document was **merged**.

**C1-200571 Correction for the wrongly implemented CR1963r1**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1949 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Cristina*

**Discussion:**

Lena Chaponnière (Qualcomm): in the CR coversheet, the CR # of the CR that was wrongly implemented is not correct, it should be CR 1693 instead of CR 1963.

Sung Hwan Won (Nokia)

A small editorial correction: a hard space between 24. and 519 should be removed.

Cristina

A revised version has been uploaded to cover all comments received so far, available through http://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs/C1-200997.zip

In this version

 Correct the CR number in coversheet –[comment from Lena]

 Remove the unnecessary space –[comment from Sung]

**Decision:** The document was **revised to C1-200997**.

**C1-200997 Correction for the wrongly implemented CR1963r1**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1949 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Cristina*

(Replaces C1-200571)

**Decision:** The document was **agreed**.

**C1-200573 Exchange port management information container through N4 Session Level Reporting procedure**

*Type: pCR For: Agreement  
 24.519 v1.0.1  
 Source: Huawei, HiSilicon/Cristina*

**Discussion:**

Lena Chaponnière (Qualcomm): don’t think N4 session level procedures between the SMF and the UPF are in the scope of TS 24.519, so this CR should be rejected

Cristina Qiang (Huawei)

Protocol aspect between NW-TT and TSN AF is in the scope of 24.519.

The road between NW-TT and TSN AF consists of two parts:

part 1—transmission between NW-TT and SMF—N4 session level reporting procedure

part 2—transmission between SMF and TSN AF—SM policy association modification procedure

Part 2 already been covered, but part 1 is missing. C1-200573 just wants to ensure the general description is complete and current, doesn’t design any protocol details. Don’t understand why part2 can be mentioned but part1 can’t.

-

Lena Chaponnière (Qualcomm) Thanks for the additional information, now I understand the motivation for the pCR and I am fine with it.

**Decision:** The document was **agreed**.

**C1-200687 Port management IE format and length updates**

*Type: other For: Agreement  
 Source: Intel / Thomas*

**Decision:** The document was **agreed**.

**C1-200706 Resolving editor’s notes on reliable transmission**

*Type: pCR For: Agreement  
 24.519 v1.0.1  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **agreed**.

**C1-200708 Duplicated Ethernet port parameters in case of validation and generation of LLDP frames processed centrally at NW-TT**

*Type: pCR For: Agreement  
 24.519 v1.0.1  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **agreed**.

**C1-200734 Clarification on calculation of the residence time spent within the 5G system**

*Type: pCR For: Agreement  
 24.535 v1.0.1  
 Source: Intel / Thomas*

**Decision:** The document was **agreed**.

#### 16.2.8 5G\_CIoT

**C1-200298 Update of Reading coverage enhancement status +CRCES for Connection to 5G Core Network**

*Type: CR For: Agreement  
 27.007 v16.3.0 CR-0684 rev 1 Cat: B (Rel-16)  
  
 Source: BlackBerry UK Limited*

(Replaces C1-200116)

**Decision:** The document was **agreed**.

**C1-200328 Removal of EN and additional abnormal case for cause #31**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1881 Cat: F (Rel-16)  
  
 Source: Samsung/Anikethan*

**Discussion:**

Osama Lotfallah (Qualcomm):

We discussed the handling of non-integrity protected messages with cause code that we know for sure is coming from fake base station. Let me give the details here again:

- We thought the most possible candidates are:

a) Add to F-TAI: We already have handling of similar cases of receiving cause #11 from HPLMN which will never come from HPLMN and the agreed solution since Rel13 in LTE is to add that TAI into forbidden TAI that will be deleted based on T3247 timer

b) Add this particular cell to barred cell for 5 min: We already do this for network that fail authentication at UE side. This is not DoS behavior but it could satisfy the argument that claims that attacker is using the same TAC of legit eLTE cell

- Deleting the note will not only affect cause #31 but also affect cause #76 which is not the main objective of this CR

- In this CR, the extra argument of NAS timer T3510 can add additional issue which goes against discarding non-integrity protected messages

o For NB-N1 mode NAS timer is extended to +240 sec

o NB-N1 devices cares about power consumption

o If this CR get agreed or existing text of discarding the message is kept as is, I do not think that attacker using fake base station will go away within +240 sec. In fact smart attacker who study this hole in NAS spec will stay until T3510 expires 5 times (i.e. after > 20 min) then UE will disable N1 mode and might stay in the same fake eLTE cell (that claim connected to both 5G and 4G)

o In this case, smart attacker can drain the battery and disable N1 mode for extended period of time although legit eLTE network cell is available in different TAI or different CGI

- It is not good 3GPP specification to leave that security hole at NAS level and simply discard.

- If it is hard to reach agreement to add specific text in NAS spec for this, at least we should add a note that UE should do other proprietary mechanism to avoid staying in these fake eLTE cells that sends cause #31 and #76 non-integrity protected.

- The same argument applies to C1-200351 in TS 24.301

-

Osama Lotfallah (Qualcomm):

In order to allow UE to abort procedure, stop running timer and do other proprietary counter fake base station measure, I think the mandatory requirement in below text to discard the message needs to be changed to something with “may” or “should” and then follow that with implementation note/option to allow UE to abort and do that proprietary solution.

If the REGISTRATION REJECT message with 5GMM cause #31 was received without integrity protection, then the UE shall discard the message

Also, if we are going with the above, to handle receiving #31 as abnormal in other changes, the message needs to be integrity-protected.

On comments from Ani:

But when I discussed this further with other colleagues I was told that one of the principles that is assumed wrt the DOS attacks is that they are not persistent. It is not expected for an attacker to be persistently present and reject the UE’s registration when the UE comes back afresh after a disable-enable cycle.

[OL] Then why do we set T3247 to 30-60 min? We saw attacker being persistent for several minutes. Or at least if they are smart, they will know the security hole in NAS and will stay longer

And if an attacker really is persistent then an easier way for him would be to simply release the RRC connection after receiving the registration request message. That way none of the integrity check related backup implementations from UE side will never kick in and neither can the UE make out if this is a genuine network or a fake one.

[OL] We are not discussing RRC security holes or different kind of attack. We are focusing in downgrade attack at NAS level

With these in mind, I though it best to just remove the EN.

[OL] I am surprised by Samsung inconsistent position here. Kundan in last meeting was trying in C1-198742 to add handling for #76 to go for the option of F-TAI but it was written wrong because discard message will not allow UE to abort procedure and stop running NAS timers. At that time, I ask to investigate option a) or b) and resolve both #31 and #76 together and have single solution in DoS section to handle these two cause codes.

But I am also ok with your suggestion that we add a note saying that it can be implementation whether any additional actions need to be taken in cases of receiving non-integrity protected reject.

Would you be ok with that?

[OL] Please see above text

--

Lin Shu (Huawei)

On this topic, I would like to draw an attention that originally we pushed to do some DOS protection for #31 as for other cause values (see C1-196041) but CT1 reached a common understanding that #31 shall only be sent by the real NW. That is why we changed total logic to go the way that the UE shall simply discard all received NIP rejected message with #31. To me I think this is enough.

If we talking about the persistent attack from a fake NW (e.g. such fake NW will also move to follow the UE’s mobility in order to mount such persistent attack for long time), then regardless of what the UE done, the attack will be there. But we should consider that in reality, how an attacker could mount such persistent attack without considering the cost? How benefit it could obtain from such attack? People should care money and time. If the attacker could not benefit much, why it will do such persistent attack?

IMHO, in our spec, we just need to specify that the UE will discard the NIP reject message with #31 and for all other required additional UE handling, it is up to per different UE vendor’s implementation. No need to have a NOTE to capture this as whenever something unspecified in the standard, the vendor could/will have some proprietary mechanism if they believe needed.

All in all, we do support this CR.

Some small comments as below and also apply to 24.301 CR:

1. “ 5GMM cause #31 when received by a UE that has not indicated support for CIoT optimizations or when received by a UE over non-3GPP access is considered an abnormal case and the behaviour of the UE is specified in subclause 5.5.1.2.7. ” better to be reworded as:

"5GMM cause #31 received by a UE that has not indicated support for CIoT 5GS optimizations or received by a UE over non-3GPP access is considered as an abnormal case and the behaviour of the UE is specified in subclause 5.5.1.2.7. "

2. "Clauses affected:" in the cover page is missing.

--

other comments from Osama Lotfallah (Qualcomm)

On this topic, I would like to draw an attention that originally we pushed to do some DOS protection for #31 as for other cause values (see C1-196041) but CT1 reached a common understanding that #31 shall only be sent by the real NW. That is why we changed total logic to go the way that the UE shall simply discard all received NIP rejected message with #31. To me I think this is enough.

[OL] Proposal in C1-196041 was wrong because it will result in to disable N1 mode from 1st rejection with non-integrity protected message (i.e. handling as cause #11 from VPLMN is wrong). I think EN was there to point to issue in that discard choice. I checked the official report of CT1#120 and I did not see anything about that common understanding of this is weak attack and nothing wrong to stay in same fake eLTE cell. Why for cause #11 coming from HPLMN we did not discard although we know for sure it is fake cell?!

If we talking about the persistent attack from a fake NW (e.g. such fake NW will also move to follow the UE’s mobility in order to mount such persistent attack for long time), then regardless of what the UE done, the attack will be there. But we should consider that in reality, how an attacker could mount such persistent attack without considering the cost? How benefit it could obtain from such attack? People should care money and time. If the attacker could not benefit much, why it will do such persistent attack?

[OL] That is not the main point here. Why NAS spec do not want to inform lower layer that the eLTE cell is fake? Again we did this for cause #11 from HPLMN but here we decided to ignore that attack and hope the attacker will go away by +240 sec. This looks like inconsistency in NAS spec

IMHO, in our spec, we just need to specify that the UE will discard the NIP reject message with #31 and for all other required additional UE handling, it is up to per different UE vendor’s implementation. No need to have a NOTE to capture this as whenever something unspecified in the standard, the vendor could/will have some proprietary mechanism if they believe needed.

[OL] How UE can do additional handling when NAS spec mandates the UE to keep NAS procedure, keep NAS timer running and keep lower layer connected to fake base station?! That text blocks doing any additional stuff by UE. Right? We are of the opinion of choosing either option a) or b) and specify it in NAS. I went for adding optional text to be more flexible.

-

RV Anikethan (Samsung)

It looks reasonable to let the additional action, if needed, to be UE implementation specific .

Please let us know if the below note is agreeable:

If the TRACKING AREA UPDATE REJECT message with EMM cause #25 or #31 was received without integrity protection, then the UE shall discard the message.

NOTE 2: It is upto UE implementation if any additional actions need to be taken after ignoring ATTACH REJECT received with EMM Cause #25 or #31 without integrity protection.

If yes, shall share a revision of the CR with the highlighted note added in the necessary sections of the specification. Necessary text wrt the procedure will be updated for the TAU/Registration sections.

-

Osama Lotfallah (Qualcomm): Do you think that the note will allow UE to abort running procedure, stop NAS timer and trigger cell selection to go away from fake cell?! The text blocks all that because it is simply says ignore that message. Therefore, having note only is not enough.

Nobody is answering my question. Why downgrade attack with cause #31 coming from fake cell needs to be handled different than other cause code (#11,#14, ..etc) that we know come from fake cell (being added to F-TAI and no real action related to cause code is effective) and we handle them in DoS section?!!! You do not see this inconsistency in NAS spec.

-

Lin Shu (Huawei)

I could be fine with adding a Note to remind the implementation. One point is you need not to cover #25 in the NOTE, only #31.

@Osama, regardless of C1-196041 is wrong or not in technical but during the last Oct meeting, it is CT1’s understanding that #31 will only be sent by the real network. This totally changed the CR direction in the revision. To be frankly, I do not want to re-open the same discussion cycle on this rare cases and that is why I could be fine with Ani’s simpler proposal.

-

Further detailed input from RV Anikethan (Samsung)

-

Robert Zaus (Apple)

I would like to express my support for Osama’s very first e-mail.

The CRs for NAS DoS attack counter measures in 2G/3G/4G had two purposes:

- firstly, mitigate the effect of the reject cause (by not following the ‘normal’ reaction to the reject cause)

- secondly, try to move the UE to a different cell/location area/tracking area so that it can attempt to get service again.

(If I remember correctly, this was one of Christian’s reason for introducing the mechanism with the forbidden TAI/LAI list.)

By specifying that the Reject message with cause #31 received without integrity protection is ignored, you achieved the first point, but you do not achieve the second one.

Therefore, I don’t think it is a sufficient solution.

@Lin: I do not understand what you mean with: “it is CT1’s understanding that #31 will only be sent by the real network”.

You certainly do not want to say that CT1 agreed that a fake base station is not allowed to send #31, do you?

Maybe what you mean is: a genuine network will send #31only with integrity protection; if the UE receives #31 without integrity protection, then it can only be sent by a fake eNB.

And as you were raising the issue about the cost of the attack. - When we drafted the CRs for 24.008/24.301, our assumption was that actually such an attack could go on for a few hours. Our specs are publicly available, so if you design a solution based on the assumption that after a few minutes the attacker will give up, then you are already providing the blueprint for the next security attack. I think we just have to acknowledge the fact that there are some people analysing our specs, looking for potential gaps, writing papers on this and presenting those at conferences. (Such a paper was the starting point for the whole NAS DoS discussion, and these people won’t do you the favour to just go away.)

@Anikethan: I do not agree to your argument below that: The difference is that #11 and other causes “might” come from a genuine network as well without integrity protection.

Osama was referring specifically to the case that cause #11 is received in the HPLMN. And according to CT1’s common understanding (I hope this is still correct), cause #11 shall never be used in the HPLMN. This is independent of the question whether the message is integrity protected or not. So when drafting the CRs for 24.008/24.301, it was CT1’s assumption that because there is no legitimate use case for sending cause #11 in the HPLMN, this can be interpreted by the UE as an indication of a DoS attack, and therefore the UE should add the TAI of the cell to the forbidden TAI list and try and select a cell in another TA/LA.

About the proposal to discard the message, but then adding a note saying that further actions are up to UE implementation, I think this quite misleading, because as described in the reason for change of the CR, actually there are further UE actions specified that will follow from discarding the Reject message:

- after some time, T3510 will expire, the UE will increment the attempt counter, in certain cases also the 5GS update status will be changed, etc.

If you want to ‘bypass’ all this, you’ll need to write a bit a more than a rather vague note.

All in all, in my view, it would be best to have a solution similar to receiving #15 without integrity protection. I.e. the UE should not delete the 5G-GUTI, security context, TAI list, etc., but just add the TAI to the forbidden TAI list and attempt to select a cell in a different TA/LA. (As this is intended specifically for an NB-IoT device, we should not force the UE to do a new attach each time, as we did for cause #11.)

I’m not convinced that it is a good idea to leave all additional UE actions (besides discarding the Reject message) up to UE implementation.

But in the past this topic was alway driven by some operators, so maybe they have a view on this?

-

RV Anikethan (Samsung)

Considering the difference in views that we seem to have on this topic and the additional update that Osama has sent wrt the possibility that cause #31 can be received without integrity protection from a genuine network, I shall back off from removing the EN. We can take this up in further meetings after more study wrt the use cases and offline discussions.

I have updated the CR’s below.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200861\_was\_351\_Cause%2331\_Handling.zip

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200862\_was\_328\_Cause%2331\_Handling.zip

Please let me know if we are ok with the revisions.

--

Robert Zaus The revisions are generally O.K. for me.

One minor editorial: in the 24.301 CR, can you please insert ‘hard spaces’ (Ctrl+Shift+Space) in the 4 places where you have references to “subclause 5.5.x.y.z” (as you did in the 24.501 CR)? Thanks.

-

Osama Lotfallah (Qualcomm)

Question for clarification: what does “indicated support for CIoT optimizations” means here? Is there a case where UE only support 4G CIoT optimization and not 5G CIoT optimization and vice versa?!

RV Anikethan (Samsung)

The “indicated support for CIoT optimizations” means the supported and preferred network behaviour that the UE notifies for EPC and 5GC.

And from stage 2 text the implication looks to be that if one is supported, the other too is supported. Below is the text for the same from TS 23.501:

5.31.3 Selection, steering and redirection between EPS and 5GS

The UE selects the core network type (EPC or 5GC) based on the broadcast indications for both EPC and 5GC, and the UE's EPC and 5GC Preferred Network Behaviour. For a network that supports NB-IoT, it shall broadcast an indication of whether N3 data transfer is supported or not in system information.

When the UE performs the registration procedure it includes its Preferred Network Behaviour (for 5G and EPC) in the Registration Request message and the AMF replies with the 5G Supported Network Behaviour in the Registration Accept message.

If the UE supports any of the CIoT 5GS Optimisations included in 5GC Preferred Network Behaviour, then when the UE performs an Attach or TAU procedure and the UE includes its EPC Preferred Network Behaviour then the UE shall also include its 5GC Preferred Network Behaviour.

-

Lin Shu (Huawei)

No problem with this new direction on the CR.

Some comments:

(1) For 24.501 CR, the changes on sub 5.5.1.2.7 and 5.5.1.3.7 was covered by the revision of Sung’s CR https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200971\_was\_0739\_SNPN\_EN\_31.docx , please check and better to take it out to avoid overlapping.

(2) For 24.501 CR, “CIoT optimizations” should be “CIoT 5GS optimizations”, for 24.301 CR, “CIoT optimizations” should be “CIoT EPS optimizations”

(3) In both CRs “is considered” should be “is considered as”

(4) In 24.501 CR, better to have following rewording for all changes:

. “ 5GMM cause #31 when received by a UE that has not indicated support for CIoT optimizations or when received by a UE over non-3GPP access is considered an abnormal case and the behaviour of the UE is specified in subclause 5.5.1.2.7. ” better to be reworded as:

"5GMM cause #31 received by a UE that has not indicated support for CIoT 5GS optimizations or received by a UE over non-3GPP access is considered as an abnormal case and the behaviour of the UE is specified in subclause 5.5.1.2.7. "

-

RV Anikethan (Samsung)

(1) For 24.501 CR, the changes on sub 5.5.1.2.7 and 5.5.1.3.7 was covered by the revision of Sung’s CR https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200971\_was\_0739\_SNPN\_EN\_31.docx , please check and better to take it out to avoid overlapping.

 [Anikethan]: Shall do. Thanks for pointing that out.

(2) For 24.501 CR, “CIoT optimizations” should be “CIoT 5GS optimizations”, for 24.301 CR, “CIoT optimizations” should be “CIoT EPS optimizations”

 [Anikethan]: A UE in any of the RAT’s includes both 5GS and EPS CIoT optimizations. Hence I did not purposefully include EPS/5GS in the text. It opens up the possibility of mis-interpretation. Based on this, would you be fine with the existing text?

(3) In both CRs “is considered” should be “is considered as”

 [Anikethan]: Shall do.

(4) In 24.501 CR, better to have following rewording for all changes:

. “ 5GMM cause #31 when received by a UE that has not indicated support for CIoT optimizations or when received by a UE over non-3GPP access is considered an abnormal case and the behaviour of the UE is specified in subclause 5.5.1.2.7. ” better to be reworded as:

"5GMM cause #31 received by a UE that has not indicated support for CIoT 5GS optimizations or received by a UE over non-3GPP access is considered as an abnormal case and the behaviour of the UE is specified in subclause 5.5.1.2.7. "

 [Anikethan]: Shall do

-

Osama Lotfallah (Qualcomm)

@Ani

Thanks for the clarification in the other email. Since you removed part from CR to TS 24.501, now you will need to follow if CR2013 in C1-200971 will be agreed or not especially with that repeated text that you decided to remove from this CR. If it will not be agreed, you will have to revise this CR to TS 24.501 again in plenary to add the removed text. I did not think repeated same text in two different CRs will create issue for Frederic. Other than that, both revisions look OK to me.

**Decision:** The document was **revised to C1-200862**.

**C1-200862 Removal of EN and additional abnormal case for cause #31**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1881 rev 1 Cat: F (Rel-16)  
  
 Source: Samsung/Anikethan*

(Replaces C1-200328)

**Decision:** The document was **revised to C1-201025**.

**C1-201025 Removal of EN and additional abnormal case for cause #31**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1881 rev 2 Cat: F (Rel-16)  
  
 Source: Samsung/Anikethan*

(Replaces C1-200862)

**Decision:** The document was **agreed**.

**C1-200351 Removal of EN and additional abnormal case for cause #31**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3330 Cat: F (Rel-16)  
  
 Source: Samsung/Anikethan*

**Discussion:**

Osama Lotfallah (Qualcomm)

I checked with my SA3 colleagues. There is not any requirement for MME to run authentication when redirecting CIoT devices from 4G to 5G using cause #31. Currently, this kind of redirection is not security concern as it is not downgrade attack and 5G is much better in security than 4G. In other word, there is not any text or living CR in SA3 to prevent legit MME to send that cause code non-integrity protected. I think the text in TS 24.301 was not accurate to mandate to discard that

**Decision:** The document was **revised to C1-200861**.

**C1-200861 Removal of EN and additional abnormal case for cause #31**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3330 rev 1 Cat: F (Rel-16)  
  
 Source: Samsung/Anikethan*

(Replaces C1-200351)

**Decision:** The document was **revised to C1-201026**.

**C1-201026 Removal of EN and additional abnormal case for cause #31**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3330 rev 2 Cat: F (Rel-16)  
  
 Source: Samsung/Anikethan*

(Replaces C1-200861)

**Decision:** The document was **agreed**.

**C1-200355 Applicability of UE specific DRX Parameter for NB-S1 mode Indicator**

*Type: CR For: (not specified)  
 24.301 v16.3.0 CR-3331 Cat: B (Rel-16)  
  
 Source: Vodafone GmbH*

**Discussion:**

Amer Catovic (Qualcomm): We agree with the reason for change, describing the two scenarios with backward compatibility issues associated with Option 1 in C1-200237. However, we don’t agree with the proposal. We prefer to use the same parameter negotiation scheme that we have specified for eDRX parameter negotiation in NB-S1 mode and in N1 mode and for UE specific DRX parameter negotiation in N1 mode. This would be Option 2 in C1-200237. We see no reason to employ other solutions when we already have the solutions that have been tried and tested and can be re-used.

Mikael Wass (Ericsson)

We agree that there are backwards compatibility issues as described in reason for change and these need to be solved by a solution for UE specific DRX in NB-IoT for EPS.

However, we think CT1 should wait for SA2/RAN2 to progress further before deciding on the NAS solution as a decision on alt1 vs alt2 as indicated in incoming LS C1-200237 will impact the details of a NAS solution.

In my understanding, the proposal in C1-200355 may be a needed extension of alt1 to handle the described backwards compatibility issues, whereas if alt 2 is selected it is not needed.

Yang Lu (Vodafone): Thanks for acknowledging the issue and indicating your company’s preference.

To our view, the CR in C1-200355 does re-use the same parameter negotiation scheme for UE specific DRX parameter negotiation in N1 mode.

Addition to UE indicating its specific DRX parameter by using the existing mechanism specified in TS24.301, as described on the cover sheet, in order to resolve the backwards compatibility issue, the UE needs to indicate it’s capability of supporting the UE specific DRX in NB-S1 mode in the UE network capability IE.

Can you please elaborate on your proposal as to how the negotiation will be done?

We are open to discuss alternatives to fix the backwards compatibility issue.

-

Amer Catovic (Qualcomm): I agree with Mikael’s proposal. To answer Yang’s question below, we would prefer to copy the existing NAS procedure for negotiating eDRX parameter negotiation in 24.301, only the procedure for UE specific DRX parameters would involve two IEs, one for each mode/RAT.

-

Lin Shu (Huawei)

@Amer, this CR is for TS 24.301. The current UE specific DRX value mechanism in TS 24.301 has NO NAS negotiation. So what your saying “we would prefer to copy the existing NAS procedure for negotiating eDRX parameter negotiation in 24.301” is confusing. Such mechanism w/o ack was already there since R8 before 5G coming and it was already used in the commercial 4G network for 10+ year during which no people complain it. I guess what you want to say is: to copy the negotiation in 5G into 4G. But 4G comes before the 5G, so how can you say to copy the existing procedure from 5G to 4G? Normally we just say to copy some existing thing from 4G to 5G, but do not say that to copy something new back from 5G to 4G as 4G was already there and was already commercial. So your logic is totally wrong and we will object to copy the 5G logic to 4G in this case.

For 4G, currently there is no NAS negotiation, so option 2 could not work well in 4G due to NBC issues. Typically in below cases:

Legacy UE accessing new MME:

- Legacy UE will only send the DRX value for WB in existing IE but the new MME can provide the negotiated new value for WB in the accept message which will be ignored by the UE. Then the NW will use the new negotiated value but the UE will use the requested value, mismatch between the network and the UE on the used DRX value for WB.

new UE accessing legacy MME:

- New UE can send separate DRX values in two IEs but the legacy MME will only handle the value received in the existing IE, treat it as RAT agnostic and there is no acked value to the UE in accept message. Due to no acked value in the accept message, the new UE will not use the new requested DRX value for paging for both WB and NB. However, the legacy MME will always send the new DRX value to the eNB for paging. Then mismatch between the network and the UE on the used DRX value for WB

Option 1 we believe it has no NBC issues as it just copy the same NAS handling for WB to NB. As current NAS handling for WB work well for 10+ years, then it should be work well for NB as well. As the UE specific DRX value is finally used by the eNB, what the MME needs to do is just to receive/store the value requested by the UE and then send it to the eNB for paging. Hence, when sending the stored value for paging, the MME needs not to check the current serving RAT as it is the remit of eNB to decide whether will use the UE speicific DRX value for paging in the serving cell.

All in all, there are other better NAS alternatives than NAS part of option 2 which could work better. What Yang proposed in this CR is one of such NAS alternative and we believe this is better than NAS part of option 2. Thanks.

--

Amer Catovic (Qualcomm)

Could you please explain how Option 1 would tackle the two specific scenarios described in the reason for change in C1-200355, besides the seniority argument? Specifically:

Scenario 1

Rel-16 UE in NB-S1 mode, Rel-15 MME, Rel-16 eNB.

- UE provides UE specific DRX value for NB-S1 mode V1 in TAU Request

- No ack to the UE from MME

- Scenario 1a (different UE specific DRX cycle values for NB-S1 mode vs. WB-S1 mode):

o MME interprets the received value as UE specific DRX value for WB-S1 mode V2 and forwards it to the eNB.

o eNB applies V2. UE applies V1. If V1 > V2 UE misses pages. If V2 < V1, UE wakes up too often, drains the battery V2/V1 times faster.

- Scenario 1b:

o MME does not forward any UE DRX parameter value to the eNB because the UE is in NB-S1 mode

o eNB pages the UE using cell-specific DRX cycle V3

o UE wakes up too often, drains the battery V2/V3 times faster

Note: Both Scenario 1a and 1b are spec-compliant since DRX parameter is optional in the Paging Request message over S1-AP.

Scenario 2

Rel-15 UE in NB-S1 mode, Rel-16 MME, Rel-16 eNB. Different UE specific DRX cycle values for NB-S1 mode vs. WB-S1 mode.

- UE provides UE specific DRX value V1 in TAU Request

- No ack to the UE from MME

- MME interprets the received value as UE specific DRX value for NB-S1 mode V2 and forwards it to the eNB.

- eNB applies V2. UE applies V1. If V1 > V2 UE misses pages. If V2 < V1, UE wakes up too often, drains the battery V2/V1 times faster.

Please see my comments on Option 2 below.

<For 4G, currently there is no NAS negotiation, so option 2 could not work well in 4G due to NBC issues. Typically in below cases:

Legacy UE accessing new MME:

- Legacy UE will only send the DRX value for WB in existing IE but the new MME can provide the negotiated new value for WB in the accept message which will be ignored by the UE. Then the NW will use the new negotiated value but the UE will use the requested value, mismatch between the network and the UE on the used DRX value for WB.

[Amer] Based on the single DRX parameter in the request, the MME could understand that it is dealing with a legacy UE and could behave as a legacy MEE w.r.t this UE.

new UE accessing legacy MME:

- New UE can send separate DRX values in two IEs but the legacy MME will only handle the value received in the existing IE, treat it as RAT agnostic and there is no acked value to the UE in accept message. Due to no acked value in the accept message, the new UE will not use the new requested DRX value for paging for both WB and NB. However, the legacy MME will always send the new DRX value to the eNB for paging. Then mismatch between the network and the UE on the used DRX value for WB

[Amer] Based on the response from the MME, the UE could understand that it is dealing with a legacy MME and could behave as a legacy UE. >

--

Yang Lu (Vodafone)

If I understand your preference correctly (prefer to copy the existing NAS procedure for negotiating eDRX parameter negotiation in 24.301), you’d like to solve the backwards compatibility issue as follows.

<Alternative>

UE (in NB-S1 mode):

Rel-16 onwards UE sends the UE specific DRX parameter in the legacy DRX parameter IE as specified today to indicate the UE specific DRX parameter in WB-S1 mode, and in the meantime, it sends also a NEW IE to indicate the UE specific DRX parameter in NB-S1 mode.

MME (in NB-S1 mode):

Rel-16 onwards MME responds in a NEW IE to indicate the negotiated/accepted UE specific DRX parameter to be used in NB-S1 mode.

Could you please confirm whether it is correctly described?

I can see the following differences compared to C1-200355.

In the uplink, we are proposing that the UE sends a UE capability indicator (of supporting UE specific DRX parameter in NB-S1 mode) instead of introducing a NEW IE.

In the downlink, we are proposing that the MME sends an acknowledge in the existing Additional update result IE instead of indicating the negotiated/accepted UE specific DRX parameter in a NEW IE.

-

Lin Shu (Huawei)

Also please see my further reply to your comments below

[Amer] Based on the single DRX parameter in the request, the MME could understand that it is dealing with a legacy UE and could behave as a legacy MEE w.r.t this UE.

[Lin] No, the new MME cannot do this as even for the new UE, it is optional for request the UE specific DRX value for NB. The UE specific DRX value is always based on UE’s request, i.e. if the UE does not want to use UE specific DRX value, it will not request it to the MME.

[Amer] Based on the response from the MME, the UE could understand that it is dealing with a legacy MME and could behave as a legacy UE.

[Lin] No, it is very strange for the new UE to handle as this way, no ack received does mean the UE cannot use the requested value. But the legacy UE will always use the requested value.

-

Mikael Wass (Ericsson)

Correct, as of now our preference is to select alt2 as a baseline solution. Maybe we need to tweak the details of the solution but the main feature of alt2 to introduce a new NAS IE for NB-UE specific DRX value is what we prefer.

Your summary and comparison of alt2 vs your proposal is correct what I can see. We do not need a UE support indication in alt2 as use of the new IE indicates use of NB-UE specific DRX. The indication of negotiated NB-UE specific DRX value from MME to UE is sufficient for the supporting UE to differentiate supporting from non-supporting MME.

--

Amer Catovic (Qualcomm)

Also please see my further reply to your comments below

[Amer] Based on the single DRX parameter in the request, the MME could understand that it is dealing with a legacy UE and could behave as a legacy MEE w.r.t this UE.

[Lin] No, the new MME cannot do this as even for the new UE, it is optional for request the UE specific DRX value for NB. The UE specific DRX value is always based on UE’s request, i.e. if the UE does not want to use UE specific DRX value, it will not request it to the MME.

[Amer] The UE could always include the UE specific DRX value IE for both RATs. There could be a code point to mean “not requested”. This is similar to the proposal by Vodafone, only encoded differently.

[Amer] Based on the response from the MME, the UE could understand that it is dealing with a legacy MME and could behave as a legacy UE.

[Lin] No, it is very strange for the new UE to handle as this way, no ack received does mean the UE cannot use the requested value. But the legacy UE will always use the requested value.

[Amer] No ack received may also be interpreted by the Rel-16 UE that the MME is a legacy MME.

-

Amer Catovic (Qualcomm)

I agree with your views below. I prefer to not use the capability indications and use the DRX parameter IEs to negotiate Rel-16 NB-S1 mode DRX parameters. This also allows the MME to provide a different DRX parameter from the one that the UE requested.

-

Mikael Wass (Ericsson)

In line with our preferred solution so the principle of this CR is fine for us.

Comments:

The Requested NB-DRX value can be modified by the network and the “negotiated” value is signaled to the UE in the accept message. Procedure text of Attach and TAU does not reflect this modification.

The Requested WB-DRX cannot be changed by the network but just accepted and stored (legacy behavior). But SA2 still mentioned in their LS an accept being signaled back to the UE also for WB-DRX. Not sure if this will be pursued in stage2 so we need check SA2 on this.

The NB-DRX should also be provided at mobility from WB-EUTRA. I guess it should also be a “may” provide and not “shall” provide?

-

Yang Lu (Vodafone)

Thanks for the comments and I have taken them into account in the revision (v2), expect for the second item with regards to the network response which is under Stage 2 discussions.

The revision can be found with the link below.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200355\_v2.zip

I aim at uploading it before the deadline today.

-

Lin Shu (Huawei)

Now the CR totally changed the direction which is going to another NEW NAS alternative. It is neither option 2 in SA2 LS, nor we discussed option 2a nor option 2b in our discussion paper.

Today is the deadline and hence we have no time to analyze such NEW NAS alternative in detail, typically related to NBC issues.

As CT1 will intend to send an reply LS to SA2 and ask some questions to RAN/RAN3, for the safe way forward, I would suggest CT1 will not agree any CR action on this topic in this meeting, thanks.

-

Maoki Hikosaka (NTT DOCOMO)

I share the same view as Lin, CT1 should not agree any CR in this meeting.

The decision should be made first by SA2 based on CT1/RAN2/RAN3’s preference.

So, what we can agree in this meeting is only the preference of the option (not a CR).

-

Yang Lu (Vodafone)

Although I have taken all technical comments on the CR on board in the revision, I am obviously not able to address this kind of non-technical comments from two companies provided on Thursday.

Since there is no consensus, please mark it as postponed. Thanks!

**Decision:** The document was **revised to C1-201007**.

**C1-201007 Applicability of UE specific DRX Parameter for NB-S1 mode Indicator**

*Type: CR For: -  
 24.301 v16.3.0 CR-3331 rev 1 Cat: B (Rel-16)  
  
 Source: Vodafone GmbH*

(Replaces C1-200355)

**Decision:** The document was **not treated**.

**C1-200368 Addition of MT-EDT support indication**

*Type: CR For: (not specified)  
 24.301 v16.3.0 CR-3332 Cat: B (Rel-16)  
  
 Source: Ericsson, Qualcomm Incorporated, OPPO / Mikael*

**Discussion:**

Fei:

The CR is almost fine with some minor wording: the condition “If the UE is in NB-S1 mode or WB-S1 mode” is not needed since in the S1 mode, there are no other choices.

Mikael Wass (Ericsson): . I will fix this in a revision. I also add “then” to align to existing wording. So the result is:

“If the UE supports control plane MT-EDT, then the UE shall…”

Fixed in four places.

Yanchao Kang (vivo): Here the “enter” after the 2nd paragraph should be kept.

Mikael Wass (Ericsson): ok

Lin Shu (Huawei): I have following comments:

1. This is MT-EDT for EPS and has nothing related to 5G CIOT, right? Even you marked this CR under WID 5G\_CIoT in the cover page but I cannot find anything in the change part is related to 5G CIOT. Even you used “the network has allowed the use of user plane CIoT 5GS optimization” in sub 5.3.15 but I believe you made a copy-paste error for which it should be “CIoT EPS optimization”. All in all, I think the WID of this CR is wrong, it should be “SAES16” and then is out of the scope of this e-meeting.

2. In cover page, RAN2 LS C1-200048 should be C1-200217.

3, For below text, it is very confusing that the MME can trigger the delivery of downlink data to the UE for UP. The MME will never involve the data delivery over UP.

"For a UE that supports user plane MT-EDT and for which the network has allowed the use of user plane CIoT 5GS optimization, the MME may trigger the delivery of downlink data to the UE, when available, using procedures for user plane MT-EDT as specified in 3GPP TS 23.401 [10]."

-

Mikael Wass (Ericsson)

Thanks for the comments.

1. MT-EDT for EPS was introduced in stage2 by SA2 as part of 5G CIoT as can be seen in the referenced CR to 23.401, I assume to keep MT-EDT for both 5G and EPS together. So that is the reason for the proposed WI use also in CT1 and keeping the linkage stage2-stage 3. We can of course modify this if CT1 prefers and use a different or even multiple WIs? I also note that EPS MT-EDT is listed in the 5GS CIoT work plan. What is the CIoT rapporteur view?

2. Fixed.

3. Ok, we can reword this to make clearer. MME is involved in the chain of indications that enables use of UP-EDT, but it might be misleading to use “trigger” for MME part of it. Maybe better to say “the network may trigger…”?

-

Amer Catovic (Qualcomm): I think that this CR should be discussed under 5G\_CIoT and TEI16, since the corresponding stage 2 CR in S2-1912322 is also agreed under 5G\_CIoT WI.

-

Mikael Wass (Ericsson): So I understand your view is that we keep CR WI as is (5G\_CIoT, TEI16) and handle in 5G-CIoT AI. I will then address the other comments given in a revision in the ongoing e-meeting.

-

Lin Shu (Huawei)

We cannot control what related SA2 CRs put the WID on their cover page. It is their job.

In CT1, when we evaluate a CR under which WID, it is based on the change content of the CR, not just based on the WID the source company typed in the CR cover page. It is very free for people to type the WID on the cover page but it can be commented that you put a wrong WID on the cover page based on the change content.

So for the change content of this CR, I cannot find anything related to 5GS? While seeing the objective of 5G\_CIOT WID, it only covers the 5GS, EPS is out of scope of the WID.

For this MT-EDT, originally it was done for EPS only and later 5GS needs to be supported as well. It is done the similar enhancement for both EPS and 5GS but this does not mean they shall be under the same WID.

There is another same example for WUS, it was originally for EPS and then to 5GS. But when we prepared CRs for WUS in EPS in the last Reno meeting, I put it under “SAES16, CIoT-CT”, but based on the comments from Behrouz, it should be “TEI16, CIoT-CT”. Also just due to this, I actively indicated to CT1 list that I will not prepare any CRs on WUS for EPS as it is out of scope of this e-meeting and also the related SA2 reply LS was asked to be postponed.

So as we done in the past, for this CR, the correct WID should be “TEI16, CIOT-CT” as well. Thanks.

“4 Objective

The objective of the work is to enhance the necessary CT specifications to support the stage 2 requirements for Cellular IoT for the 5G System as defined in TS 23.501 and TS 23.502. Stage 3 work shall be started only after the applicable normative stage 2 work is available.

”

--

Peter Leis (Nokia): The fact that SA2 has worked on “Introduction of MT-EDT” under 5G\_CIoT, LTE\_eMTC5, NB\_IOTenh3 gives us a chance to work on this feature under 5G\_CIoT as well. This position is also expressed by the work item rapporteur.

Working on the CR in this meeting would be preferable from my side as we need to get Rel-16 finished.

However, the e-meeting needs full consensus on decisions and this includes used work items for a CR.

Lin can you live with the CR being discussed in this meeting?

-

Lin Shu (Huawei)

I could understand your concern on R16 timeframe due to special situation.

Hence, I could live to discuss this CR in this meeting with following comments:

(1) The WID in the cover page should be “TEI16, CIoT\_CT”. This is to respect the fact of the change content of the CR and I do not expect to be internally asked in the future that this CR has nothing changed for 5GS then why put it under 5G\_CIoT WID.

(2) In the Agenda, this CR needs to be moved from agenda 16.2.8 to 16.2.21.

(3) In the Agenda, I would like to document some text, e.g. “New CR under TEI16 but pursued based on consensus”.

@Mikael, I have some rewording comments as below revision (yellow higlighted), Please check, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200892\_MT-EDT\_24301-Lin.doc

-

chair:

I can take most of those comments for the agenda on board

In the Agenda, I would like to document some text, e.g. “New CR under TEI16 but pursued based on consensus”.

It is not a \_new\_ CR, but the CR was allocated under CIoT.

->

CR was originally allocated under 5GCiOT, however, needs to also have TEI16 as work item on the cover page. Pursued based on consensus

-

Revised as requested and uploaded in TDoc C1-200976.

Lin Shu (Huawei)

The CR is fine with very minor one as below.

In “For a UE that supports user plane MT-EDT and for which the network has allowed the use of user plane CIoT EPS optimization”, it is better “allowed” to be “accepted” to keep consistence, thanks.

CR was originally allocated under 5G\_CIoT, however, needs to have TEI16, CIoT-CT as work item on the cover page. Pursued based on consensus

**Decision:** The document was **revised to C1-200892**.

**C1-200892 Addition of MT-EDT support indication**

*Type: CR For: -  
 24.301 v16.3.0 CR-3332 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson, Qualcomm Incorporated, OPPO / Mikael*

(Replaces C1-200368)

**Decision:** The document was **revised to C1-200976**.

**C1-200976 Addition of MT-EDT support indication**

*Type: CR For: -  
 24.301 v16.3.0 CR-3332 rev 2 Cat: B (Rel-16)  
  
 Source: Ericsson, Qualcomm Incorporated, OPPO / Mikael*

(Replaces C1-200892)

**Decision:** The document was **revised to C1-201021**.

**C1-201021 Addition of MT-EDT support indication**

*Type: CR For: -  
 24.301 v16.3.0 CR-3332 rev 3 Cat: B (Rel-16)  
  
 Source: Ericsson, Qualcomm Incorporated, OPPO / Mikael*

(Replaces C1-200976)

**Decision:** The document was **agreed**.

**C1-200383 Resolve Editor´s Notes on NB-N1 mode extended NAS timers for CE**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1891 Cat: F (Rel-16)  
  
 Source: Ericsson / Mikael*

**Decision:** The document was **agreed**.

**C1-200384 Resolve Editor´s Notes on WB-N1 mode extended NAS timers for CE**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1892 Cat: F (Rel-16)  
  
 Source: Ericsson / Mikael*

**Decision:** The document was **agreed**.

**C1-200397 "MO exception data" access category**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1897 Cat: F (Rel-16)  
  
 Source: Ericsson / Ivo*

**Discussion:**

Fei Lu (ZTE): 397 and 421 have proposed to support the ""MO exception data" in the SNPN. I am not sure whether the NB-N1 mode will be supported in the SNPN.

Ivo Sedlacek (Ericsson): I am unaware of any statement which excludes SNPN in NB-N1 mode. If that's correct, then someone might deploy SNPN in NB-N1 mode and the standard should be prepared for it.

Ban Al Bakri (NTT DOCOMO): I agree with Ivo that there is no restriction so far to exclude NB-N1 mode for SNPN.

Please note that C1-200677 provides the same solution.

Amer Catovic (Qualcomm)

I agree with Feilu that SNPN is not supported in E-UTRA, and as such SNPN is not supported in NB-N1 mode. There isn’t any support for the broadcast of system information needed to access SNPN, such as CAG-ID or NID, in NB-IoT RAN. This is one of the situations when all the dots have not yet been connected for a feature across all the related specs. Please see Q5 in the ongoing email discussion in RAN2 on this topic (attached). If we ignore the RAN design and specify a UAC for MO exception data for SNPN, we will eventually going to have to remove it when all the dots are connected. I prefer to not do this unnecessary work. At the very least, an EN should be added saying that “The support for CP CIoT in SNPN is to be verified”.

There isn’t any support for the broadcast of system information needed to access SNPN, such as CAG-ID or NID, in NB-IoT RAN. This is one of the situations when all the dots have not yet been connected for a feature across all the related specs. Please see Q5 in the ongoing email discussion in RAN2 on this topic (attached). If we ignore the RAN design and specify a UAC for MO exception data for SNPN, we will eventually going to have to remove it when all the dots are connected. I prefer to not do this unnecessary work. At the very least, an EN should be added saying that “The support for CP CIoT in SNPN is to be verified”.

Ivo Sedlacek (Ericsson): I have informed Ban offline that Ericsson is OK to merge C1-200397 into a revision of C1-200677.

In the revision of C1-200677, I am OK to revert changes for SNPN, i.e. in Table 4.5.2A.2. However, I would like to see an editor's note, e.g. as suggested below ("The support for CP CIoT in SNPN is to be verified"), under Table 4.5.2A.2.

Fei Lu (ZTE)

Thanks for sharing the draft on the email discussion on eNPN.

It seems that the Q5 is related to Rel-17.

Based on this, whether the EN is really needed for Rel-16.

-

Amer Catovic (Qualcomm): I think that is not too har to remove the EN at the end of Rel-16. I personally believe that this will happen.

-

Fei Lu (ZTE): I am fine with the draft sent out by Ban

-

Merged into C1-200677 and its revisions

**Decision:** The document was **merged**.

**C1-200400 Stop T3565 upon connection resumption**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1900 Cat: F (Rel-16)  
  
 Source: vivo / Yanchao*

**Discussion:**

Lin Shu (Huawei)

The CR is fine with some comments to improve it:

1. It would be better to cover the change in a new paragraph following the 1st paragraph as the 1st paragraph talks about the case of “Upon reception of SERVICE REQUEST message or REGISTRATION REQUEST message”

2. To change “UE context resume request” to “NGAP UE context resume request” to keep consistency with proposal from C1-200580.

3. “as specified in 3GPP TS 38.413 [31]” should be “as specified in 3GPP TS 36.413 [xx]” as UP CIOT is not supported by NR.

Yanchao Kang (vivo)

A draft revision is now available at : https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision%20of%20C1-200400\_CIoT\_stop%20T3565%20upon%20resumption.doc

Any further comment?

Also I didn’t find TS36.413 in the reference section, and did any paper adding reference for TS36.413 during this meeting?

--

Fei Lu (ZTE)

Reference to 36.413 is not right.

The correct reference should be 38.413. Otherwise it means that the AMF will support the S1 interface.

Although the NR does not support the CIoT, the eNodeB still needs to update to support N2 and N3 interface for the 5G\_CIoT.

-

Lin Shu (Huawei):I am talking about E-UTRA connected to 5GCN, which is NGAP between eNB and AMF, not S1.

For E-UTRA connected to 5GCN, it was covered in 36.413, not in 38.413.

Fei Lu (ZTE)

Please double check with your RAN3 colleague.

-

Amer Catovic (Qualcomm): Does this thread have a wrong agenda item in the subject line? I think it should be 16.2.6 instead of 16.2.8.

--

Lin Shu (Huawei): It is correct and it is in the 5G\_CIoT.

Lin Shu (Huawei): After checked with our RAN3 colleague, Fei is correct. Sorry for this as I originally believe all NB/eMTC should be covered in 36.xxx TSs.

Thanks Fei for correct me.

--

Yanchao Kang (vivo)

@Lin and Fei,

Thanks for your help.

The revision of C1-200400 is now available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200831.zip

Any comments?

Hello Amer,

Yes, C1-200400 should be in 5G-CIoT.

The reason is: I Clicked the reserve button too fast and it allocated two numbers(C1-200399 and C1-200400 ) for the same eNS paper. I just reuse the C1-200400 for another CIoT paper, and I have changed the agenda item and the title for C1-204000 after I requested the TDoc number.

I have asked peter to remove this paper to the correct WID.

Sorry for the inconvenience.

**Decision:** The document was **revised to C1-200831**.

**C1-200831 Stop T3565 upon connection resumption**

*Type: CR For: -  
 24.501 v16.3.0 CR-1900 rev 1 Cat: F (Rel-16)  
  
 Source: vivo / Yanchao*

(Replaces C1-200400)

**Decision:** The document was **agreed**.

**C1-200417 Support for UE specific DRX for NB-S1 mode**

*Type: discussion For: Decision  
 Source: Qualcomm Incorporated, Ericsson / Amer*

**Discussion:**

Lin Shu (Huawei)

In principle the whole content of this paper is confusing as it does not distinguish the discussion between EPS and 5GS while the existing DRX NAS negotiation is totoally different between EPS and 5GS.

Below are our detail inline comments:

>> Option 1 doesn’t have a NAS impact for the signalling of UE specific DX parameters. Option 2 has a NAS impact for the signalling of UE specific DRX parameters, but UE specific DRX negotiation procedure would be the same as what is already in place for extended DRX parameter negotiation;

[Lin] The yellow text is wrong in EPS as currently there is no UE specific DRX negotiation in EPS.

>>Option 1 would require a NAS-level acknowledgement to the UE in order to address the following cases:

a. MME not supporting UE specific DRX cycle with RAN supporting UE specific DRX cycle. In this case the RAN would not receive the UE-specific DRX parameter from the MME. Without NAS-level acknowledgment to the UE, the RAN would still be paging the UE in NB-S1 mode using a longer default DRX cycle, while the UE in NB-S1 mode is following a shorter UE specific DRX cycle thus wasting battery life;

[Lin]The yellow text is wrong as currently there is no spec text to prevent the legacy MME to send the stored DRX value to the eNB even the UE is camping on NB (if you could find current spec text, please share me). This is the same as currently it does not prevent the UE still to request the UE specific DRX value when camping in NB even it will not use it in NB. Before NB is supported in 3GPP, the UE specifid DRX value is there and it is RAT agnostic. After NB is supported in 3GPP but the UE specific DRX value is not used in NB, so the legacy MME implementation is till RAT agnostic. So the issue indicated by green text does not exist for option 1.

>> b) WB-S1 mode supports the UE specific DRX value set of {320, 640, 1280, 2560}. NB-S1 mode supports the UE specific DRX value set of {1280, 2560, 5120, 10240}. Without NAS-level acknowledgment, the UE in NB-S1 would not be able to use the values that are not applicable to WB-S1 mode, i.e. values 5120 and 10240, with a negative impact on the batter life.

[Lin] How can you conclude the yellow text? This should be discussed in RAN2 and make the final decision. Without RAN2 agreement, you cannot just say yellow text. In EPS, currently there is no NAS-level acknowledgment but UE specific DRX feature works very well since R8 and no people to complain it and no peopole want to enhance it. The UE supporting UE specific DRX for NB can send it requested value to NB, e.g. values 5120 and 10240, to the NW and then NW send it to the eNB, if eNB supporting UE specific DRX for NB, then the eNB will use the values 5120 and 10240 to page in NB. So the issue indicated by green text does not exist.

>>3. Whether to use the same IEI or different IEI for NB-S1 mode IE vs. WB-S1 mode IE for Option 2 needs further discussion. From our point of view, either way would work.

[Lin] It is very strange for this text as SA2 LS has clearly indicated that option 2 used two separate IE. Anyway on this point, we prefer to use the single NAS IE which could work well.

- Option 1 doesn’t have a NAS impact for the signalling of UE specific DX parameters. However, in order to avoid wasting battery life in some scenarios, Option 1 would need to implement NAS-level acknowledgement to the UE. In other words, Option 1 would need to have NAS impact in order to provide a complete solution; and

[Lin] Disagree, option 1 uses the common/same value range between WB and NB, if the current handling without NAS-level acknowledgement works well for WB, it shall work well for NB as well.

- MME upgrade is needed for UE specific DRX for NB-S1 mode even with Option 1.

[Lin] Disagree, no impact on MME for option 1 and hence no upgrade is needed.

Lin Shu (Huawei)

Forget to provide below comments:

>> - Both options are feasible from the NAS point of view;

[Lin] No, option 2 could not work well in EPS as it has NBC issues as below:

Legacy UE accessing new MME:

- Legacy UE will only send the DRX value for WB in existing IE but the new MME can provide the negotiated new value for WB in the accept message which will be ignored by the UE. Then the NW will use the new negotiated value but the UE will use the requested value, mismatch between the network and the UE on the used DRX value for WB.

new UE accessing legacy MME:

- New UE can send separate DRX values in two IEs but the legacy MME will only handle the value received in the existing IE, treat it as RAT agnostic and there is no acked value to the UE in accept message. Due to no acked value in the accept message, the new UE will not use the new requested DRX value for paging for both WB and NB. However, the legacy MME will always send the new DRX value to the eNB for paging. Then mismatch between the network and the UE on the used DRX value for WB

-

Mikael Wass (Ericsson)

I think you have misunderstood alt2. At least my understanding of alt2 is different than what you describe.

In alt2 nothing is changed for UE specific DRX in WB. Same IE, no ack, UE requested value is stored in MME and provided at paging in WB.

A new IE is introduced for UE requested DRX in NB. This requested value is negotiated and acknowledged back to the UE, The value is stored by the MME and provided at paging in NB.

In my understanding, one of the main points of different understanding is that you believe the legacy MME will provide a requested UE specific DRX to the eNB also at NB access whereas our interpretation is that the legacy MME only provides the requested UE specific DRX value to the eNB in WB. I guess we need to come to a common understanding on this, or agree on a solution that satisfies both options.

Further comments on Lin's:

Legacy UE accessing new MME:

- Legacy UE will only send the DRX value for WB in existing IE but the new MME can provide the negotiated new value for WB in the accept message which will be ignored by the UE. Then the NW will use the new negotiated value but the UE will use the requested value, mismatch between the network and the UE on the used DRX value for WB.

[Mikael] No, the legacy UE provides a requested WB UE specific DRX in the legacy IE. The new MME understands from the IE that the value is for WB, stores it and there is no value signaled back to the UE. The stored WB value is provided to RAN at paging in WB. No problems.

new UE accessing legacy MME:

- New UE can send separate DRX values in two IEs but the legacy MME will only handle the value received in the existing IE, treat it as RAT agnostic and there is no acked value to the UE in accept message. Due to no acked value in the accept message, the new UE will not use the new requested DRX value for paging for both WB and NB. However, the legacy MME will always send the new DRX value to the eNB for paging. Then mismatch between the network and the UE on the used DRX value for WB

[Mikael] A new UE provides a requested WB UE specific DRX value in the legacy IE. There is no ack from the MME. The UE expects the requested WB UE specific DRX value to be used in WB, just as in legacy. The new UE signals a NB UE specific DRX in the new IE and expects an ack with the value accepted by the MME. If there is no ack on the requested NB UE specific DRX value (as in the case of legacy MME that does not understand the IE), the UE will not use UE specific DRX in NB but will use the default DRX. No problems.

With your interpretation of legacy MME behavior, the new UE would expect such legacy MME to provide the requested legacy UE specific DRX to the eNB also in NB, and will then use the requested DRX value in NB with a supporting eNB, and the default DRX with a non-supporting eNB.

--

Lin Shu (Huawei)

Now let’s see what documented in SA2 LS for option 2 carefully (copied as below):

“Option 2, based on the assumption that UE specific DRX is RAT specific. With this approach, in SA2’s understanding, there is impact on EPS NAS and RAN as below:

- UE can propose a DRX cycle length for use separately for WB-EUTRA and NB-IoT in different IEs.

- The MME shall determine Accepted DRX parameters based on the received UE Specific DRX parameters and the MME should accept the UE requested values, but subject to operator policy the MME may change the UE requested values.

- The MME shall respond to the UE with the Accepted DRX parameters separately for WB-EUTRA and NB-IoT.

- The UE determines whether the UE specific DRX parameter shall be used is based the negotiation and awareness of whether the camping cell supports UE specific DRX.”

How do you interpret the above 3rd bullet? I intend to say you misunderstood option 2 in SA2 LS.

About “you believe the legacy MME will provide a requested UE specific DRX to the eNB also at NB access whereas our interpretation is that the legacy MME only provides the requested UE specific DRX value to the eNB in WB.”, currently in all 3GPP specs (SA2/CT1/RAN3) I cannot find any spec text to specified that the legacy MME shall send the stored UE specific DRX value to the eNB for paging based on the current serving RAT. At least I cannot find any text described, e.g. when the MME initiates the paging in NB, the UE specific DRX value shall NOT be provided to the eNB. If you can find such spec text, it will be better to share.

In TS 24.301, we only have below NOTE, but even in the NOTE, it just clearly indicated that “not used by the E-UTRAN for paging from NB-IoT cells”, then some my points:

(1) It is a NOTE so there is no enforcement on the MME implementation.

(2) Why is it a NOTE, not a normative text in TS 24.301? Because it enforces at the eNB, not at the MME, so it was captured as a NOTE as we usual done in CT1.

(3) In TS 24.301 sub 5.6.2 for paging, nothing specified that the MME shall not provide the stored UE specific DRX value to lower layers for paging.

(4) The UE specific DRX value is finally used by the eNB, what the MME done is just to receive/replace/store the value and then send it to eNB for paging. It is up to the eNB to do the final decision whether to use it in the paging or not.

(5) The UE specific DRX value is used in EPS/LTE since R8 for 10+ year. Before NB comes to 3GPP, it was used at the MME as RAT agnostic. Even when NB comes to 3GPP since R13, the UE specific DRX value is still only used in WB, i.e. no change on use it regardless of NB. So no need to upgrade the existing MME implementation since R8. If the existing MME implementation could work, why you need to upgrade your existing MME implementation?

(6) Currently, the UE is not prevented from sending the UE specific DRX value for WB when in NB even it will not use it in NB. Then similar logic should be the same at the MME side: even the UE is accessing via NB, the MME will handle the received DRX value as normal, i.e. replace the old one, store the new one and use it for paging regardless of RAT.

“NOTE 2: The UE specific DRX parameter is not used by the E-UTRAN for paging from NB-IoT cells (see 3GPP TS 23.401 [10] and 3GPP TS 36.304 [21]).”

--

Mikael Wass (Ericsson)

Thanks for the further response and clarification.

For 1st issue, you are correct. SA2 adds an accept indication for alt2 also for WB-EUTRA. This was added during SA2 discussions before sending the LS. However, the logic is not intended to be changed for WB-EUTRA and the MME does not change the UE requested value for WB but just accepts and stores as in legacy. So for the use case of a legacy UE it does not matter, the UE will ignore the accept indication but that does not matter as the WB value will be used at WB paging. The supporting UE will however from the WB accept indication know whether the MME is supporting or non-supporting (not quite clear to me at this point why this is needed , though).

The requested NB-UE specific DRX value can be modified by the MME and indicated back to the UE.

For 2nd issue, I see this as a RAN3 issue that needs to be sorted out there as the question is if the MME is required to always include a stored UE specific DRX value via S1 or not. This is not related to NAS so any normative requirement in 24.301 cannot be expected. I can see that this likely will impact the possible S1 solution for NB-UE specific DRX, and RAN3 needs to know whether the legacy MME:

a) Always includes a stored UE specific DRX at paging

b) Includes a stored UE specific DRX at WB paging but not at NB paging

c) Includes a stored UE specific DRX at WB paging and inclusion at NB paging is unspecified.

**Decision:** The document was **noted**.

**C1-200418 Support for the signalling of the capability for receiving WUS assistance information**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1907 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Amer*

**Discussion:**

Yanchao Kang (vivo): In subclause 5.5.1.2.4, the MME in note 4 should be AMF.

In subclause 5.5.1.3.4, the MME in note 9 should be AMF.

Mikael Wass (Ericsson): Minor: don’t use ”doesn’t”, use “does not”. 4 places.

Fei Lu (ZTE) Since the stage 2 CRs have not been approved by SA, then the linked CR shall be added.

if and only if ---> (only) if

Amer Catovic (Qualcomm): Thank you for the comments, They will be taken onboard.

Mahmoud Watfa (Samsung):

What does “active emergency PDU session” mean exactly? I have not seen this term in the spec.

-

Amer Catovic (Qualcomm): I used the same “active” condition as the stage 2 CR. It does not seem relevant to me whether the emergency PDU session is active or not in this case. Let me verify this with my SA2 colleague.

On the term per se, I think it is OK to use it in general. We use “active PDU session” in 24.501 extensively. It designates a PDU session with active user plane resources, like in this text:

If the UE has one or more active PDU sessions which are not accepted by the network as always-on PDU sessions and no uplink user data pending to be sent for those PDU sessions, the UE shall not include those PDU sessions in the Uplink data status IE in the REGISTRATION REQUEST message.

It is possible for an emergency PDU session to not have active UP resources, i.e. to not be active, e.g.:

“If the UE is in a non-allowed area or if the UE is not in allowed area, the UE shall not include the Uplink data status IE in REGISTRATION REQUEST message, except if the PDU session for which user-plane resources were active prior to receiving the fallback indication is an emergency PDU session,…”

-

Fei Lu (ZTE): I believe that "active' can be removed.

My understanding was that the UE does not have or is not estbalishing the emergency PDU session, then the UE shall not request the use of the WUS.

Lin Shu (Huawei) In principle the CR is fine but we have some detail inline comments as in the revision below. Please check, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200418-24.501-WUS-Lin.docx

-

Amer Catovic (Qualcomm) Thanks for the comments and suggestion. Regarding the comment to remove the condition on not having any emergency sessions: the reply LS from SA2 that you quoted confirms the condition and so does the stage 2 text. So can you clarify your request to remove the condition on not having any emergency sessions?

-

Lin Shu (Huawei)

@amer

The condition in your CR I removed is “when the UE doesn’t have an active emergency PDU session”

While SA2 LS replied below. I guess you want to cover the green text right? But green text is for the UE attached for emergency services. The UE has emergency PDU session does not mean the UE is registered for emergency. That is why I removed your condition which is not aligned with SA2 reply. Based on yellow text below, actually the UE and NW can still negotiated the WUS parameters even there is an emergency PDU session established. So if you want to cover the green text, please reword your condition, thanks.

“SA2 Answer #5:

The same principle as eDRX should be followed, therefore the UE should not indicate its support of WUS Assistance Information during an attach for emergency bearer services, or tracking area update procedure for the UE attached for emergency bearer services. The UE and network may negotiate WUS parameters during a tracking area update procedure when the UE has a PDN connection for emergency bearer services, however WUS should not be used while a PDN connection for emergency bearer services is established.

”

--

Amer Catovic (Qualcomm)

My CR was based on the stage 2 text in the agreed SA2 CR to 24.501 in S2-2001249:

UE and MME AMF shall not signal WUS Assistance Information in Registration Request, Registration Accept messages when the UE has an active emergency PDU session.

Please see attached the latest version of the stage 3 CR. Sorry for sending it via email, my access to the meeting server for upload is denied

Please let me know if you have further comments.

Amer Catovic (Qualcomm)

The revision has been uploaded in C1-200812.

-

Lin Shu (Huawei)

Even based on SA2 agreed 23.501 CR, the condition in your CT1 CR is not fully correct.

In SA2 CR, the condition is applied to “UE and MME shall not signal WUS Assistance Information”

But in your CT1 CR, the condition is applied to “indicates its capability for reception of WUS assistance information during registration procedure”

The UE can indicate its capability even when there is a emergency PDU session established but cannot signal the assistance information, i.e. cannot use the WUS. They are different concept.

Another comments:

1. It is very strange to see “If the UE supports WUS assistance information IE”, better be “If the UE supports WUS assistance”

2. Why you use “(only) if”? What is “(only)” in the bracket means?

**Decision:** The document was **revised to C1-200812**.

**C1-200812 Support for the signalling of the capability for receiving WUS assistance information**

*Type: CR For: -  
 24.501 v16.3.0 CR-1907 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Amer*

(Replaces C1-200418)

**Decision:** The document was **revised to C1-201050**.

**C1-201050 Support for the signalling of the capability for receiving WUS assistance information**

*Type: CR For: -  
 24.501 v16.3.0 CR-1907 rev 2 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Amer*

(Replaces C1-200812)

**Discussion:**

I just checked C1-201050 in the server but I still see yellow text below which is not needed for capability indication :

“The UE shall set the WUSA bit to "WUS assistance information reception supported" in the 5GMM capability IE (only) if the UE supports WUS assistance information and does not have an emergency PDU session. The UE may include its UE paging probability information in the Requested WUS assistance information IE if the UE has set the WUSA bit to "WUS assistance information reception supported" in the 5GMM capability IE.’

“If the UE supports WUS assistance information IE and the AMF supports and accepts the use of WUS assistance information for the UE, then the AMF shall determine the negotiated UE paging probability information for the UE, store it in the 5GMM context of the UE, and include it in the Negotiated WUS assistance information IE in the REGISTRATION ACCEPT message. The AMF may consider the UE paging probability information received in the Requested WUS assistance information IE when determining the negotiated UE paging probability information for the UE.

”

“The UE shall set the WUSA bit to "WUS assistance information reception supported" in the 5GMM capability IE if the UE supports WUS assistance information and does not have an emergency PDU session. The UE may include its UE paging probability information in the Requested WUS assistance information IE if the UE has set the WUSA bit to "WUS assistance information reception supported" in the 5GMM capability IE.”

-

Lin Shu (Huawei)

The CR is fine for me if you could prepare a CR to correct following flaws in the next meeting, thanks.

(1) For below text, “the UE supports WUS assistance information IE” should be “the UE supports WUS assistance information”, no “IE”

“If the UE supports WUS assistance information IE and the AMF supports and accepts the use of WUS assistance information for the UE, then the AMF shall determine the negotiated UE paging probability information for the UE, store it in the 5GMM context of the UE, and include it in the Negotiated WUS assistance information IE in the REGISTRATION ACCEPT message. The AMF may consider the UE paging probability information received in the Requested WUS assistance information IE when determining the negotiated UE paging probability information for the UE.”

(2) For below text, the “and does not have an emergency PDU session” should be removed as well:

“The UE shall set the WUSA bit to "WUS assistance information reception supported" in the 5GMM capability IE if the UE supports WUS assistance information and does not have an emergency PDU session. The UE may include its UE paging probability information in the Requested WUS assistance information IE if the UE has set the WUSA bit to "WUS assistance information reception supported" in the 5GMM capability IE.”

(3) The new added subclause “9.11.3.x” should be provided after the Table 9.11.3.1.1. This seems will not create trouble for CR implementation but just looks strange in the CR.

(4) Double space in below text in sub 5.5.1.2.2:

“The UE shall set the WUSA bit to "WUS assistance information reception supported" in the 5GMM capability IE(double space here)if the UE supports WUS assistance information. The UE may include its UE paging probability information in the Requested WUS assistance information IE if the UE has set the WUSA bit to "WUS assistance information reception supported" in the 5GMM capability IE.”

**Decision:** The document was **revised to C1-201058**.

**C1-201058 Support for the signalling of the capability for receiving WUS assistance information**

*Type: CR For: -  
 24.501 v16.3.0 CR-1907 rev 3 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Amer*

(Replaces C1-201050)

**Decision:** The document was **agreed**.

**C1-200419 Handling of user-plane resources for NB-IoT UEs having at least two PDU sessions**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1672 rev 2 Cat: C (Rel-16)  
  
 Source: Qualcomm Incorporated, Ericsson / Amer*

(Replaces C1-198585)

**Discussion:**

Fei Lu (ZTE)

I have couple of comments for this CR:

1) the first change, the wording should be improved using bullet style:

the AMF either rejects the PDU session establishment request procedure; or

proceeds with the PDU Ssession establishment and includes the Control Plane CIoT 5GS Optimisation indication or Control Plane Only indicator to the SMF.

2) bullet b-5 in the subclause 5.6.1.4.2, the message should be CPSR message;

3) texts regarding the PDU session reactivation result IE should be aligned with the texts which was agreed in C1ah-200156.

Yanchao Kang (vivo): there's a superfluous #

Amer Catovic (Qualcomm) Thank you for the comments. They will be taken onboard.

Lin Shu (Huawei)

We have some detail inline comments as below, please check, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200419-24.501-NB-IoT-UP-Resource-Enforcement\_Option1\_r3-Lin.docx

-

Amer Catovic (Qualcomm)

Thanks for the comments. I revised the CR (attached, I don’t have access to upload to the meeting server) according to your suggestions. Please see some comments in the text.

-

Kaj Johansson (Ericsson)

I’m fine with a shorter variant in 5.3.21 but I propose a change to “The AMF enforces the limit on two PDU sessions with active user-plane resources for a UE in NB-N1 mode”. Normally we don’t refer to normative subclauses from general sections.

Amer Catovic (Qualcomm)

The new draft is here:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200xxx\_C1-200419-24.501-NB-IoT-UP-Resource-Enforcement\_Option1\_r6.docx

The revision has been uploaded as C1-200853.

--

Lin Shu (Huawei)

It seems some of my comments are not taken and please see below.

1. “8) the 5GMM cause IE is set to the 5GMM cause #92 "insufficient user-plane resources for the PDU session", the UE passes the 5GSM message in the Payload container IE and the PDU session ID to the 5GSM sublayer which are handled in the 5GSM procedures specified in clause 6. Additionally, the UE indicates to the 5GSM sublayer that the user-plane resources were not established due to insufficient user-plane resources.”

Should be below to keep consistency:

“8) the 5GMM cause IE is set to the 5GMM cause #92 "insufficient user-plane resources for the PDU session", the UE passes to the 5GSM sublayer an indication that the 5GSM message was not forwarded due to insufficient user-plane resources along with the 5GSM message from the Payload container IE of the DL NAS TRANSPORT message.”

2. “This needs to be removed anyways because it is repeated in each sub-bullet.”

[Lin] There is no problem to repeat as there are other handling between two “the AMF shall”

3. “I did not detect any overlap with C1ah-200156, which changes different subclauses.”

[Lin] It is not overlapping but to align the same style of the same bullet for the same handling to avoid “"if condition A, then action B, if condition C"”

--

John-Luc Bakker (BlackBerry)

Minor comments:

1) the SMF indicated to the AMF that the resource is not available in the UPF (see 3GPP TS 29.502 [20A]);

2) or the UE is in NB-N1 mode and the result will lead to user-plane resources established for more than two PDU sessions (see 3GPP TS 23.502 [9])

the AMF shall include the PDU session reactivation result error cause IE with the 5GMM cause set to #92"insufficient user-plane resources for the PDU session" if:

The “or” should at the end of bullet 1) and a semicolon is missing at the end of bullet 2).

The last line, starting with “the AMF …” is incorrect style. Should be B1 + a tab prior to “the”.

At the end of the last ine there is a stray “if:”.

Then a few more de-capitalizations highlighted below:

4) If the Uplink data status IE is included in the CONTROL PLANE SERVICE REQUEST message and does not indicate a request to have user-plane resources established for more than two PDU sessions for a UE in NB-N1 mode, the AMF shall:

i) indicate the SMF to re-establish the user-plane resources for the corresponding PDU sessions; and

ii) include the PDU session reactivation result IE in the SERVICE ACCEPT message to indicate the user-plane resources re-establishment result of the PDU sessions for which the UE requested to re-establish the user-plane resources.

5) If the Uplink data status IE is included in the CONTROL PLANE SERVICE REQUEST and indicates a request to have user-plane resources established for more than two PDU sessions for a UE in NB-N1 mode, the AMF shall not indicate to the SMF to re-establish the user-plane resources for the corresponding PDU sessions; and

6) Otherwise, if the Payload container IE is included in the message and if the Payload container type IE is set to "Location services message container", the AMF shall forward the Payload container type and the content of the Payload container IE to the LMF associated with the routing information included in the Additional information IE of the CONTROL PLANE SERVICE REQUEST message.

-

Lin Shu (Huawei)

I also found some editorial issue which was covered by John-Luc below.

Also the “;” is missing at the end of below bullet:

“d) the AMF determines that there are user-plane resources established for two other PDU sessions for this UE (see 3GPP TS 23.501 [8]) (; is missed here)

the AMF shall either:

”

Any way, the CR is fine for me and we can cover such editorials in the next meeting by a separate CR. Thanks.

-

Amer Catovic (Qualcomm)

John Luc, could you live with the editorial issues if I promise to bring a CR to the next emeting to fix them, and also, in the mean time, as the rapporteur of the work item, work with Frederic to remove some of the obvious editorial issues during the implementation?

-

Chair

I suggest that we go forward with the CR.

The CR has some editorials. I make a NOTE in the chairman’s agenda that Amer will bring a CR to the next meeting to fix the issues.

**Decision:** The document was **revised to C1-200853**.

**C1-200853 Handling of user-plane resources for NB-IoT UEs having at least two PDU sessions**

*Type: CR For: -  
 24.501 v16.3.0 CR-1672 rev 3 Cat: C (Rel-16)  
  
 Source: Qualcomm Incorporated, Ericsson / Amer*

(Replaces C1-200419)

**Decision:** The document was **revised to C1-201054**.

**C1-201054 Handling of user-plane resources for NB-IoT UEs having at least two PDU sessions**

*Type: CR For: -  
 24.501 v16.3.0 CR-1672 rev 4 Cat: C (Rel-16)  
  
 Source: Qualcomm Incorporated, Ericsson / Amer*

(Replaces C1-200853)

**Decision:** The document was **agreed**.

**C1-200420 5GSM congestion timers apply to data transfer over control plane**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1908 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated / Amer*

**Discussion:**

Kaj Johansson (Ericsson):

In EPS, T3396 does not prevent sending of ESM DATA TRANSPORT message according to 6.5.1.4.2 and 6.5.3.4.2 in 24.301.

Thus, in 5GS, T3396, T3584 and T3585 should not prevent transfer of user data using control plane CIoT 5GS optimization.

For this purpose, timer T3448 applies.

Yanchao Kang (vivo): ditto

Lin Shu (Huawei)

Comments:

1. Wrong CR template, e.g. the background yellow color is missing.

2. The ME box should be ticked in the cover page.

3. The date format is wrong in the cover page

4. The release no. is wrong in the cover page.

5. For the change part, prefer to use "neither A nor B nor C", not “neither A, B, nor C”.

Mahmoud Watfa (Samsung)

I have a question for clarification: are there specific stage 2 requirements in support of the proposal in this CR?

**Decision:** The document was **postponed**.

**C1-200421 Definition of a new access category for MO exception data**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1909 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Amer*

**Discussion:**

Fei Lu (ZTE): 397 and 421 have proposed to support the ""MO exception data" in the SNPN. I am not sure whether the NB-N1 mode will be supported in the SNPN.

Ivo Sedlacek (Ericsson): exception data reporting is not a regulatory service, and thus "Access attempt for MO exceptional data" should be done after "Access attempt for operator-defined access category", as in C1-200397.

Ban Al Bakri (NTT DOCOMO): On C1-200421, we have the same comment as Ivo.

Services related to regulation should come first, before the Operator-defined access category.

Emergency call is regulatory requirement, where Exception data is not. Also, there is no way to prevent IoT UEs from using mo exception data, that may impact the traffic and make it uncontrollable. Therefore conceptually, operator-defined category should come first.

If you agree on this comment, then we can work on merging the 3 contributions:

C1-200421, C1-200397 and C1-200677.

Amer Catovic (Qualcomm):

I am OK with moving the new row below ODAC. However, as I explained in the other thread about C1-200421, there is no support for CP CIoT in SNPN, so the related subclause should be removed.

Ivo Sedlacek (Ericsson) I have informed Ban offline that Ericsson is OK to merge C1-200397 into a revision of C1-200677.

In the revision of C1-200677, I am OK to revert changes for SNPN, i.e. in Table 4.5.2A.2. However, I would like to see an editor's note, e.g. "The support for CP CIoT in SNPN is to be verified" under Table 4.5.2A.2.

-

Lin Shu (Huawei)

We believe CP CIOT can be supported by SNPN via NB-IoT/eMTC connected to SNPN 5GCN. At least we did not see any clear spec text in both SA2/CT1 to exclude it, so by default, I can be supported. But we could live with to add an EN to capture this without touching SNPN as the timebeing.

It seems C1-200421 and C1-200397 will be merged into the revision of C1-200677, I do support this way. Then I have a minor one to C1-200677 as below:

1. In sub 4.5.4.1, the adding CPSR message for indicating the Uplink data status IE is not needed as CPSR is mainly for CP data transport without including UL data statue IE. There is only one case that the UE can include the Uplink data status IE in the CPSR is for CP-UP switching. However, the current text in sub 4.5.4.1 is very general so by adding CPSR message here, it will give the wrong impression that normally the CPSR message will include the Uplink data status IE which is not true. So better to NOT add CPSR message here.

-

Ban Al Bakri (NTT DOCOMO)

Revised CR in the Inbox/drafts in C1-200677-r1 with the following changes;

• Revert the changes for SNPN and add an EN.

• I applied comments provided by Ivo before the meeting, mainly formatting.

• I considered the comment from Lin below on 677, below, and provided alternative text.

• I also corrected and simplified the cover page.

• I added Ericsson and Qualcomm as co-signers (please confirm).

-

Amer Catovic (Qualcomm): Thank you for the revision of the CR. We are OK with merging C1-200421 into C1-200677-r1 and we would like to co-sign the CR.

-

Ban Al Bakri (NTT DOCOMO)

Please Note that the CRs [C1-200421], [C1-200677] and [C1-200397] are merged into [C1-200821] / revision of C1-200677.

C1-200821 is uploaded to 3GU.

-

Merged into C1-200677 and its revisions

**Decision:** The document was **merged**.

**C1-200424 Update of +CNMPSD for NR**

*Type: CR For: Agreement  
 27.007 v16.3.0 CR-0685 Cat: B (Rel-16)  
  
 Source: BlackBerry UK Ltd.*

**Decision:** The document was **agreed**.

**C1-200435 UE behaviour when T3447 running**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1917 Cat: F (Rel-16)  
  
 Source: ZTE*

**Discussion:**

Amer Catovic (Qualcomm): I have a question for clarification: if T3447 is running than the UE cannot send any data for any service. So what is the rationale for the urgency to report change in PS data off status while T3447 is running?

Fei Lu (ZTE):When the timer is running, then the UE is not allowed to send the UL data. However the UE is still allowed to receive the DL data.

However for the PS data off, as specified in the TS 23.503, some DL packets will be discared.

- when the SMF is informed about activation of 3GPP PS Data Off, the SMF ensures in UPF only downlink and optionally uplink packets for services belonging to the list(s) of 3GPP PS Data Off Exempt Services are forwarded while all other downlink and uplink packets are discarded, and

- When SMF is informed about deactivation of 3GPP PS Data Off, the SMF ensures in UPF downlink and uplink packets are forwarded according to the operator policy for the subscriber.

Based on this, the UE is required to indicate the change of PS data off status when the timer T3447 is running.

I hope I have clarified your question.

Lin Shu (Huawei):Comments:

1. For below text, normally the UE cannot modify an emergency PDU session and hence, it would be better to refer the error cases as specified in sub 6.4.1.3 and 6.3.2.3, e.g. yellow text added.

“C) "modification request" and the PDU session being modified is an emergency PDU session (see error cases as described in subclause 6.4.1.3 and subclause 6.3.2.3)”

2. For below text, as changed sub 5.4.5.2.6 is only for the connected mode, then how about the idle mode? When T3447 is running in the idle mode and the PS data off is changed, then whether the UE is still allowed to initiate the SR in order to send the PDU session modification? IMHO, it think so and hence the required change for the idle mode is also needed.

“ii) the Request type IE is not included and the PDU session modification procedure is used to indicate a change of 3GPP PS data off UE status for a PDU session; or”

3. The “or” at the end of below text needs to be removed.

“ii) the Request type IE is not included and the PDU session modification procedure is used to indicate a change of 3GPP PS data off UE status for a PDU session; or”

--

Fei Lu (ZTE)

Please find the draft revision in the drafts with the following change:

1) the cover sheet is updated to include the SR procedure;

2) the reference is added as Lin suggested;

3) or is removed;

4) the SR for the elevated signalling is added. The wording is the same as the agreed CR in C1ah-200137.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200792\_was0435\_CIoT.docx

Lin Shu (Huawei): It seems PS DATA OFF was not coved in sub 5.6.1.7 and I think it needs to be covered as well to align with connected mode you changed in sub 5.4.5.2.6 to keep consistency. Thanks.

Fei Lu (ZTE): In the revision in the drafts shared yesterday, it was already covered in the new bullet

6) the service request procedure is initiated forelevated signalling.

This is the wording from the agreed CR C1ah-200137 which was revised from C1ah-200040 for T3346 and PS data off case.

Kaj Johansson (Ericsson)

Sorry for jumping in late.

I was thinking.

For the UL NAS TRANSPORT message and timer T3447 on UE side.

When “the UE in 5GMM-CONNECTED mode receives mobile terminated signaling or downlink data over the user-plane” (bullet 4)), from this point the UE is allowed to send uplink signaling until it moves to IDLE.

Hence, if MT signaling or data over user-plane is received while CONNECTED, that is a DRB is established, the UE is allowed to send the modification request.

What I try to say is, do we really need specify this new exception?-

-

Fei Lu (ZTE)

When the timer T3447 is running, the UE is still allowed to receive the DL data.

However when the PS data off is activated, as specified in the TS 23.503, some DL packets will be discared and only DL packet belonging to list of PS data off exempt services will be sent to the UE.

- when the SMF is informed about activation of 3GPP PS Data Off, the SMF ensures in UPF only downlink and optionally uplink packets for services belonging to the list(s) of 3GPP PS Data Off Exempt Services are forwarded while all other downlink and uplink packets are discarded, and

- When SMF is informed about deactivation of 3GPP PS Data Off, the SMF ensures in UPF downlink and uplink packets are forwarded according to the operator policy for the subscriber.

If the DL packet is discarded, then the UPF will not trigger the SMF to perform paging or setup the DRB. And the UE will not receive the DL packet.

I hope I have clarified your concern.

**Decision:** The document was **revised to C1-200792**.

**C1-200792 UE behaviour when T3447 running**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1917 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE*

(Replaces C1-200435)

**Decision:** The document was **agreed**.

**C1-200495 Enhancement on CPSR for CIoT CP data transport**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1701 rev 2 Cat: C (Rel-16)  
  
 Source: Huawei, HiSilicon, Vodafone, ZTE, China Mobile, China Telecom, CATT/Lin*

(Replaces C1-198581)

**Discussion:**

Mikael Wass (Ericsson): Compared to previous version of this CPSR optimization proposal, ngKSI and SN have been shortened and combined into one octet.

Shortening SN will result in security impact and decreasing the window for accepted NAS COUNT values at replay protection. This is not acceptable for us and the previous “normal” 8 bit SN needs to be used.

Shortening ngKSI will loose the TSC indication. We believe there are cases when this is needed and given that there is no actual saving in message size, assuming SN is reverted to 8 bits, we would prefer to also keep the “normal” ngKSI.

-

Behrouz Aghili (Interdigital): We are of the same understanding as Ericsson here and our general position in regards to this topic has not changed. It seems that the effort from the supporting companies is to just try to “optimize”, by means of saving a few octets, no matter what the price will be! In one of the previous discussion papers or CRs (and I am sorry that I cannot remember which one here), it was argued that “CP Service Type” was really not needed! And now, that IE is back, but other IEs are being sacrificed as a “short SN” and ngKSI of 3 bits.

As a general comment, trying not to repeat what I have said several times in the past, I don’t see any strong reason for defining a Non-Standard L3 message, creating an exceptional case and, hence, making the protocol more complex.

-

Vivek Gupta (Intel): Our views have not changed on this topic as well, and we are \*not\* in favor of further optimization of CPSR message by defining this as a non-standard L3 message.

--

Lin Shu (Huawei):We are fine to go the way as you proposed below and please check below revision whether you are ok or not, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx(rev%20of%200495)\_5G\_CIoT\_24.501\_Enhancement%20on%20CPSR-v2.docx

Note that why we are tryig to use a shorten SN is to save one more octet in the header.

--

Lin Shu (Huawei):

I fully understand your general concerns on non-standard NAS message for this. But I guess both you have deeply involed the whole discussion on this topic in the past and I believe you know the backgroud of this. So I will not repeat everything we have shared but just want to highlight one key point: The CPSR message is a NEW NAS message in 5GS and dedicatedly used for CP CIOT data transport, which is already a special NAS message. As we discussed/analyzed in the past, even to save one octet for this message over NAS, will save much more transport block and restrasmission over AS layer and finally will improve the CIoT device battery life and signaling efficiency.

This is the new system and if we clearly find some room to improve it, why we cannot do it? Everything is new, so why we cannot embrace the new things in the new generation?

Finally, I have revised the CR as suggested by Mikael and then please check below revision in the draft to see whether you could live it or not, thanks a lot!

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx(rev%20of%200495)\_5G\_CIoT\_24.501\_Enhancement%20on%20CPSR-v2.docx

Yang Lu (Vodafone):we second what Lin said. The update suggested by Mikael is OK for us too.

-

Lin Shu (Huawei)

I know your main concern is on defining a non-standard L3 NAS message.

However, I just want to say that CT1 has already provided a very special handling on the new defined CPSR message which is somehow exceptional as well, e.g.

(1) to include mutual exclusive optional IEs;

(2) for initial NAS message protection, it is not to include the whole message but just the optional IE part in the NAS message container IE;

(3) no UE ID included in such initial NAS message.

So existing handling for CPSR message was already special so, I believe to make it as a non-standard L3 NAS message will NOT create some trouble from protocol implementation perspective.

Anyway, the revision of C1-200495 was in C1-200893 and already uploaded, thanks.

-

Behrouz Aghili (Interdigital)

I am really sorry, but my position has not changed in regard to this CR. If we all look back at what happened with the proposals to save octets in the header from the beginning, we will all see that so many things have changed and the supporting companies have given up and reverted back several of their original ideas. Yet, time after time, you try to just save a few octets by sacrificing another octet. I cannot remember how many octets the original proposal (several meetings back) was trying to save, but we are now down to “3”! Even the previous option of saving “4’ octets in C1-200501 was questionable and now we are talking about 3!

**Decision:** The document was **revised to C1-200893**.

**C1-200893 Enhancement on CPSR for CIoT CP data transport**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1701 rev 3 Cat: C (Rel-16)  
  
 Source: Huawei, HiSilicon, Vodafone, ZTE, China Mobile, China Telecom, CATT/Lin*

(Replaces C1-200495)

**Decision:** The document was **postponed**.

**C1-200496 Ciphering and deciphering handling of CPSR message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1930 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Decision:** The document was **agreed**.

**C1-200497 UE-requested user-plane resources release in NB-N1 mode**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1931 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Discussion:**

Amer Catovic (Qualcomm): We believe that this proposed optimization does not provide a favorable cost-benefit tradeoff. The existing solution in 24.501 may not be perfect but it meets the requirement to release active UP resources beyond the maximum supported. We would prefer to not agree to this CR in Rel-16.

Lin Shu (Huawei):

Your below comment is too general so to be frankly I cannot get your real point.

It would be appreiciated if you could provide more deatial comments on why “this proposed optimization does not provide a favorable cost-benefit tradeoff.”? What is the cost of our solution? What is the reall issue to go with this optimization?

We actually have pointed out the big problem of the current solution in the cover page, it indeed goes beyond the stage 2 requirement. What stage 2 required is to restrict the maximum number of active user-plane resources in NB-N1 mode. It does not restrict the maximum number of established PDU session in NB-N1 mode.

So it is very clear to have below issues as highlighted in our cover page:

Finally problems we observed:

(1) created unncessary NAS signalling load, this impacts the network efficiency; and

(2) prolonged the service setup time, this impacts the user experience.

Fei Lu (ZTE)

I share the same view with Amer and the additional enhancement is not needed.

Additionally, I did not see the benefit of saving the signalling. The PDU session modification is used to trigger the release of the DRB.

After the release of the DRB, the UE will also require the SR message for the DRB establishment procedure. Actually this is almost the same signalling of the PDU session establishment procedure.

Please see my rely inline below:

Additionally, I did not see the benefit of saving the signalling. The PDU session modification is used to trigger the release of the DRB.

[Lin] The current handling is to trigger the PDU session release and our proposal is to trigger the PDU session modification, so at this point, the signaling load is the same, right?

After the release of the DRB, the UE will also require the SR message for the DRB establishment procedure. Actually this is almost the same signalling of the PDU session establishment procedure.

[Lin] With the current handling, for the subsequent UL request, what the UE and the NW should do is:

(1) to establish a new PDU session with end-to-end procedure involved almost all nodes (UE, AMF, SMF, UPF, PCF, UDM, DN), this end-to-end procedure will take long timer and then delay the service setup;

(2) to reactivate the DRB with end-to-end procedure involve UE, NG-RAN, AMF, SMF and UPF.

With our proposal, for the subsequent UL request, what the UE and the NW should do is just above (2).

If you say they are the same signaling load, then why 3GPP does not go the way that, whenever the UE moves to the idle mode, all PDU session will be released and then to re-establish all of them later? To me, it is strange that you say they are the same signaling load.

Another key point is: from service continuity perspective, it seems you forgot the DL direction. If a PDU session was released, then how to proceed the DL data transport? Currently there is no trigger for DL data to request the UE to establish a new PDU session. With our proposal, the DL data can be quickly deliveried by the AMF requesting the NG-RAN to reactivate the DRB, right?

So the benefit of our proposal is quite clear.

Fei Lu (ZTE):Almost the same does NOT mean exactly the same.

I did not understand why you are talking about the DL packets. If the UE has already two DRBs, how the AMF triggers the setup of the DRB.

-

Lin Shu (Huawei)

For the DL, it seems you misunderstood my clarification and now let’s see a typical use case as below:

(1) At timer T0, assuming a UE in NB mode already has 3 active PDU sessions (PDU session#1, #2, #3) and currently the UE was in the connected mode with PDU session #1 and #2 have active DRBs;

(2) At time T1, the UE received a request from upper layer for sending an exception data report and the UE decides to establish a new PDU session #4 for it;

(3) With the current handling, assuming the UE decides to release the PDU session #1, then it will initiate an explicit PDU session release procedure to release PDU session #1 and also to establish a new PDU session #4;

(4) Then at timer T2, such UE has 3 active PDU sessions (PDU session #2, #3, #4) and currently the UE was in the connected mode with PDU session #2 and #4 have active DRBs;

(5) Later at timer T3, the DRB for PDU session #2 was released due to no data transport over it anymore, then currently the UE has only one active DRB for PDU session #4;

(6) Then at timer T4, the NW has a DL data needs to be sent over PDU session #1.

Then my point is: at step (6), how does the DL data to be transport over PDU session #1? It is impossible as PDU session #1 was inactive, right?

Then with our proposal, in step (3), the just released the DRB of PDU session #1, then at the timer T4 in step (6), the AMF can directly request NG-RAN to reactivate the DRB for PDU session #1 and then the DL data can be quickly sent to the UE over PDU session #1. This is what I want to say for the DL.

About the UL, you said “Almost the same does NOT mean exactly the same.”, I am not sure what is your real point. But it is very very clear that with the current handling there are two things need to be done while with our proposal, only one thing need to be done. So how can you say “Almost the same”?

Then assuming what you said “Almost the same” is correct, it would be appreciated if you could provide your opinion on below question? If below way could work well, then I believe all operators will be very happy with it as one AMF/SMF can serve much more UEs, this indeed could save operator’s CAPEX, right?

Q: Why 3GPP does not go the way that whenever the UE moves to the idle mode, all PDU session will be released and then to re-establish all of them later?

Kaj Johansson (Ericsson): There is no stage 2 procedure/requirement for the UE to initiate the user plane release of a PDU session and we see that needed before we do anything in stage 3.

Amer Catovic (Qualcomm)

Thanks for your comments. Fei and Kaj provided the details you requested from me. I second their comments and re-affirm my position that this CR is not needed in Rel-16..

\*-

Fei Lu (ZTE): On top of what Kaj said, actually this CR has introduced a UP to CP data transfer switch mechanism, which has no stage 2 requirement either.

-

Lin Shu (Huawei)

to Kaj:

For handling the maximum number of allowed active user-plane resources for PDU sessions of UEs in NB-N1 mode, there is also NO stage 2 requirement on the UE to release the UP resources of a PDU session. That is to say, currently there is no stage 2 requirement on below CT1 text in sub 6.4.1.5A:

"If the UE decides to release one or more active user-plane resources to cater for upper layer request, the UE shall release the PDU session via explicit 5GSM signalling."

SA2 just specified below requirement in TS 23.501 but how to achieve this requirement is up to stage 3. That is why we can specify above CT1 text without involving SA2. What now we proposed is to improve the above text in stagae 3 from to release the whole PDU session to just release the DRB of this PDU session but still keep this PDU session. So we believe this need not to involve SA2 as well. It is under CT1’s remit to have an implementation way to achieve below stage 2 requirement

“- A maximum of two Data Radio Bearers are supported over NB-IoT. Therefore, at most two PDU sessions can have active user plane resources at the same time.”

to Fei:

No, totally no, please do not confuse something!

I did not say anything, or specified anything in my CR that our CR “introduced a UP to CP data transfer switch mechanism”, so how can you say this?

We just changed: from release the whole PDU session to just release the DRB of this PDU session but still keep this PDU session.

We did not change the attribute of this PDU session, that is to say, even the DRB was released for this PDU session, but this PDU session is still for UP, the UL/DL transported over this PDU session still needs to reactivate the DRBs. Nothing else is changed.

-

Lin Shu (Huawei)

You just provided a general comment “does not provide a favorable cost-benefit tradeoff” but what Kaj and Fei’s comments are related to stage 2 requirement for which I have clarified.

So I still did not get your specific technical comments.

Normally, you cannot just provide a very general comment to say a CR is not needed, e.g. “I do not like this CR and hence this CR is not needed”. If so, then all people can easily say such general comments to object a CR.

-

Amer Catovic (Qualcomm)

It is OK to second the comments made by other delegates. For your convenience, here's a brief summary:

- The existing stage 3 solution fulfills the stage 2 requirements of ensuring that not more than 2 PDU sessions have active user plane resources

- Based on the above, your proposal is an optimization. The implementation effort for this optimization outweighs the benefits, in my opinion, especially at this stage in the release:

-- It is simpler to implement the logic to release a PDU session beyond instead of a logic to handle the corner cases like the one you described below + a new NAS procedure. For most NB-IoT devices, I think the existing solution will be sufficient.

-- Augmenting the NAS protocol by adding new features to it for small gains goes against the objective of making simple and cheap IoT devices

- NAS protocol currently does not support a procedure for the UE to initiate a release of active UP resources of a PDU session. This would be a substantial addition to the NAS protocol that should be evaluated and OK'ed by SA2 first.

Based on the above, my proposal is to submit this idea to SA2, and if agreed in SA2, work on it as a Rel-17 enhancement.

--

Kaj Johansson (Ericsson)

The UE initiated PDU session release procedure has been specified in stage 2 since long.

What I tried to say is that this CR proposes a new procedure and as CT1 does not own the stage 2, the stage 2 responsible group should specify such procedure i.e. SA2.

A UE in NB-N1 mode supports control plane CIoT 5GS optimization and as there is no other limitation for NB-IoT then the general one for the number of concurrent PDU sessions, the device could in parallel to sending user data over user plane also send user data over the control plane.

--

Lin Shu (Huawei)

>>What I tried to say is that this CR proposes a new procedure and as CT1 does not own the stage 2, the stage 2 responsible group should specify such procedure i.e. SA2.

[Lin] What is “new procedure” we proposed? We just reuse the existing NAS procedure. Do you think the PDU session modification is a new procedure?

A UE in NB-N1 mode supports control plane CIoT 5GS optimization and as there is no other limitation for NB-IoT then the general one for the number of concurrent PDU sessions, the device could in parallel to sending user data over user plane also send user data over the control plane.

[Lin] Agree with you said above but we did not touch anything related to CP. We just focus on UP redardless of CP. The CP is totally out of scope of this topic.

To Amer: thanks for providing your technical comments which is better for discussion.

- The existing stage 3 solution fulfills the stage 2 requirements of ensuring that not more than 2 PDU sessions have active user plane resources

[Lin] But the existing stage 3 solution is overdone from implementation perspective. It is stage 3’s remit to find the best way to implement stage 2 requirement. This is not the first story we done in CT1.

- Based on the above, your proposal is an optimization. The implementation effort for this optimization outweighs the benefits, in my opinion, especially at this stage in the release:

[Lin] I am not sure what is your “implementation effort”, what we proposed is just to replace the release of the whole PDU session by the release of DRB of this PDU session, all of these are existing handling. The only new point is for the UE to send an new 5GSM cause value in the PDU session modification to trigger the SMF to do this. Note that we have already added many new cause values in 5GS to cover different handling. So this is also not the 1st story.

-- It is simpler to implement the logic to release a PDU session beyond instead of a logic to handle the corner cases like the one you described below + a new NAS procedure. For most NB-IoT devices, I think the existing solution will be sufficient.

[Lin] No, I am not proposing any new NAS procedure, but just reuse the existing procedure. About the use cases, I did not add any new use cases but just to cover the same cases as covered by the existing solution. As the existing solution was captured in a general section so you cannot say the case is corner case. For NB devices, the existing solution is not just sufficient, it is clearly overdone.

-- Augmenting the NAS protocol by adding new features to it for small gains goes against the objective of making simple and cheap IoT devices

[Lin] No, we did not add any new features. On the contrary, we just try to reuse the existing procedure to improve the existing solution to make it is NOT overdone for simpler and cheaper IoT devices.

- NAS protocol currently does not support a procedure for the UE to initiate a release of active UP resources of a PDU session. This would be a substantial addition to the NAS protocol that should be evaluated and OK'ed by SA2 first.

[Lin] The end-to-end procedure for release of active UP resources of a PDU session itself is initiated by the NW without involving NAS protocol. What the NAS protocol needs to do is to cover some required triggers for such release. Hence what we proposed is just to add a UE trigger for the SMF to do it and the NW initiated procedure was already defined in stage 2.

Based on the above, my proposal is to submit this idea to SA2, and if agreed in SA2, work on it as a Rel-17 enhancement.

[Lin] SA2 currently does not and need not to cover below handling in CT1 for which we want to improve, as this is a stage 3 implementation and in CT1’s remit.

"If the UE decides to release one or more active user-plane resources to cater for upper layer request, the UE shall release the PDU session via explicit 5GSM signalling."

--

Fei Lu (ZTE):

If the PDU session is not CP only PDU session and the network has indicate the support of N3 data transerfer and CP in the registration accept message, then when the UP resource of the PDU session is released, the UE can send the small data over CP for this PDU session. This is somehow considered as the UP to CP switch.

---

Lin Shu (Huawei)

But you said below is existing handling, that is to say, without our proposal, the UE and the NW can also do this for a CP PDU session which is not CP only, right?

For a CP PDU session without CP only indication, once its DRB was released (e.g. the UE moves to the idle mode), hereafter, the UE and the NW can change it to UP whenever the UE and the NW want. Our proposal doest not touch this, right?

Also the above is not UP to CP switching, what we called switching is happenning during the ongoing data transport.

Currently, 3GPP only defined CP-to-UP switching but there is no UP-to-CP switching for CIOT, hope you agree with this, thanks.

-

Amer Catovic (Qualcomm):

@ Lin: It seems that we both agree that your proposal is an optimization to the current solution, which meets the requirements. We disagree on the need to implement this optimization. A I stated below, I think that the cases where your proposal will make a difference are rare and unlikely to occur, and as such are not worthy of addressing by creating a new NAS signaling procedure at this stage in Rel-16.

Regarding your comments on the new procedure, UE-triggered procedures, in which the UE triggers the NW to initiate a procedure, are still considered as separate procedures, both in 23.502 and in 24.501. So I think that, before we agree to your proposal, we need to have the support in stage 2 specs for the “UE-initiated 5GSM procedure for releasing user plane resources for a PDU session”. That way, we could potentially use this procedure for other use cases as well. Because of this and the late stage in Rel-16 that we are in, I repeat my proposal to not agree to this CR now and re-start this discussion in Rel-17.

-

Kaj Johansson (Ericsson): In my view the CR propose to add a new cause to the UE initiated PDU session modification procedure to be the trigger for the SMF to kick off a user plane release procedure. For me this is a new procedure, UE initiated user plane release procedure.

About CP CIoT, I mentioned this because a UE in NB-N1 mode that runs out of DRBs for UP CIoT could use CP CIoT in parallel, with this the proposed optimization becomes even less important.

Also why create new mechanisms in NAS and CN to coop with a RAN limitation, makes no sense.

--

Lin Shu (Huawei):

>>In my view the CR propose to add a new cause to the UE initiated PDU session modification procedure to be the trigger for the SMF to kick off a user plane release procedure. For me this is a new procedure, UE initiated user plane release procedure.

[Lin] I do not think to add a new 5GSM cause value in an existing PDU session modification procedure is a new procedure. We have added many new 5GSM cause value in the PDU session modification but we did not call it the new procedure.

>>About CP CIoT, I mentioned this because a UE in NB-N1 mode that runs out of DRBs for UP CIoT could use CP CIoT in parallel, with this the proposed optimization becomes even less important.

[Lin] But with the existing handling, the whole UP PDU session will be released and then you even have no choice to select whether to use it as CP or UP. Also I do not believe for a UP PDU session, during its life, the UE or the NW will modified it to CP. Currently we have no way to enable the UE and the NW to modify an existing UP PDU session to CP. I want to highlight that what we touched is only for UP PDU session, so please do not mix this with CP. We have nothing to do with CP.

Also why create new mechanisms in NAS and CN to coop with a RAN limitation, makes no sense.

[Lin] You also mix something here. The existing NAS handling is also to resolve the RAN limitation, do you agree? We did not add anything new on RAN limitation.

-

RV Anikethan (Samsung)

We acknowledge the use case and the redundancies that the existing handling has.

This was exactly the scenario highlighted in Samsung’s CR during the Reno meeting:

http://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_121\_Reno/Docs/C1-198074.zip

But we would prefer a more simpler handling of just allowing the UE to do a local release of the connection and establishing connection afresh for these use cases instead of the proposed PDU session modification procedure.

The same was proposed in the above CR.

--

Chen-Ho Chin (OPPO)

When the timer T3447 is running, the UE is still allowed to receive the DL data.

However when the PS data off is activated, as specified in the TS 23.503, some DL packets will be discared and only DL packet belonging to list of PS data off exempt services will be sent to the UE.

- when the SMF is informed about activation of 3GPP PS Data Off, the SMF ensures in UPF only downlink and optionally uplink packets for services belonging to the list(s) of 3GPP PS Data Off Exempt Services are forwarded while all other downlink and uplink packets are discarded, and

- When SMF is informed about deactivation of 3GPP PS Data Off, the SMF ensures in UPF downlink and uplink packets are forwarded according to the operator policy for the subscriber.

If the DL packet is discarded, then the UPF will not trigger the SMF to perform paging or setup the DRB. And the UE will not receive the DL packet.

I hope I have clarified your concern.

-

Amer Catovic (Qualcomm)

I stand by my comments made earlier. Some clarifications to help you understand my position:

You are referring to a procedure in 23.502 for a CN-initiated deactivation of UP resources for a PDU session. My key argument is that we need a reference for a corresponding UE-initiated (or UE requested) procedure proposed by Huawei, which currently does not exist in 23.502. UE-initiated procedures and NW-initiated procedures are considered as separate procedures in 24.501 (as well as in 23.502), even if the UE-initiated procedure re-uses the NW-initiated procedure as the second step. Please refer to 24.501 for many such examples. So we need stage 2 support for the proposed new procedure before we proceed with this CR. That would also make the Huawei CR potentially more useful in the long run, as we could add such new procedure, if agreed by SA2, to our toolbox and use it for other purposes as well.

-

Lin Shu (Huawei)

@Ani, about local release vs explicit release, I think we have discussed in Reno meeting and a very clearer direction is that local release is not a way as it indeed created unnecessary mismatch between the UE and the NW on PDU session/DRB resources while the UE already stays in the connected mode. Normally, it is a basic and good principle that when a UE is in the connected mode, all status (including PDU session status and DRB resources) should be synchronized between the UE and the NW as far as possible.

@Chen, thanks for your support and I will add your company as co-signer in the next revision. I also agree with you that there are some rooms can be improved in the future, e.g. R17, on selective deactivate the DRBs of a PDU session. Let’s have an easy starting for NB in R16. Finally, thanks for sharing a very good words (you cannot have your cake and eat it) for which I did not heard very much

@Amer, I just want to highlight one key point it seems you mixed: the activation/deactivation of UP resources of a PDU session for a UE was always final initiated by the SMF, the UE and the AMF just request but it is the SMF to take the final decision to initiate it. There is no UE initiated UP resource activation/deactivation, the UE just sends a request, e.g. by including a UL data status IE to the AMF and then indicated by the AMF to the SMF, it is the SMF to initiate the real actions about it.

Finally, C1-200497 was revised to C1-200996 and available in the draft, please check, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200996(rev%20of%200497)\_5G\_CIoT\_24.501\_UE-requested%20UP%20release%20in%20NB.docx

-

Fei Lu (ZTE) We would like to see the stage 2 requirement first on this issue (UE triggered the SM/MM procedure to release the DRB).

-

Kaj Johansson (Ericsson) Our position has not changed, we still like to see stage 2 requirement first.

**Decision:** The document was **revised to C1-200996**.

**C1-200996 UE-requested user-plane resources release in NB-N1 mode**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1931 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

(Replaces C1-200497)

**Decision:** The document was **postponed**.

**C1-200498 NAS evaluation on options for UE specific DRX for NB-IoT**

*Type: discussion For: Decision  
 Source: Huawei, HiSilicon/Lin*

**Discussion:**

Amer Catovic (Qualcomm)

Observation 2: We disagree. Using differnet values allows to indicate the support for UE specific DRX for NB-S1 mode at the same time as providing the values, both at the UE and at the MME. Also, see Observation 5 below.

Observation 3: We disagree. Option 1 has backward compatibility issues in the MME and in the UE (see cover sheet of C1-200355 for more details) and soilving these issues would create NAS impact.

Observation 4: We disagree. The alleged backward copmatibility issues assocaited with Option 2 described in Table 4 Row 1 are not correct.

a) The “legacy UE accesing new MME” issue could be resolved by MME keeping separate DRX values per RAT

b) The “new UE accesing legacy MME” issue could be resolved as follows:

o In NB-S1 mode, a Rel-16 UE would understand, based on the lack of NB-S1 DRX parameter in the response, that it is dealing with a Rel-15 MME and does not use UE specific DRX.

o In WB-S1 mode, the UE adopts the legacy behaviour.

Observation 5: We disagree. If the DRX values are different for NB-S1 mode vs. WB-S1 mode, the interpretation of the DRX values will be different between the UE and the MME.

Observation 6: same as Observation 5.

Observation 7: same as 5 and 6.

Observation 8: Out of scope, the stage 2 requirements and the stage 3 solution are completed for N1 mode. This discussion is only about NB-S1 mode.

Proposal 1: Disagree.

Proposal 2: Disagree

Proposal 3: out of scope.

**Decision:** The document was **noted**.

**C1-200500 Discussion on truncated 5G-S-TMSI over NAS**

*Type: discussion For: Decision  
 Source: Huawei, HiSilicon/Lin*

**Decision:** The document was **noted**.

**C1-200501 Truncated 5G-S-TMSI over NAS**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1932 Cat: C (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Discussion:**

Yang Lu (Vodafone): The following description of the total value of the two truncated (AMF set & AMF pointer) values occurs three times in the CR.

The sum of the "Truncated AMF Set ID value" and the "Truncated AMF Pointer value" in the Truncated 5G-S-TMSI configuration IE shall be larger or equal to 8.

An alternative (and my preference) is to add a NOTE in Table 9.11.3.xy.1, saying something like

Total value of the "Truncated AMF Set ID value" and the "Truncated AMF Pointer value" in the Truncated 5G-S-TMSI configuration IE is specified in 3GPP TS23.003 [xx] and 3GPP TS36.300 [yy].

-

Fei Lu (ZTE): The UE behaviour shall also be enhanced to indicate the UE will provide this info to the lower layer since the truncated S-TMSI is used over the RRC interface.

-

Mikael Wass (Ericsson):

1) Why is the PNB used rather than the UE support indication in 5GS network feature support? To me it seems safer for the network to use the actual support indication of CP CIoT optimization support and the network decision to use/allow CP CIoT. There can be cases when CP CIoT is not indicated in PNB, but the network anyway would accept use of CP CIoT if supported by the UE. And for this case (NB-N1 mode) we anyway know that CP CIoT is supported by the UE, why do we need bullets 2 and 3 at all?

If:

- the UE is in NB-N1 mode;

- the UE requests "control plane CIoT 5GS optimization" in the 5GS update type IE of REGISTRATION REQUEST message;

- the AMF decides to accept the requested CIoT 5GS optimization and the registration request; and

- the network is configured to provide the truncated 5G-S-TMSI configuration for control plane CIoT 5GS optimizations;

2) I do not think a normative requirement for the sum of values needs to be added in NAS specification, unless if you expect NAS to verify and trigger error handling if incorrect. If this requirement is captured elsewhere, no need to repeat in NAS spec.

-

Behrouz Aghili (Interdigital)

Just a minor comment in addition to the ones brought up by Mikael.

The new IE that you are introducing should be a Type 4 IE of TLV format and, hence, of Length = 3.

--

Lin Shu (Huawei)

Thanks for your comments and I have tried to capure almost of your comments in below revision in the draft box. Please check:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx(rev%20of%200501)\_5G\_CIoT\_24.501\_Truncated%205G-S-TMSI%20over%20NAS.docx

@Yang, good proposal and I have taken your comment with minir rewording, please check;

@Fei, I have taken your comments and please check;

@Mikael, I have taken your 1st comment to focus on the final result, i.e. the UE is using control plane CIoT 5GS optimizations, to make it simpler. I guess your 2nd comments can be resolved by Yang’s suggestion.

@Behrouz, I did not taken your comment as I want to know, why it should be type 4 IE if type 3 IE is enough? Thanks.

--

Fei Lu (ZTE)

Regarding the following change:

If the REGISTRATION ACCEPT message contains the Truncated 5G-S-TMSI configuration IE, then the UE shall:

a) store the included truncated 5G-S-TMSI configuration;

b) use the truncated 5G-S-TMSI configuration to create the truncated 5G-S-TMSI as specified in 3GPP TS 23.501 [8]; and

c) provide the lower layers with the truncated 5G-S-TMSI.

I would prefer to use the simple wording as following:

If the REGISTRATION ACCEPT message contains the Truncated 5G-S-TMSI configuration IE, then the UE shall store the included truncated 5G-S-TMSI configuration and provide it to the lower layer.

There is no need for the NAS to generate the truncated S-TMSI. It is only required for the AS when the msg 3 is sent.

-

Amer Catovic (Qualcomm) @Lin, Fei,

It is untestable what the UE provides to the lower layer; namely: 5G-S-TMSI or the 5G-S-TMSI configuration. Whichever option we select in the specs is unenforceable through testing. So this should not be a requirement, but rather a note:

If the REGISTRATION ACCEPT message contains the Truncated 5G-S-TMSI configuration IE, then the UE shall store its value.

NOTE: The UE provides the Truncated 5G-S-TMSI configuration to the lower layers..

-

Lin Shu (Huawei)

I am fine with Amer’s proposal and now please check the below revision is fine or not, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx(rev%20of%200501)\_5G\_CIoT\_24.501\_Truncated%205G-S-TMSI%20over%20NAS-v2.docx

-

Lin Shu (Huawei)

501 was revised to 895 and it is available in the draft, please check whether it is fine for you or not, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200895(rev%20of%200501)\_5G\_CIoT\_24.501\_Truncated%205G-S-TMSI%20over%20NAS-v2.docx

-

Behrouz Aghili (Interdigital)

I am so sorry, but it seems that I totally missed this mail within the barrage of mails that I had on Monday morning. Hope it is not too late…

The reason you need an IE of TLV format is backward compatibility. If the NW sends this IE to a UE of earlier release of the protocol, then that UE does not recognize the IEI (the “T”) and, hence, will discard the entire IE. However, the UE needs to know how many octets this new IE contain.

I sent you a reply to an earlier mail from your side that I, unfortunately, had missed. The format of the new IE should be TLV.

-

Lin Shu (Huawei)

Now I got your key point and I agree with you, the new optional IE should be TLV, if its length is larger than one octet.

Please see the updated revision below and to see it is fine for you or not, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200895(rev%20of%200501)\_5G\_CIoT\_24.501\_Truncated%205G-S-TMSI%20over%20NAS-v3.docx

-

Mikael Wass (Ericsson)

Not sure this has been raised yet, but why does the inclusion of Truncated 5G-S-TMSI configuration IE in the REGISTRATION ACCEPT not trigger a REGISTRATION COMPLETE message to verify that the UE received the (new) parameters. In the Configuration update procedure case the signaling of Truncated 5G-S-TMSI configuration is acknowledged by the UE, so would it not be logical to apply the same in the registration procedure case?

I guess it can be argued that the UE will resend REGISTRATION REQUEST if REGISTATION ACCEPT is not received, but I see no major difference in the type of the current parameters that do trigger REGISTRATION COMPLETE, e.g UE radio capability ID.

If it can be justified to send Truncated 5G-S-TMSI configuration in registration procedure without complete, the changes in the CR are ok

Probably we need to add abnormal case handling, but that can be done in a next step.

Unfortunately the cover sheet has not been updated to align to modified changes.

-

Lin Shu (Huawei)

@Mikael

About your below comments on whether the ack is needed or not, I can confirm that this big comment is the 1st time provided after the deadline.

As no people provided such big comment before the deadline, then to be frankly, as every day is rather busy, I have not considered and even thought it more before seeing your below email. Hence, so at the timebeing, I have no any good idea on this but I try to provide my views inline below. Please check.

When you checked my below reply, then two ways forward on this CR in this meeting:

(1) If you could live to discuss the further required work as the next step to the next meeting, then we can agree this CR in this meeting.

(2) If you cannot live to separate the discussion on required work into different steps, then let’s postpone the CR to the next meeting.

So please let me known your views. Thanks.

-

Mikael Wass (Ericsson)

Sorry for that, but it is something I realized only when reviewing the final revision a bit more careful. And I assume Thursday deadline is for creating new revisions, not providing comments on those revisions…

Anyway, as you seem to conform that it is a valid concern that needs further analysis we can have an agreement to do this for next meeting. The current CR can at least be seen as a baseline for work we know needs to be done anyway. And in best case an analysis will show that we do not need UE ack, then the CR implement the complete solution.

Under these assumptions I can live with (1).

Thanks Mikael, for living with the CR as the base for further work.

I do not mean you cannot provide the comments but just that I cannot do anything for such big comments provided after the revision deadline

To be frankly I also overlooked on this point when preparing the CR. Let’s keep this in mind and co-work for the next meeting. I think it is not easy so my draft idea is a disc paper seems needed for this.

Some quick feedback on your inline comments.

[Mikael] I assume there can also be a case when the UE already has a Truncated 5G-S-TMSI configuration and the network needs to provide new valued. So it is not only the on/off case that needs to be considered.

[Lin] Yes, I missed this case in my below points. We need to analyzed this as well. Also we need to check how often such change will be done, e.g. whenever a new 5G-GUTI was allocated, then such n/m value shall be updated as well, or even the 5G-GUTI is not updated, such n/m value needs also to be updated periodically? or? This seems related to the UE ID privacy protection and not sure SA3 has discussed this or not.

[Mikael] Agree, we need to get feedback from other groups. Hopefully we can do this without any “official” communication between the groups.

[Lin] Yes, I also do hope without any “official” communication between the groups and to seek internal check. Let’s see what will happen when this was discussed in the next meeting.

[Mikael] E.g. the cover sheet still for proposal #2 lists the conditions of the originally submitted CR for the AMF to provide Truncated 5G-S-TMSI configuration. These have been modified and are different in latest revision.

[Lin] ok, now I get your point. The thing is that in the reason for change, that proposal #2 I just copied from the disc paper. It could be a case that the final proposed change in the CR will be tweaked per comment and then different from the proposal in the disc paper. To update it is better but I think without update it, it will not create the confusing for the readers.

-

Yang Lu (Vodafone) it is fine for us and we can work on the improvements needed in the next meeting.

**Decision:** The document was **revised to C1-200895**.

**C1-200895 Truncated 5G-S-TMSI over NAS**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1932 rev 1 Cat: C (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

(Replaces C1-200501)

**Decision:** The document was **agreed**.

**C1-200502 AMF behavior on stop T3448**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1933 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Decision:** The document was **agreed**.

**C1-200503 No SMS in payload container IE in CPSR message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1934 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

**Discussion:**

Kaj Johansson (Ericsson):I have some sympathy with your proposal but I do not fully agree with the conclusion.

If the UE wants to both send SMS and e.g. synchronize PDU session status with the NW, then the Payload container IE must be used.

--

Lin Shu (Huawei): I see your point and agree with your observation.

So I changed the CR to only cover the coding text correction, I also update the cover page very much, so please check below and see whether you are fine with this, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx(rev%20of%200503)\_5G\_CIoT\_24.501\_Correction%20on%20SMS%20in%20payload%20container%20in%20CPSR.docx

--

Kaj Johansson (Ericsson)

The linked draft version is almost fine with me.

Just minor comments, in Reason for change about “as the length of SMS is smaller than 254B”. Is that really the direct reason or is it because the contents actually starts from octet three according to 24.301? I would prefer that the later is stated instead.

-

Lin Shu (Huawei): I will change that text in the cover page to “However, when seeing the NAS message container IE coding in 24.301 as below, only the first two octets need to be excluded:”, hope this is fine for you, thanks.

**Decision:** The document was **revised to C1-200894**.

**C1-200894 No SMS in payload container IE in CPSR message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1934 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon/Lin*

(Replaces C1-200503)

**Decision:** The document was **agreed**.

**C1-200580 Stopping of T3513 after connection resume for user plane CIoT 5GS optimization**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1956 Cat: C (Rel-16)  
  
 Source: Samsung/Mahmoud*

**Discussion:**

Lin Shu (Huawei)

The CR is fine with some minor ones as below:

1. Better to be category F CR.

2. Change part needs also to refer TS 36.413

Lin Shu (Huawei)

Just recalled that the CR is only for UP CIOT and NR does not support UP CIOT, so for my 2nd comments below, it should be:

2. “as specified in 3GPP TS 38.413 [31]” should be “as specified in 3GPP TS 36.413 [xx]” as UP CIOT is not supported by NR.

Lin Shu (Huawei): As corrected by Fei, I withdraw my below 2nd comments as NGAP was covered in 38.413, not 36.413. Sorry for this.

Mahmoud Watfa (Samsung)

No problem, thanks for confirming.

Please note that the revision is in C1-200852 and the only change is to make it CAT F as you suggested.

The document is available.

**Decision:** The document was **revised to C1-200852**.

**C1-200852 Stopping of T3513 after connection resume for user plane CIoT 5GS optimization**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1956 rev 1 Cat: F (Rel-16)  
  
 Source: Samsung/Mahmoud*

(Replaces C1-200580)

**Discussion:**

Mmahmoud Watfa (Samsung)C1-200852 is a revision of C1-200580.

The only change was to make it CAT F as suggested by Lin.

The document is uploaded and is available.

**Decision:** The document was **agreed**.

**C1-200583 5G-GUTI reallocation after resume from 5GMM-IDLE mode with suspend indication due to paging**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1959 Cat: C (Rel-16)  
  
 Source: Samsung/Mahmoud*

**Discussion:**

Fei Lu (ZTE): The motivation of the CR is fine. However one more condition should be added to clarify that this is only applied for the MT access resume cause.

Now the CR looks that even the resume procedure is triggered by the mo-signalling or mo data, the 5G-GUTI allocation is also required during the lifetime of the NAS signalling connection.

Mahmoud Watfa (Samsung):

I can clarify that this is related to paging (instead of using MT access resume which I agree would be the same).

The modification/clarification is highlighted below:

This procedure shall be initiated by the network to assign a new 5G-GUTI to the UE after:

a) a successful service request procedure invoked as a response to a paging request from the network and before the release of the N1 NAS signalling connection; or

b) the AMF receives an indication from the lower layers that the RRC connection has been resumed for a UE in 5GMM-IDLE mode with suspend indication as a response to a paging request from the network, and before the:

1) release of the N1 NAS signalling connection; or

2) suspension of the N1 NAS signalling connection due to user plane CIoT 5GS optimization i.e. before the UE and the AMF enter 5GMM-IDLE mode with suspend indication.

Fei Lu (ZTE):

Thanks for your consideration, my proposal on the new wording as following:

the AMF receives an indication from the lower layers that the RRC connection has been resumed for a UE in 5GMM-IDLE mode with suspend indication and this resumption is as a response to a paging request from the network

Mahmoud Watfa (Samsung): Thanks for your suggestion. This works for me.

I can revise the tdoc accordingly.

-

Kaj Johansson (Ericsson)

The reason why SA3 has specified that the AMF shall re-allocate the 5G-GUTI during NW initiated service request procedure is because the temporary ID is revealed in both downlink direction (paging) and uplink direction (service request message).

For the case in the CR that the AMF shall perform a 5G-GUTI reallocation, the 5G-GUTI is revealed only in downlink direction (paging) and not in the uplink direction (resume) hence there is no security issue to justify a 5G-GUTI reallocation for this case.

Given this I do not see that the proposed change is needed.

**Decision:** The document was **revised to C1-200782**.

**C1-200782 5G-GUTI reallocation after resume from 5GMM-IDLE mode with suspend indication due to paging**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1959 rev 1 Cat: C (Rel-16)  
  
 Source: Samsung/Mahmoud*

(Replaces C1-200583)

**Discussion:**

Mahmoud Watfa (Samsung)

The requirement to allocate a new 5G-GUTI after paging results into the fact that the network will NEVER page the UE with the same 5G-S-TMSI twice.

With the case in the CR, you will break that principle and can actually page the UE more than twice with the same 5G-S-TMSI when the UE is put in 5GMM-IDLE with suspend indication repeatedly.

Coming to your comment below. Remember that the main objective of SA3 was to avoid a UE being tracked based on its response to paging.

Yes, I agree with resume the UE will not send its temporary ID in the UL. However, you can actually correlate the resume signalling (specifically the RRC connection resume request with resume cause set to “MT-access”) with the UE being paged. This way you can know which UE is actually responding to paging.

• Now, assume the UE goes back to 5GMM-IDLE with suspend and the network pages the UE again with same 5G-S-TMSI

• UE generates RRC signalling to resume connection with resume cause set to “MT-access”

• Repeating the above, you can actually track the UE!

Tracking of the UE can still be possible even if the UE does not reveal its temporary ID in the uplink. So the above objective will not be met.

Hence the CR is needed to avoid such security issues.

Please let me know if this clarifies.

-

Kaj Johansson (Ericsson): Note that there is no 5G-GUTI re-allocation requirement in stage 2 for the MO service request which could happen over and over again from 5GMM-IDLE to 5GMM-CONNECTED without a 5G-GUTI re-allocation in between.

SA3 did not see the lack of 5G-GUTI re-allocation at MO service request as a security issue.

The same reasoning applies for paging with resume response case.-

-

Mahmoud Watfa (Samsung):

You say “SA3 did not see the lack of 5G-GUTI re-allocation at MO service request as a security issue”.

 At least I am NOT talking about MO service request procedures. The CR is focused on cases of network paging, so please let us focus the discussion on that.

However, since you are mentioning MO cases, you can see the following NOTE 1 from SA3.

6.12.3 Subscription temporary identifier

A new 5G-GUTI shall be sent to a UE only after a successful activation of NAS security. The 5G-GUTI is defined in TS 23.003 [19].

Upon receiving Registration Request message of type "initial registration" or "mobility registration update" from a UE, the AMF shall send a new 5G-GUTI to the UE in the registration procedure.

Upon receiving Registration Request message of type "periodic registration update" from a UE, the AMF should send a new 5G-GUTI to the UE in the registration procedure.

Upon receiving Service Request message sent by the UE in response to a Paging message, the AMF shall send a new 5G-GUTI to the UE. This new 5G-GUTI shall be sent before the current NAS signalling connection is released.

NOTE 1: It is left to implementation to re-assign 5G-GUTI more frequently than in cases mentioned above, for example after a Service Request message from the UE not triggered by the network.

NOTE 2: It is left to implementation to generate 5G-GUTI containing 5G-TMSI that uniquely identifies the UE within the AMF.

Coming back to network paging… (not MO cases)

I have explained that the current requirement to allocate a new 5G-GUTI after paging means that the network should not page the same UE twice using the same 5G-S-TMSI. And that will be broken in the case of: suspend then paging, followed by resume, followed by suspend, followed by paging, followed by resume, etc.

Of course we don’t agree with “The same reasoning applies for paging with resume response case”.

Again, I have clarified that paging with same 5G-S-TMSI twice should not be possible with the current SA3 requirement. And I also demonstrated that there is a case (as explained by our CR) where this breaks.

At this point, we should ask SA3 for guidance on this important security matter.

I therefore will draft an LS to SA3 on this and let them tell us what the requirement is.

--

Kaj Johansson (Ericsson): The current TS 33.501 is clear about when 5G-GUTI reallocation shall take place and resume response to paging request is not one of the triggers.

According to our SA3 colleagues this is intentionally.

If Samsung wants to also have paging with resume response as a trigger, then this should be handled in SA3 via regular CR and not via a LS from CT1.

**Decision:** The document was **postponed**.

**C1-200585 Adding an editor’s note for suspend indication due to user plane CIoT 5GS optimization**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1961 Cat: C (Rel-16)  
  
 Source: Samsung/Mahmoud*

**Discussion:**

Amer Catovic (Qualcomm) We disagree with the editor’s note. Resolving the EN would amount to designing the API between AS and NAS, which would be untestable. We suggest the following alternatives:

- Adding a note, as a hint for implementers, e.g. “The suspend indication from lower layers mentioned in the current subclause is different from the suspend indication from lower layers mentioned in subclause x.x, which triggers a transition from mode X to mode Y ”

- Name the indications differently, e.g..: “RRC suspend indication” vs. “RRC inactive indication”

Mikael Wass (Ericsson)

I think something needs to be done in 24.501 to differentiate triggers for Suspend vs RRC Inactive. Depending of RAN2 feedback/guidance the 24.501 change could be different, so I think to add an EN until sufficient information is available to CT1 makes sense. Wording can be modified if there are concerns with current proposal, e.g.:

Editor’s Note: Specification to differentiate a suspend indication due to the use of user plane CIoT 5GS optimization from a suspend indication due to the RRC entering the RRC inactive state is FFS.

Mahmoud Watfa (Samsung): Thanks for your suggestion. I am fine with modifying the EN until feedback is received from RAN2.

For now I will plan to use your proposed rewording until another agreeable suggestion is made.

Please note: C1-200585 is revised to C1-200783 to change the EN as indicated below.

I will wait for some time to see if there are other rewording suggestions before uploading.

-

Amer Catovic (Qualcomm): I would prefer to not refer to any specification, because a clarification may be all that is needed, as I explained in the thread on C1-200588. I suggest this:

Editor’s Note: Clarification is needed to differentiate the suspend indication due to the use of user plane CIoT 5GS optimization from a suspend indication due to the RRC entering the RRC inactive state.

-

Mahmoud Watfa (Samsung): In this case we should not use “clarification” either.

I would suggest:

Editor’s Note: Differentiating a suspend indication due to the use of user plane CIoT 5GS optimization from a suspend indication due to the RRC entering the RRC inactive state is FFS.

Amer Catovic (Qualcomm): Fine with me.

Mikael Wass (Ericsson): Fine for me as well.

Lin Shu (Huawei): Fine for me as well but better to be a category F CR. Thanks.

**Decision:** The document was **revised to C1-200783**.

**C1-200783 Adding an editor’s note for suspend indication due to user plane CIoT 5GS optimization**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1961 rev 1 Cat: F (Rel-16)  
  
 Source: Samsung/Mahmoud*

(Replaces C1-200585)

**Discussion:**

Mahmoud Watfa (Samsung): Revision now available.

Also made it CAT F as suggested by Lin.

Amer Catovic (Qualcomm): Looks OK. Thanks.

**Decision:** The document was **agreed**.

**C1-200588 Ambiguity in the suspend indication from lower layers to the NAS**

*Type: discussion For: Discussion  
 24.501 v..  
 Source: Samsung/Mahmoud*

**Discussion:**

Amer Catovic (Qualcomm): We think that the any breakdown in the meaning of the suspend indication that would be introduced in the specs would be untestable, and as such should not be specified as a requirement. More useful alternatives include:

- Adding a note, as a hint for implementers, e.g. “The suspend indication from lower layers mentioned in the current subclause is different from the suspend indication from lower layers mentioned in subclause x.x, which triggers a transition from mode X to mode Y ”

- Name the indications differently, e.g..: “RRC suspend indication” vs. “RRC inactive indication”

Mikael Wass (Ericsson)

I think the issue highlighted in the paper is relevant and when looking at NAS specification the same lower layer indication seems to trigger two different behaviors. It should be clarified by RAN2 how these cases are distinguished so therefore

I support sending an LS to request clarification, but I would prefer to leave it open for RAN to explain or resolve without CT1 pointing at any specific required action.

Mahmoud Watfa (Samsung):

@Amer:

1) On your comment “We think that the any breakdown in the meaning of the suspend indication that would be introduced in the specs would be untestable”

I don’t agree that this is untestable. As per the paper, the NAS modes that should be entered are quite different based on the same suspend indication. Based on this, the UE behaviour after receiving a paging would be quite different i.e.: when in 5GMM-IDLE with suspend indication, the UE resumes connection with a resume ID, etc, but when in 5GMM-CONNECTED mode with RRC inactive indication, the UE goes to 5GMM-IDLE mode and starts a new RRC connection.

2) The NAS is an entity that is separate from RRC and in some cases gets certain indications based on which it operates in certain modes. So suggesting “Name the indications differently, e.g..: “RRC suspend indication” vs. “RRC inactive indication”” does not work if the indication represented by the name does not actually exist. Similarly, the other suggestion with a note does not solve the ambiguity at the NAS.

@Mikael: I am OK with rewording the LS as you suggest.

Behrouz Aghili (Interdigital): Having read the Discussion Paper, it is absolutely clear that there are two possible actions for the UE to take for the exact same indication form the lower layers. Hence, we too are of the understanding that something has to be done to resolve this issue.

We would like to, therefore, support sending an LS to RAN2.

Haorui Yang (OPPO)

Based on the discussion paper, I also think the issue does exist.

Also it is better that keep CT1 spec and RAN2 spec align for the indication between NAS layer and RRC layer.

So I support what Mikael suggested, i.e. sending an LS to RAN2 to let RAN2 clarify.

**Decision:** The document was **noted**.

**C1-200592 Recovery from fallback for UEs using CP CIoT optimization**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1966 Cat: C (Rel-16)  
  
 Source: Samsung/Mahmoud*

**Discussion:**

Amer Catovic (Qualcomm) We are OK with the rationale and the objective of the CR. We think that the same objective could be achieved with much less impact on the specification. We propose the following text:

If the UE requests the lower layers to transition to RRC\_CONNECTED state at initiation of a registration procedure, a service request procedure or a de-registration procedure, upon fallback indication from lower layers, the UE shall:

- enter 5GMM-IDLE mode;

- proceed with the pending procedure; and

- if the pending procedure is a service request or registration request procedure, the UE shall include the Uplink data status IE in the SERVICE REQUEST message, the CONTROL PLANE SERVICE REQUEST or in the REGISTRATION REQUEST message, indicating the PDU session(s) without active user-plane resources for which the UE has pending user data to be sent, if any, and the PDU session(s) for which user-plane resources were active prior to receiving the fallback indication, if any (see subclauses 5.5.1.3 and 5.6.1 for further details).

In addition:

- case j) could be added to case d)

- case i) could be added to case c)

Mahmoud Watfa (Samsung): To understand your comment and see how the CR can be revised, I would like to point out that the text you propose below is for the case when the pending procedure is registration request or service request procedure.

The CR also covers the case that the pending procedure is an UL NAS TRANSPORT for sending data which is a different paragraph, and just adding “Control Plane Service Request” there does not suffice.

Please clarify.

Kaj Johansson (Ericsson)

I’m almost fine with the CR except:

• for the last update, the NAS message container could be included if the UE wants to sync PDU session status (PDU session status IE). Maybe you could change to:

o the UE shall send the CONTROL PLANE SERVICE REQUEST without including the Payload container IE and without including the CIoT small data container IE.

Amer Catovic (Qualcomm): The existing text says “If the UE has only uplink user data or SMS to be sent…” Doesn’t this cover it?

-

Mahmoud Watfa (Samsung): to Amer: We might be talking about two different sections…

I am referring to the following paragraph in section 5.3.1.4:

If the UE requests the lower layers to transition to RRC\_CONNECTED state for other reason than initiation of a registration procedure, or for other reason than a service request procedure, or for other reason than a de-registration procedure, upon fallback indication from lower layers, the UE shall:

- enter 5GMM-IDLE mode;

- initiate service request procedure and include the Uplink data status IE in the SERVICE REQUEST message indicating the PDU session(s) for which user-plane resources were active prior to receiving the fallback indication, if any (see subclause 5.6.1 for further details); and

- upon successful service request procedure completion, proceed with any pending procedure.

The text above does not apply for UEs that use CIoT optimization.

• When the condition “for other reason” is met, the UE currently has to send Service Request message after transitioning to 5GMM-IDLE mode. This would not apply if the other reason was an UL NAS TRANSPORT with CIoT user data or SMS. In this case, the UE should send CPSR and include the data/SMS in the CPSR. The UE need not send CPSR and proceed with any pending procedure.

• Otherwise, if “for other reason” was say 5GSM message, the UE should just send CPSR and then proceed with any pending procedure.

Therefore, just adding CPSR all over the place in that section does not work and does not provide a correct and clear UE behaviour.

In general, I tried to take a similar approach to what we have in the service request procedure i.e. we have a section for UEs that are not using CIoT optimization vs a section for UEs that are using CIoT optimization. Although I did not define new sections, I split the paragraphs for these UEs since the message that should be sent (SR or CPSR) depends on usage of CIoT optimization.

Having said that, please clarify your comment per section.

Lin Shu (Huawei)

We also agree with the intention of the CR and need to do something but the proposed changes are overdone as some cases will not happen for UE is using CP. Detailed our comments see below

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200592\_fallback\_recovery-Lin.docx

--

Mahmoud Watfa (Samsung)

Kindly see responses in the document that I have added in the draft folder and the link is as follows:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200592\_fallback\_recovery-Lin-MW.docx

In general, the assumption is as follows:

• First, this is not about UP CIoT 5GS optimization, so please ignore this feature.

• The WB-N1 mode UE that is using CP CIoT 5GS optimization can have PDU sessions that are not CP only based i.e. the control plane only indication IE is not received

o This means the UE can switch the session from CP to UP (this is done with CPSR message and inclusion of UL data status IE)

• Assume for simplicity:

o The UE has 2 such PDU sessions i.e. each PDU session can be switched from CP to UP

 To switch from CP to UP, the UE uses CPSR message with UL data status IE

o Remember in 5GS, we have selective activation of UP resources i.e. the UE can request UP resource establishment for 1 PDU session as needed

• The UE may already have switched 1 PDU session from CP to UP i.e. the network has already established UP resources for 1 of these sessions

o The UE now in 5GMM-CONNECTED mode with RRC inactive may receive fallback indication when trying to resume. Then the UE includes the UL data status IE in the CPSR message to get the UP resources again for that session when recovering from fallback

o Note also that when in 5GMM-CONNECTED mode with RRC inactive indication, the UE may want to switch a second PDU session from CP to UP. In this case, the UE also sends CPSR with UL data status IE to switch from CP to UP for the second PDU session. But if the UE already has the first session switched (as stated above), and fallback occurs, then again the UL data status IE should be included.

Kindly confirm if the responses clarify your questions on the use of the UL data status IE in the CPSR message after fallback.

-

Lin Shu (Huawei)

Based on your clarification, now I can get your scenarios which is a very limited case.

But for your proposed change below, the yellow text is not limited to your specific scenario which can apply for all cases. I believe in more often case for CP, there is no CP-UP switching by CPSR including a UL data status IE. So in the case of without CP-UP switching happened, the yellow text will unconditionally force the UE to do CP-UP switching which is wrong. So I think you need to reword it to add more condition to limit the case that: the UE using CP was already switched a CP PDU session to UP and then perform a CPSR for 2nd CP-UP switching, and then fallback happens during this CPSR procedure. Note that my key concern is: to overkill the often case just due to cover a non-often case.

“3) if the pending procedure is a service request or registration request procedure, the UE shall include the Uplink data status IE in the CONTROL PLANE SERVICE REQUEST message, or in the REGISTRATION REQUEST message, indicating the PDU session(s) without active user-plane resources for which the UE has pending user data to be sent, if any, and the PDU session(s) for which user-plane resources were active prior to receiving the fallback indication, if any (see subclauses 5.5.1.3 and 5.6.1 for further details).

’

Another point is, as the new added bullet was starting from “b) if the UE is using control plane CIoT 5GS optimization, the UE shall:”, image all CP PDU sessions were switched into UP, then how we can say “the UE is using control plane CIoT 5GS optimization”, so I guess at the UE at least have a CP PDU session which was not switched to UP.

-

Mikael Wass (Ericsson)

I am fine in general with the intentions of the CR, but a couple of minor comments for now:

1st

If the UE requests the lower layers to transition to RRC\_CONNECTED state at initiation of a registration procedure, a service request procedure or a de-registration procedure, upon fallback indication from lower layers:

.

.

.

a) if the UE is using control plane CIoT 5GS optimization, the UE shall:

2nd

If the UE requests the lower layers to transition to RRC\_CONNECTED state for other reason than initiation of a registration procedure, or for other reason than a service request procedure, or for other reason than a de-registration procedure, upon fallback indication from lower layers:

.

.

.

b) if the UE is using control plane CIoT 5GS optimization, the UE shall:

.

.

.

3) upon successful service request procedure completion, proceed with any pending procedure.

I think we need to add this 3rd bullet also for the UE using CIoT case, as the triggering procedure may have been something different than what is executed in bullet 2, e.g. PDU session modification.

-

Mahmoud Watfa (Samsung)

First, kindly note that the revision number is C1-200859.

The revised document can be found via this link:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200859-draft.docx

Lin - Thank you for your comments. Please allow me to provide responses per comment.

1) Your comment “Based on your clarification, now I can get your scenarios which is a very limited case.”

 I am working based on the specification which allows switching from CP to UP. The UE that uses CP CIoT 5GS optimization can have a PDU session which may be switchable to UP. How often the UE decides to switch a session to UP is not the focus. What we need to do is to cover the case when it occurs.

2) Your comment “the yellow text will unconditionally force the UE to do CP-UP switching which is wrong”

 The existing text already covers the condition by the words “if any” that are also highlighted below in your quoted text. This is not forcing, but says if there is any. This is in accordance with section 5.6.1.2.2 as quoted below. Please see underlined words below which again says “if the UE has …”:

“For case d, if the UE has pending user data that is to be sent via the user plane in subclause 5.6.1.1, the UE shall set the Control plane service type of the CONTROL PLANE SERVICE REQUEST message to "mobile originating request". The UE shall include the Uplink data status IE in the CONTROL PLANE SERVICE REQUEST message to indicate which PDU session(s) have pending user data to be sent via user-plane resources.”

So, “if any” is similar to the above underlined text. Again, this shows it is not forcing a switch. But rather the switch is conditioned on the UE having pending user data via UP.

3) Your comment “Another point is, as the new added bullet was starting from “b) if the UE is using control plane CIoT 5GS optimization, the UE shall:”, image all CP PDU sessions were switched into UP, then how we can say “the UE is using control plane CIoT 5GS optimization”, so I guess at the UE at least have a CP PDU session which was not switched to UP”

 I believe you are mixing things.

• The use of CP CIoT 5GS optimization means the UE sets the 5GS-PNB-CIoT bits to CP CIoT 5GS optimization, and the network allows it.

• Then additionally, the PDU session that gets established may be CP only, or may be switched from CP to UP.

o For the latter (i.e. for sessions that can be switched), the UE is still considered to be using the CP CIoT 5GS optimization. It is not true that when the session gets switched from CP to UP then the UE is no longer using CP CIoT 5GS optimization because the DRB can be released and the UE continues data over NAS.

So I don’t see an issue with the current wording.

I would appreciate if you can let me know whether I have addressed your comments

**Decision:** The document was **revised to C1-200859**.

**C1-200859 Recovery from fallback for UEs using CP CIoT optimization**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1966 rev 1 Cat: C (Rel-16)  
  
 Source: Samsung/Mahmoud*

(Replaces C1-200592)

**Discussion:**

Amer Catovic (Qualcomm)

I am OK with this version if everyone is OK too.

The only change I will make is to add “location services message” that is missing.

Please see the addition below:

If the UE requests the lower layers to transition to RRC\_CONNECTED state for other reason than initiation of a registration procedure, or for other reason than a service request procedure, or for other reason than a de-registration procedure, upon fallback indication from lower layers, the UE shall:

1) enter 5GMM-IDLE mode;

2) initiate the service request procedure and include the Uplink data status IE in the SERVICE REQUEST message or the CONTROL PLANE SERVICE REQUEST message indicating the PDU session(s) for which user-plane resources were active prior to receiving the fallback indication, if any (see subclause 5.6.1 for further details). If the procedure that triggered the request to the lower layers to transition to RRC\_CONNECTED state is the UE-initiated NAS transport procedure and the UE had SMS, location services message, or CIoT user data to send, the UE shall also include the SMS or CIoT user data in the CONTROL PLANE SERVICE REQUEST message as described in subclause 5.6.1.4.2; and

3) upon successful service request procedure completion, proceed with any pending procedure.

**Decision:** The document was **agreed**.

**C1-200593 Service area restrictions for UEs using CIoT 5GS optimization**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1967 Cat: C (Rel-16)  
  
 Source: Samsung/Mahmoud*

**Discussion:**

Amer Catovic (Qualcomm):

Thanks for the revision. I think that the text can be simplified. Please see my proposed revision here:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200859-draft\_AC.docx

\_

Mahmoud Watfa (Samsung)

Question for clarification: are there any stage 2 requirements to support this stage 3 CR?

Mahmoud Watfa (Samsung) : I have not seen any requirement stating that service area restriction is not applicable for UEs that use CIoT 5GS optimization, and the current service area restriction have not considered such UEs.

Kaj Johansson (Ericsson): I’m almost fine with the CR

According to 23.501, the NW is not allowed to initiate Service Request or SM signaling to obtain user services (both in CM-IDLE and in CM-CONNECTED states). Excerpt from 23.501:

Non-Allowed Area:

In a Non-Allowed Area a UE is service area restricted based on subscription. The UE and the network are not allowed to initiate Service Request or SM signalling (except for PS Data Off status change reporting) to obtain user services (both in CM-IDLE and in CM-CONNECTED states).

Given this, what is the motivation for "or a DL NAS TRANSPORT message with the Payload container type IE to set to "CIoT user data container" has been received" ?

To me the NW should not send a DL CIoT user data container in the first place when the UE is in non-allowed area.

-

Mahmoud Watfa (Samsung)

Let me explain the motivation.

1) As you know, the current restriction “shall not initiate a 5GSM procedure except for emergency services, high priority access or indicating a change of 3GPP PS data off UE status” only blocks 5GSM message in the UL NAS TRANSPORT. However, there is no restriction on sending UL NAS TRANSPORT carrying CIoT user data. However, this should not be allowed since it is data over control plane.

2) Actually the restriction is on the UE side, but there is no restriction on the network side. E.g. even if the UE is in a non-allowed area, the network can page and send signalling or setup DRBs. Hence the UE is allowed to respond to paging.

a. As you know the NAS transport procedure is a common procedure that can be started in connected mode. So if the UE performs registration, then still it should not initiate NAS transport procedure for sending CIoT data.

b. However, if the AMF decides to send a DL NAS TRANSPORT message with CIoT user data (just like the network can page and setup DRBs), then the UE should be allowed to send UL NAS TRANSPORT as it may be an ACK at the application layer.

Please let me know if this clarifies your question.

Amer Catovic (Qualcomm): Thanks for the clarification. I was not able to find any stage 2 requirements for allowing the UE to:

- send exception data inside a non-allowed area.; or

- initiate UL NAS transport procedure to transport CIoT user data container upon receipt of a DL NAS TRANSPORT msg with CIoT user data container inside a non-allowed area.

Are there such requirements?

-.

Mahmoud Watfa (Samsung):

No - I have not seen any as you quote them below.

However, since nothing is stated about service restriction not being applicable to UEs that use CIoT 5GS optimizations, then we need to consider these UEs.

I have already replied to Kaj on another thread but will explain again my reasoning and if there is any suggestion to further improve the CR then please suggest it.

I tried to define the restrictions for CIoT UEs while re-using the existing concepts as much as possible. E.g.:

• When in restricted area (non-allowed area), the UE “shall not initiate a service request procedure except for emergency services, high priority access, responding to paging or notification or indicating a change of 3GPP PS data off UE status”. As the name suggests, data for exception reporting is “not normal data” and hence should be an exception as well.

• Reading the current restrictions, it is clear that the UE is not allowed request DRBs for existing PDU sessions e.g. the UE “shall not perform the registration procedure for mobility and periodic registration update with Uplink data status IE except for emergency services or for high priority access”. The Uplink data status IE sets up the DRBs. For CIoT, DRBs are not needed for CP optimization. This means the UE can use signalling to send CIoT user data. This should not be allowed as it is directly using a service contrary to the “service area restriction” name/concept.

• The network always has the choice to page the UE and setup DRBs. Hence the UE can respond to paging. Now if the UE is in connected mode and the network decides to send the UE a CIoT user data in a DL NAS TRANSPORT, then just like the UE is allowed to respond to paging, the UE should be allowed to send UL NAS TRANSPORT with CIoT user data as this may be an ACK at the application layer.

As mentioned above, if you have other suggestions for this then please provide them. However, it is clear that something needs to be done for UEs that use CIoT 5GS optimization that are in restricted service area.

-

Mahmoud Watfa (Samsung)

I would like to clarify that my comment below is regarding what is defined in 24.501 and not in stage 2. At least I am not aware of such network restrictions in 24.501.

However, even with the text that you quote from 23.501, that text is about “SM signalling” whereas DL NAS TRANSPORT message with “CIoT user data container” carries data over control plane (i.e. not signalling). So that text would not prohibit sending downlink data over the control plane.

Also, kindly remember that UL/DL NAS TRANSPORT messages carrying SMS are not prohibited (at least to my knowledge) in non-allowed areas.

-

Lin Shu (Huawei)

The CR in principle is fine but we have some questions and comments to improve the CR as below, please check, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200593\_Service\_area\_restrictions\_CIoT-Lin.docx

--

Mahmoud Watfa (Samsung)

Please see responses in the uploaded tdoc in the draft folder as per the link below:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200593\_Service\_area\_restrictions\_CIoT-Lin-MW.docx

One of your suggestions can be done with no problem.

On your comment about network not sending CIoT user data to the UE while in a restricted area, I am not sure about that. As mentioned to Kaj in another email, the restriction in SA2 is about 5GSM signalling. Noting that SMS is not prohibited in the DL, it is not evident to me that CIoT user data cannot be sent by the network. I am of the opinion that the network can choose to do so if it wants.

Please provide further thoughts on this.

-

Amer Catovic (Qualcomm): @Mahmoud

Thanks for the explanation of your rationale for the CR. My position is that this rationale should be discussed and agreed in stage 2 first before we can agree to your CR in stage 3. Please note that the existing exceptions; namely: responding to a page or notification, and reporting a change in PS Data Off status, are all explicitly listed in 23.501 sc. 5.3.4.1.1, and as such were adopted in stage 3 in 24.501. We need the same stage 2 support for the exception that you are proposing.

-

Mahmoud Watfa (Samsung): @Amer,

Some companies have provided specific comments on some specific changes to the CR, which is appreciated. I have responded to them and I believe some text can be agreed by these companies.

I have provided an explanation to you about the motivation for the CR, while, to the best of my ability, trying to stick to the concept of service area restriction. E.g. it is very clear that a UE in a restricted area should not setup DRBs (except for emergency, etc) to gain services towards a PDU session. Now my proposal, similarly, restricts access to a PDU session service via control plane.

Another example is the reason for allowing exception data report as described below.

I have also asked you for any suggestions for improvement. Yet, you seem to question the entire concept.

If this is the case, then we need to send an LS to SA2 to ask about guidance on the applicability of service area restriction to UEs that use CIoT 5GS optimization. I will draft and share one.

-

Amer Catovic (Qualcomm): I am not sure which concept you are referring to. You have multiple proposals in your CR.

I am OK with asking SA2, if everyone else is OK too, about the exception to the service restriction for exception data. Lin and Kaj seem to agree, but I am not convinced. During the discussion on the mapping of connection types to access categories for AC10, multiple companies argued that exception data transfer cannot be considered in the same rank as emergency connections, and also that it should have lower priority than Operator Defined Access Classes, and this is agreed (see C1-200677-r1). That hints that operator-defined restrictions could have higher priority than exception data, which is opposite from what you are proposing.

Regarding the other proposal to exempt UL data transfer to send an application layer ACK, I don’t agree with that question. Samsung can initiate a discussion directly in SA2.

--

Mahmoud Watfa (Samsung): I am referring to the general concept of service area restriction.

It is better if you provide specific comments as per your email below so that the discussion can be technical with specific points that lead towards some progress.

OK, I see you are not convinced about the following:

• Allowing exception data reporting

• Allowing UL CIoT data in response to DL CIoT data

Fine, I can remove these aspects from the CR. We can ask at least about exception data reporting in the LS. We can discuss LS content on another thread.

However, the CR has more aspects as follows:

• UE in 5GMM-CONNECTED mode or 5GMM-CONNECTED mode with RRC inactive indication: should not initiate UL NAS TRANSPORT with CIoT user data

o Motivation: as the UE is in a restricted service area, the UE should not get service towards a (non-emergency) PDU session for CP CIoT data transfer.

• UE in 5GMM-IDLE mode with suspend indication: should not request the lower layers to resume a suspended connection for sending data

o Motivation: as the UE is in a restricted service area, the UE should not request resumption of connection, and hence should not request DRB setup, for sending (non-emergency) UP CIoT data

Can you please provide comments on these if any?

-

Lin Shu (Huawei)

Thanks for clarification.

For “Noting that SMS is not prohibited in the DL, it is not evident to me that CIoT user data cannot be sent by the network”, I have checked with our SA2 colleague and was told that service area restriction is applied for both UL and DL. To me, it sounds a little strange that the NW intentionally put the UE in an non-allowed area but you still send the DL services to the UE.

You can also check your SA2 colleague and to make our life easier in this meeting, maybe we can no touch DL in this meeting and then discuss it separately in the next meeting.

-

Amer Catovic (Qualcomm)

Comments suggesting that a proposal has no supporting stage 2 requirements is a specific comment, especially if it is correct. I understand that you don’t like it, which is fine 😊 All the questions you raised in the CR could/should have been submitted to SA2 as a company contribution, and could have saved time to both CT1 and SA2. This should always be the preferred option.

Regarding the reaming aspect, could you please provide a draft showing what it would look like after the other two aspects are removed?

-

Mahmoud Watfa (Samsung)

Yes, we can all make the comment “there is no stage requirement” and therefore CT1 will never be able to progress work… However, I prefer to stick to technical comments please.

As explained, the UE in a restricted service area should not have access to sessions for data network. In Rel-15, such access was only possible via user plane. Hence the UE should not send a Reg. Req. with the UL data status IE as quoted below from section 5.3.5.2 of TS 24.501:

“shall not perform the registration procedure for mobility and periodic registration update with Uplink data status IE except for emergency services or for high priority access”

So, it seems very straightforward that UEs in restricted areas should now also not get access to a session via the control plane when CP CIoT 5GS optimization is used. This is a view that others have also shared.

Similarly, the UE in 5GMM-IDLE mode with suspend indication should not request lower layers to resume DRBs when it is in a restricted service area.

Here is a link to the draft with the changes following the motivations above:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200593-v1-draft.docx

I hope this clarifies.

-

Amer Catovic (Qualcomm)

Scrolling down to your proposal, the reason for change on the cover sheet says:

The service area restrictions in TS 24.501 (see section 5.3.5.2) have not considered UEs that are using CIoT 5GS optimization. As these UEs may be in a “non-allowed tracking area” or may not be in an “allowed tracking area”, the service restrictions need to be defined.

Looking at 23.501, it seems that the same applies to 23.501, i.e. the reason that 24.501 has not considered these aspects is that stage 2 has not considered them either. My SA2 colleague confirms that this seems to be a gap that needs to be closed in SA2, since 5G CIoT is a Rel-16 work item and service area restrictions had been defined in Rel-15. So this needs to addressed by SA2 first. In this particular case, since you are drafting an LS on service area restrictions out of this meeting, you could maybe add this aspect to the draft LS. Another option is to submit a CR to close the gap to SA2 directly.

-

Mahmoud Watfa (Samsung)

I am fine with sending an LS about this.

I will take a look at your proposal for the LS and revise accordingly.

-

Lin Shu (Huawei)

We are fine with the revision “https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200593-v1-draft.docx”

If the draft reply LS is available, I would like to see, thanks

-

Mahmoud Watfa (Samsung)

I have sent out an email on the “general email reflector”.

The LS will be as follows:

Overall description

CT1 would like to seek guidance on the applicability of service area restriction for UEs that use CIoT 5GS optimizations.

CT1 would like to ask the following question:

Is the UE using CP CIoT or UP CIoT optimization allowed to send or receive data in a non-allowed area, including exception data?

2 Actions

To SA2

ACTION: CT1 respectfully requests SA2 to provide an answer to the question above.

Please let me know if you have any comments.

**Decision:** The document was **postponed**.

**C1-200594 Adding reference to TS 24.501 for exception data reporting**

*Type: CR For: Agreement  
 24.368 v16.2.0 CR-0047 Cat: F (Rel-16)  
  
 Source: Samsung/Mahmoud*

**Discussion:**

Ban Al Bakri (NTT DOCOMO)

Unless there are comments, I would like to merge C1-200594 into C1-200773 as they are provided for the same reason.

Mahmoud Watfa (Samsung)

@Ban,

I am fine with the merge.

Kindly add Samsung to the revision.

Merged into C1-200773 and its revisions

**Decision:** The document was **merged**.

**C1-200618 Value range of UE specific DRX in NB-S1 mode**

*Type: CR For: (not specified)  
 24.008 v16.3.0 CR-3212 Cat: B (Rel-16)  
  
 Source: Vodafone GmbH*

**Discussion:**

Amer Catovic (Qualcomm): We believe that this CR is pre-mature, because:

- CT1 should first agree on a complete stage 3 solution for signaling of UE specific DRX parameters for NB-S1 mode. The encoding of the UE specific DRX parameter value will be discussed and agreed as a part of the complete solution;

- There is a related ongoing discussion in RAN2 on the value range of UE specific DRX parameters for NB-S1 mode

Mikael Wass (Ericsson)I share the concerns expressed by Amer. In particular any update of DRX values/range applicable for UE specific DRX in NB-S1 mode needs to be agreed by RAN and then CT1 can align.

Lin Shu (Huawei)

We believe the original motivation of RAN to support this feature is to shorten down the paging latency as currently NB UE can only use eDRX for paging.

So if we want to define the value range, then we would prefer to have the value range as {320ms, 640ms, 1.28s, 2.56s, 5.12s, 10.24s}

We also believe that the UE specific DRX value and the cell specific DRX value are two different concepts and there is no requirements they have to use the same value range. Thanks.

**Decision:** The document was **postponed**.

**C1-200626 Indication of change in the use of enhanced coverage**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1975 Cat: C (Rel-16)  
  
 Source: BEIJING SAMSUNG TELECOM R&D*

**Discussion:**

Amer Catovic (Qualcomm)Question for clarification: are there any stage 2 requirements to support this stage 3 CR?

Fei Lu (ZTE): When I reviewed the stage 2 requirement, actually I did not fully understand why this parameter is not sent to the UE.

The proposal in the CR can work. However I would perfer that the corresponding stage 2 is discussed first.

When a new registration procedure is triggered by the UE, then there is no need to impact the PDU session modification procedure in the TS23.502. I think during the registration procedure, the AMF can update the CE mode to the SMF. Additionally change of the CE mode should also be informed to the ng-eNodeB.

Mahmoud Watfa (Samsung): Regarding your question: SA2 has indeed captured the fact that the use of enhanced coverage can change e.g. due to subscription change. Furthermore, SA2 has captured that the AMF informs the SMF to use appropriate timers and this aspect is also part of our CR.

Since NAS is an end to end protocol between the UE and the core network (AMF and SMF), and NAS timers are impacted here, then this becomes in CT1 scope.

The CR cover sheet explains how the UE and network can be out of sync wrt NAS timers. Is this an outcome you want to allow noting it affects NAS retransmissions…?

Amer Catovic (Qualcomm): I am not debating the need for the indication but I disagree that CT1 can introduce it without SA2 requirements. The restriction on the use of EC is a system-wide feature and modifications to the related procedures need to be considered by SA2. They should confirm the need for the indication; if OK’ed, SA2 should decide what is the best procedure to use to provide it to the UE, how it fits in with the similar indications in the core NW, should other nodes be involved too (as Fei hinted) etc.

-

Mahmoud Watfa (Samsung): The issue does impact CT1 directly and so CT1 can actually discuss and introduce a solution for this. Remember again that the whole point of AMF informing SMF is for the latter to uses appropriate NAS timer based on the “extended NAS-SM timer indication”.

In any case, it seems that you would like to see a corresponding SA2 CR.

I have been notified by my colleagues that a CR has indeed been submitted to SA2, see CR 2179.

With this, I will add a linkage to the SA2 CR in the cover sheet.

Having said that, please provide other comments if any.

-

Amer Catovic (Qualcomm): Thanks for providing the SA2 CR info.

One question for clarification on the proposal: can the AMF not just send the CUC to the UE with “registration requested”, without the new indication? The UE must re-negotiate the restriction on use of EC during registration procedure.

-

Mahmoud Watfa (Samsung): That does not work. Sending a CUC message containing only the Configuration update indication IE with registration requested bit set is specifically used for the purpose of AMF relocation.

-

Amer Catovic (Qualcomm): I can't see the limitation that you mentioned below in the specs. 24.501 sc. 5.4.4.2 says:

To initiate parameter re-negotiation between the UE and network, the AMF shall indicate "registration requested" in the Registration requested bit of the Configuration update indication IE in the CONFIGURATION UPDATE COMMAND message.

...

If the CONFIGURATION UPDATE COMMAND message indicates "registration requested" in the Registration requested bit of the Configuration update indication IE and:

a) contains no other parameters or contains at least one of the following parameters: a new allowed NSSAI, a new configured NSSAI or the Network slicing subscription change indication, and:

1) an emergency PDU session exists, the UE shall, after the completion of the generic UE configuration update procedure and the release of the emergency PDU session, release the existing N1 NAS signalling connection, and start a registration procedure for mobility and periodic registration update as specified in subclause 5.5.1.3; or

2) no emergency PDU Session exists, the UE shall, after the completion of the generic UE configuration update procedure and the release of the existing N1 NAS signalling connection, start a registration procedure for mobility and periodic registration update as specified in subclause 5.5.1.3; or

Am I missing something?

-

Lin Shu (Huawei): We do support the CR to resolve this gap between the UE and the NW on using the extended NAS timer for UEs in CE mode B.

So in principle the CR looks good for us with just one comment that we believe the main purpose of this new indication IE is for the re-negotiation of the restriction on the use of enhanced coverage so the IE itself is enough for the UE to trigger such re-negotiation. So to make it simpler, the “RRECI” bit in this IE is not needed. So the IE coding for this new IE should be TV with spare value part.

All othe part looks fine for us so if my above comment could be taken, we would like to co-sign the revision. Thanks.

About whether this new indication is needed or not, I agree with what Mahmoud clarified that such new indication is needed as current "registration requested" indication itself is mainly used for AMF relocation. Note that we have already a MICO indication in the UCU which is also mainly to indicate the UE to trigger the re-negotiation of MICO mode. If following Amer’s logic, then we did not need MICO indication as well. AMF initiates the UCU for re-registration can happen in many different cases and hence it would better to provide different indication per different use cases.

-

Amer Catovic (Qualcomm)

This scenario is different from the MICO indication because the MICO indication IE is an optional IE for the UE to include in the REGISTRATION REQUEST message. MICO indication from the NW in the CUC message instructs the UE to include MICO indication IE in the REGISTRATION REQUEST. On the other hand, the UE must indicate its support for restriction on the use of EC in every REGISTRATION REQUEST, so there is no need to instruct the UE to do so. Whether the AMF provides the new indication proposed by Samsung or not in the CUC message, the UE behavior is the same. Therefore, the new proposed indication is not needed as currently proposed.

One way to make the new proposed indication useful would be to have it directly indicate to the UE whether the enhanced coverage is restricted or not without requesting registration. That would avoid the need to trigger the registration procedure.

-

Mahmoud Watfa (Samsung):

to Amer,

I am sorry but your proposal changes the fundamental principle that features are requested by the UE via registration procedure and usage of a feature is indicated to be allowed by the network in the Reg. Accept message.

It is important for the UE to register and for the network to indicate whether or not EC is being used, and based on this negotiation the AMF can inform the SMF so that all the network entities are in synch.

This is how it has been and so we don’t like to deviate from this principle.

What is the issue with the UE registering again?

On the limitation: You have to check section 5.3.1.1.

to Lin,

Thanks for your comments.

I am fine with your suggested way forward and will add your company as a co-signer in the revision.

Please note that the revision number is C1-200786.

-

Amer Catovic (Qualcomm)

In case of restriction on the use of EC, the UE doesn't request anything. The UE provides a mandatory indication of the support for the NW feature, which support does not change in the UE. So there is nothing to re-negotiate in a two-way handshake. Since the NW knows that the UE capability has not changed, the network should inform the UE when the restriction on the use of EC has changed via a parameter inside CUC. This is fully in line with the purpose of the CU procedure (sc. 5.4.4 bullet a)). This is also how LADN information is provided, for example.

The issue with the UE re-registering, from the UE point of view, is:

- The REGISTRATION REQUEST message would carry zero useful information. Sending such messages is a bad protocol design.

- These are NB-IoT devices, which are supposed to have lean, (power-)efficient protocols.

--

Mikael Wass (Ericsson)

I agree much what Amer is saying.

The indication as introduced in 5GS is a copy of what was done for EC/Restriction of EC in EPS. However the “Restriction of EC” was added one release after EC in EPS whereas we add both at the same time in 5GS. So in 5GS we do not have two types of EC supporting UEs as in EPS (supporting/non-supporting Restriction of EC), but only UEs supporting EC that are also required to support Restriction of EC.

One thing, of a bit of academic nature, is that a “Restriction of EC” indication in 5GS is odd and it would make more sense to have a “EC support” indication.

The other thing is what Amer says, and the “Restriction of EC” will not change in the UE. Possibly it could enable/disable supporting EC, but not the “Restriction of EC”

In EPS there was no dynamic enabling/disabling as now is proposed for 5GS in SA2 and CT1 in parallel. The only indication occurred in Attach/TAU. To introduce an immediate change of enabling/disabling Restriction of EC may very well result in more changes than what we see in the submitted CRs, so therefore we believe the discussion needs to be concluded in SA2 before an alignment in CT1 can be agreed. At least we need to have the finally agreed SA2 CR available before we can agree a CR in CT1. We cannot at this time assume that the changes will be limited to what is captured in the SA2 CR as submitted.

--

Fei Lu (ZTE): I agree with what Amer said.

If the subcription changes to the restriction of the use, then there is no need for the UE to trigger the registration procedure. This is somehow like the SMS availability indication.

-

Amer Catovic (Qualcomm): I don’t see the revision in C1-200768 as available. Would you kindly let us know when that happens?

Yang Lu (Vodafone)

Our inclination is to side with Mahmoud/Lin to have a prompt recover from the mismatch of the usage of enhanced coverage between the UE and the network. Certainly, the solution needs to align with stage 2.

-

Mikael Wass (Ericsson)

We are fine with the principle that AMF can trigger the UE to start registration procedure via UCU, and that the actual EC restriction change happens in registration accept. But we also agree with Amer that the UE is not expected to do anything different in the registration procedure and in principle does not need to know why AMF requests registration procedure. Not sure how best to capture the requirements so we do not over-do the case.

Also the AMF decision and use of UCU should be fully optional, in particular the timing compared to any change in subscription or other critera.

Anyway, the discussion is ongoing in SA2, and as I already stated, we do not think CT1 should proceed with this CR unless there is an SA2 agreed CR to align to. Lets see how quickly SA2 can come to a conclusion.

-

Mahmoud Watfa (Samsung)

We submitted the CR on time to CT1. We were told to have a proposal in SA2. We did so and we will create a link to that SA2 CR.

With the dependency with the SA2 CR, CT1 can proceed and obviously if the SA2 CR does not get agreed, then CT1 CR will also not be agreed.

I have provided revision taking into account your comments and as much as possible having the CR aligned with the SA2 counterpart. Also added Huawei, HiSilicon as requested.

Mikael: regarding your comment “But we also agree with Amer that the UE is not expected to do anything different in the registration procedure and in principle does not need to know why AMF requests registration procedure”:

• We are not suggesting that the UE does anything different during registration

• As stated earlier, simply requesting re-registration with no IE is used for AMF relocation and this is NOT in line with the current SA2 CR

If there are further comments for improvement, I would be happy to consider them.

Please see the link below for the draft revision:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200786-draft.docx

-

Amer Catovic (Qualcomm)

Let me just repeat my position:

- There is no need for a two-way handshake procedure since the UE support for restriction on the cannot change and is mandatory for the UE to provide in the initial registration. The AMF can update the UE with the latest information on the restriction of use of EC via UCU procedure, i.e. no need for the UE to re-register, just like the update of LADN information is done.

- The registration request by the UE would carry zero useful info and is a bad protocol design in general, and in particular for NB-IoT devices

Mahmoud, could you please provide the benefits of your solution with respect to the proposal above?

I am also fine with letting SA2 have a say first.

-

Mahmoud Watfa (Samsung)

It is not only the UE that needs to be updated but also the RAN. As part of the registration procedure, the AMF will then also update the RAN accordingly. Please follow the SA2 discussions on this.

Please allow me to remind you of your previous comment and position:

“The restriction on the use of EC is a system-wide feature and modifications to the related procedures need to be considered by SA2. They should confirm the need for the indication; if OK’ed, SA2 should decide what is the best procedure to use to provide it to the UE, how it fits in with the similar indications in the core NW”.

You asked for an SA2 contribution and we took one. Our CT1 CR is aligned with the current SA2 CR (CR#: 2179). Of course if you find any aspect that need further alignment, I will be happy to consider them.

However, if you have an alternative solution, then as you indicated, please propose it in SA2. We would also like to see such alternatives discussed in SA2 as per your recommendation.

I have added a dependency to the SA2 CR. This means the CT1 CR will not be agreed if SA2 CR is not agreed.

Perhaps the chairman can comment on the dependency aspect which to my knowledge is not new

-

Amer Catovic (Qualcomm)

Why would the AMF need a trigger from the UE to inform the RAN about the change of the restriction on the use of EC that comes from the UDM? That doesn't make sense to me.

I made two arguments against this stage 3 proposal:

1. There aren't any stage 2 requirements for it

2. The stage 3 proposal doesn't make sense to me from a technical point of view.

I was not alone in making either of the two arguments.

The fact that you submitted a CR to SA2 during this CT1 meeting and showed the dependency on the cover sheet of the stage 3 CR could have potentially addressed the first argument, provided there was a consensus in CT1 on the stage 3 CR. But since there is no such consensus, which was my second argument, the proper way to move forward is to postpone the stage 3 CR and move the discussion to SA2. This is also what others suggested below.

-

Mahmoud Watfa (Samsung)

On "Why would the AMF need a trigger from the UE to inform the RAN about the change of the restriction on the use of EC that comes from the UDM? That doesn't make sense to me. "

--> Please talk to your SA2 colleagues about this. In fact it was your suggestion that SA2 should decide on a system-wide solution.

You say "There aren't any stage 2 requirements for it"

--> We provided a link to the SA2 CR. For the third time, the SA2 CR# is 2179.

You say "The stage 3 proposal doesn't make sense to me from a technical point of view"

--> it does not make sense to you but it makes sense to others. However, please indicate with technical points if the solution does not work.

You say "the proper way to move forward is to postpone the stage 3 CR and move the discussion to SA2."

--> you seem to contradict yourself. You asked for a SA2 CR and we have provide one as indicated above. Also, please point me to some rule or guideline for "proper ways" regarding contribution handling in CT1. We submitted the tdoc on time, we provided dependency with SA2 CR. It is surely not fair to ask us to postpone this and we don’t plan to.

You say "This is also what others suggested below"

--> people indicated that they want to see an agreed CR in SA2. I have made the dependency on the cover sheet and that should take care of it. The chairman can kindly comment about this also.

Finally, I would like to assure you that if SA2 agrees another solution or does not agree this solution, then I will be happy to postpone the CR. And this is already achieved by the dependency on the cover sheet.

-

Lin Shu (Huawei)

We do support to pursue this CR in this CT1 meeting.

It is not the 1st story that during the protocol implementation CT1 has found some gap/problem which should be resolved to make sure the whole feature could be implemented finally. Sometimes SA2 did not jump into so details when they work on the system-level. On this specific topic, SA2 has defined the requirement that the restriction on use of EC can be changed but SA2 seems overlooked that CT1 has defined a end-to-end NAS timer extension for EC mode B between the UE and the NW. So I have to say this issue is more CT1’s scope as SA2 does not work on the NAS timer extension.

About the trigger for re-negotiation, I tend to say this is more like MICO mode. The UCU can only be initiated in the connected mode, so normally, there should be some ongoing 5GMM/5GSM procedure which triggered the UE moved from the idle mode to the connected mode. If the UE and the NW just changed the use of extended NAS timer during the connected mode without re-negotiation, the mismatching will happen between the UE and the NW on using the extended NAS timer values. Note that we have below restriction in TS 24.501 on the recalculation of the extended NAS timers which applied both the UE and the NW.

“The NAS timer value obtained is used as described in the appropriate procedure subclause of this specification. The NAS timer value shall be calculated at start of a NAS procedure and shall not be re-calculated until the NAS procedure is completed, restarted or aborted.”

All in all, this is more CT1 issue but I see no harm to have an SA2 CR to keep consistency. Thanks.

-

Fei Lu (ZTE)

The linked CR box in the coversheet should be ticked as Yes.

I would be fine with the content of the CR now after checking the stage 2 discussion.

**Decision:** The document was **revised to C1-200786**.

**C1-200786 Indication of change in the use of enhanced coverage**

*Type: CR For: -  
 24.501 v16.3.0 CR-1975 rev 1 Cat: C (Rel-16)  
  
 Source: BEIJING SAMSUNG TELECOM R&D*

(Replaces C1-200626)

**Discussion:**

mikael Wass (Ericsson)firstly to clarify, our request to have an agreed SA2 CR available is not just for administrative reasons. It is because we want to secure that the CT1 CR implements what is actually agreed in stage 2. A stage 2 solution is needed first because of the total solution impact that is not limited to NAS. Normally something like this should not be progressed in stage 3 until the corresponding stage 2 requirements are available. I believe this is clearly captured in the CT WID.

Now the situation luckily is that there is an agreed stage 2 CR and we can evaluate the technical aspects of the CRs. We are fine to do it this way, even if the stage 2 CR is not approved and we cannot see any real urgency to update stage 3 in parallel to stage 2.

Comments on C1-200786:

1) In the SA2 CR there is nothing said on indication for “the re-negotiation of the restriction on the use of enhanced coverage” in UCU to the UE. SA2 CR says: “The AMF use the UE Configuration Update procedure to trigger re-registration procedure for AMF to propagate the change of restriction of Enhanced Coverage to the UE and NG RAN“. Maybe we still want such indication in NAS to align to previous cases of requested registration procedure initiation, even if there is no specific use for this indication in the UE? Or what is your justification for the indication? I think an option could be to indicate “request to perform the registration procedure for mobility and periodic registration update” without and additional parameter.

2) This part has no NAS impact:

After re-negotiation of the restriction on the use of enhanced coverage using the registration procedure for mobility and registration update is complete, for any SMF with which the UE has an established PDU session, the AMF updates the SMF with the indication on the use of extended NAS timer as described in 3GPP TS 23.501 [8] and 3GPP TS 23.502 [9].

Why do we need this in 24.501? Is it not for CT4 to capture?

--

1) In the SA2 CR there is nothing said on indication for “the re-negotiation of the restriction on the use of enhanced coverage” in UCU to the UE. SA2 CR says: “The AMF use the UE Configuration Update procedure to trigger re-registration procedure for AMF to propagate the change of restriction of Enhanced Coverage to the UE and NG RAN“. Maybe we still want such indication in NAS to align to previous cases of requested registration procedure initiation, even if there is no specific use for this indication in the UE? Or what is your justification for the indication? I think an option could be to indicate “request to perform the registration procedure for mobility and periodic registration update” without and additional parameter.

[Mahmoud: in general, we can always fix any minor wording (if any) and your comment above is really nothing major. But the text is based on the actual change that justifies the need for the indication. Specifically, the sending of the Configuration Update Command message with the Configuration update indication IE only is used for the purpose of AMF relocation. Therefore, to trigger registration with the same AMF, in “CM-CONNECTED” as agreed in SA2, requires this IE. Please check TS 24.501. If we don’t include this IE, then we actually are not going to be aligned with SA2 solution.

It is disappointing that this justification is being asked yet again although I have already addressed it previously and Lin did as well as can be seen in the email threads below.

2) This part has no NAS impact:

After re-negotiation of the restriction on the use of enhanced coverage using the registration procedure for mobility and registration update is complete, for any SMF with which the UE has an established PDU session, the AMF updates the SMF with the indication on the use of extended NAS timer as described in 3GPP TS 23.501 [8] and 3GPP TS 23.502 [9].

Why do we need this in 24.501? Is it not for CT4 to capture?

[Mahmoud: this is just a general section and explains how the update is done end to end and in fact references stage 2. This is not the first time we have some statements about AMF-SMF interactions. Let me provide some more examples:

“If the UE and the network support both the control plane CIoT 5GS optimization and N3 data transfer, then when receiving the UE's request for a PDU session establishment, the AMF decides whether the PDU session should be NEF PDU session or N6 PDU session as specified in 3GPP TS 23.501 [8] and then:

a) if NEF PDU session is to be established for unstructured data type, the AMF includes Control plane only indication for the requested PDU session to the SMF;”

There are about 5 or more occurrences of the above in 5.3.21 only.

“If a LADN information IE was included in the CONFIGURATION UPDATE COMMAND message, the AMF shall consider the old LADN information as invalid and the new LADN information as valid, if any. In this case, if the tracking area identity list received in the new LADN information does not include the current TA, the AMF shall indicate the SMF to release the PDU session for LADN or release the user-plane resources for the PDU session for LADN (see 3GPP TS 23.501 [8] and 3GPP TS 23.502 [9]).” From section 5.4.4.4

I don’t see what is new here. There are numerous examples of such description between AMF and SMF in TS 24.501.

**Decision:** The document was **postponed**.

**C1-200658 Correction to UL CIoT user data container not routable or not allowed to be routed**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1978 Cat: F (Rel-16)  
  
 Source: Ericsson /kaj*

**Discussion:**

Aamer Catovic (Qualcomm) According to my understanding, the CR doesn’t have any UE impact. If that is correct, the ME box in the cover sheet should be unchecked.

Lin Shu (Huawei)

Comments:

1. Based on below existing text in sub 5.4.5.2.4, only cause #22 needs to be included to sent to the UE in your proposal.

"Upon reception of an UL NAS TRANSPORT message, if the Payload container type IE is set to "CIoT user data container", the UE is not configured for high priority access in selected PLMN, and:

a) the timer T3447 is running and the UE does not support service gap control;

b) the current NAS signalling connection was not triggered by paging; and

c) mobile terminated signalling has not been sent over the current NAS signalling connection;

the AMF shall send back to the UE the CIoT user data which was not forwarded, send the 5GMM cause #22 "Congestion", and include a back-off timer set to the remaining time of the timer T3447 as specified in subclause 5.4.5.3.1 case l2)."

2. No UE impact and should untick UE box in the cover page.

-

Kaj Johansson (Ericsson)

Thank you for the comments.

All accepted and will be reflected in a new revision.

**Decision:** The document was **revised to C1-200915**.

**C1-200915 Correction to UL CIoT user data container not routable or not allowed to be routed**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1978 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson /kaj*

(Replaces C1-200658)

**Decision:** The document was **agreed**.

**C1-200661 Single downlink data only indication and release of NAS signalling connection**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1979 Cat: C (Rel-16)  
  
 Source: Ericsson /kaj*

**Discussion:**

Mahmoud Watfa (Samsung): At least the existing condition “and if there is no downlink signalling” is also needed for the new bullet that you are adding.

E.g. after a subsequent delivery of the next downlink data to the UE, and if there is no downlink signaling, the AMF …

Perhaps a rewording of the bullets should be done so that this is a common condition.

I believe the other existing condition that there is no other DL data for the UE would also be needed and should be common to all the bullets/cases.

Amer Catovic (Qualcomm): According to my understanding, the CR doesn’t have any UE impact. If that is correct, the ME box in the cover sheet should be unchecked.

Lin Shu (Huawei)

In principle the CR is fine but I have done some rewording proposal as in the revision below. It also covered the comments on the cover page, please check, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200661-single-dl-data-only-indication-and-signalling%20connection-release-v01-Lin.docx

-

Kaj Johansson (Ericsson)

I have uploaded a draft revision to the draft folder taking into account to my best your comments and proposals: ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxx-was0661-single-dl-data-only-indication-and-signalling%20connection-release-v01.zip

From Mahmoud on “Perhaps a rewording of the bullets should be done so that this is a common condition. Perhaps a rewording of the bullets should be done so that this is a common condition. I believe the other existing condition that there is no other DL data for the UE would also be needed and should be common to all the bullets/cases.”

[kaj] I didn’t make it common in the draft revision because a bit complicated. Please if you have the time send me a proposal

**Decision:** The document was **revised to C1-201034**.

**C1-201034 Single downlink data only indication and release of NAS signalling connection**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1979 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson /kaj*

(Replaces C1-200661)

**Decision:** The document was **agreed**.

**C1-200663 PDU session status with control plane service request message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1980 Cat: F (Rel-16)  
  
 Source: Ericsson /KAJ*

**Discussion:**

Amer Catovic (Qualcomm): I believe that the first change is incorrect. The correct statement is already in sc. 8.2.30.6. So I propose to remove the first change. After the removal, the ME box on the cover sheet should be unchecked.

Fei Lu (ZTE)

the second change should be included in the subclause 5.6.1.4.2.

Lin Shu (Huawei)

The CR is fine but revision is needed. Please see my detail comments in the below revision, which also covered the comments on the cover page, please check, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200663-pdu-session-status-cpsr-v02-Lin.docx

-

Kaj Johansson (Ericsson)

Thank you for the feedback.

From Amer on “I believe that the first change is incorrect. The correct statement is already in sc. 8.2.30.6. So I propose to remove the first change. After the removal, the ME box on the cover sheet should be unchecked.”

[kaj]: I disagree because such approach should then apply to other optional IEs as well e.g. Uplink data status. In addition, 5.6.1.4.2 have the similar paragraph as proposed by the CR.

From Fei and Lin that NW part should be in 5.6.1.4.2:

[kaj] I’m ok going this direction but then the CR should also align subclauses 5.6.1.2.1 and 5.6.1.4.1 (UE is not using 5GS services with control plane CIoT 5GS optimization) as I based my CR on 5.6.1.2.1. Is that fine with you?

From Lin on the proposed update in the attached: “The UE may include the PDU session status IE in the CONTROL PLANE SERVICE REQUEST message to indicate which PDU sessions associated with the access type the CONTROL PLANE SERVICE REQUEST message is sent over are active the PDU session(s) available in the UE.”

[kaj]: For the marked up part, CPSR is only applicable for 3GPP access so I don’t see this proposal applicable. According to 4.7.2.1: “o) CIoT 5GS optimizations do not apply for non-3GPP access;”.

From Lin on the proposed update in the attached: “If the PDU session status information element is included in the CONTROL PLANE SERVICE REQUEST message, then the AMF shall:

a) shall perform a local release of all those PDU sessions which are active on the AMF side associated with the access type the REGISTRATION REQUEST message is sent over, but are indicated by the UE as being inactive, and shall

b) requests the SMF to perform a local release of all those PDU sessions.”

[kaj]: The same comment as previous (but here wrong message proposed). But I can try to make a bullet list and align the similar paragraph in 5.6.1.2.1 if agreed to move to 5.6.1.4.1.

Fei Lu (ZTE)

I would be fine if you also make the alignment for the UE not using the ciot subclauses.

--

Lin Shu (Huawei)

[kaj] I’m ok going this direction but then the CR should also align subclauses 5.6.1.2.1 and 5.6.1.4.1 (UE is not using 5GS services with control plane CIoT 5GS optimization) as I based my CR on 5.6.1.2.1. Is that fine with you?

[Lin] This is fine for me. As Fei indicated, about PDu session synchronization, both the UE and the AMF needs to do the same handling for both SR message and CPSR message.

[kaj]: For themarked up part, CPSR is only applicable for 3GPP access so I don’t see this proposal applicable. According to 4.7.2.1: “o) CIoT 5GS optimizations do not apply for non-3GPP access;”.

[Lin] The “o) CIoT 5GS optimizations do not apply for non-3GPP access;” does not prevent a WB UE can access the 5GCN via non-3GPP access. It just restrict that CIoT 5GS optimizations will not be used in non-3GPP side.So that text is needed to make it clearer.

**Decision:** The document was **revised to C1-200914**.

**C1-200914 PDU session status with control plane service request message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1980 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson /KAJ*

(Replaces C1-200663)

**Discussion:**

Llin Shu (Huawei)Sorry I provide below comments to your another CR 672

Double “which PDU session(s)” below, others are fine.

“The UE may include the PDU session status IE in the CONTROL PLANE SERVICE REQUEST message to indicate which PDU session(s) which PDU sessions associated with the access type the CONTROL PLANE SERVICE REQUEST message is sent over are active in the UE.

”

**Decision:** The document was **revised to C1-201038**.

**C1-201038 PDU session status with control plane service request message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1980 rev 2 Cat: F (Rel-16)  
  
 Source: Ericsson /KAJ*

(Replaces C1-200914)

**Decision:** The document was **agreed**.

**C1-200666 Service gap control timer corrections**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3335 Cat: F (Rel-16)  
  
 Source: Ericsson /kaj*

**Decision:** The document was **agreed**.

**C1-200669 Service gap control, correction when to start service gap control timer in UE and NW**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1981 Cat: F (Rel-16)  
  
 Source: Ericsson /kaj*

**Discussion:**

Lin Shu (Huawei)

The CR is fine but better to reword the "initial registration" to "registration procedure for initial registration" in the NOTE, thanks.

Kaj Johansson (Ericsson)

I will in a revision update the Note as suggested like: “NOTE: If the UE transitions from 5GMM-IDLE mode to 5GMM-CONNECTED mode due to registration procedure for initial registration with Follow-on request indicator set to "No follow-on request pending" …”

Lin Shu (Huawei)

That is correct.

**Decision:** The document was **revised to C1-200919**.

**C1-200919 Service gap control, correction when to start service gap control timer in UE and NW**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1981 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson /kaj*

(Replaces C1-200669)

**Decision:** The document was **agreed**.

**C1-200672 Clarification of control plane service request message options**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1982 Cat: F (Rel-16)  
  
 Source: Ericsson /kaj*

**Discussion:**

Mahmoud Watfa (Samsung):

If the CONTROL PLANE SERVICE REQUEST message is:

a) for sending CIoT user data in the CIoT small data container IE, the UE shall not include any other optional IE in the CONTROL PLANE SERVICE REQUEST message;

 This is already covered in 8.2.30.2 as a NOTE

b) for sending CIoT user data in the Payload container IE, the UE shall not include the CIoT small data container IE in the CONTROL PLANE SERVICE REQUEST message;

 Similar note can be added in 8.2.30.9

c) for sending other payload then CIoT user data or location services message or SMS, the UE shall not include any optional IE in the CONTROL PLANE SERVICE REQUEST message except for PDU session status IE and NAS message container IE, if applicable; or

 What kind of “other payload” are you referring to…? And hence what is the intention of this bullet?

d) for sending CIoT user data or location services message or SMS in the Payload container IE, the UE shall not set the Payload container type value in the Payload conainer type IE to "Multiple payloads".

 This is covered by the fact that the current spec explicitly mentions what payload type to use for SMS, data, etc. Don’t see a need for this.

Lin Shu (Huawei)

Comments:

1. Below two bullets are already covered by sub 8.2.30.2 and its NOTE:

"a) for sending CIoT user data in the CIoT small data container IE, the UE shall not include any other optional IE in the CONTROL PLANE SERVICE REQUEST message;

b) for sending CIoT user data in the Payload container IE, the UE shall not include the CIoT small data container IE in the CONTROL PLANE SERVICE REQUEST message;

2. For below bullet, the text “other payload then” is confusing. I guess you are referring e.g. UL 5GSM message. Then if so, it is very naturally some optional IEs will not be included as per IE condition given in the message coding. So I believe this bullet is not needed.

“c) for sending other payload then CIoT user data or location services message or SMS, the UE shall not include any optional IE in the CONTROL PLANE SERVICE REQUEST message except for PDU session status IE and NAS message container IE, if applicable; or"

2. For below bullet, better to be captured as a NOTE as CPSR is initiated from the idle mode so only needs to include the first type of data for triggering the CPSR message.

"d) for sending CIoT user data or location services message or SMS in the Payload container IE, the UE shall not set the Payload container type value in the Payload conainer type IE to "Multiple payloads"."

-

Kaj Johansson (Ericsson)

Thank you for all the comments and suggestions.

I have overlooked the Note you both refer below and I’m fine with that approach. Hence proposed a) and b) can be deleted but I have proposed other improvements in a draft revision to minimize duplication of statements.

Instead of d) an update to the Payload container type IE subclause is proposed in-line with above that also seems to solve c), hence c) can be deleted as well.

The purpose with d) was to clarify that only single container can be sent and purpose with c) that other signaling like 5GSM messages cannot be sent in CPSR message.

In addition I spotted additional faults that is corrected by the CR (type SMS is lacking in one paragraph).

Please find a draft version in the draft folder: ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx-was0672-not-include-ies-cpsr-v01.docx

--

Lin Shu (Huawei)

Some comments

1. I think in procedural text refers the IE condition is not a right direction, we never go this way in the past, so the “a) determines that the CIoT small data container IE shall be used according to subclause 8.2.30.2” and better to keep the current text.

2. For sub 8.2.30.2, I would prefer to go below. Even SMS is shorter than 254 but you did not know the length of LCS, so to keep consistency below rewording is better.

“This IE shall be included if the UE needs to send uplink CIoT user data, SMS or location services message that is not more than 254 bytes, and there is no other optional IE to be sent.”

3. No change on sub 8.2.30.3 is needed.

4. For sub 8.2.30.4, I would prefer to go below:

“This IE shall be included if the UE needs to send uplink CIoT user data, SMS or location services message”

5. Should be category F CR.

**Decision:** The document was **revised to C1-200918**.

**C1-200918 Clarification of control plane service request message options**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1982 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson /kaj*

(Replaces C1-200672)

**Decision:** The document was **agreed**.

**C1-200675 CIoT user data container in CPSR message not forwarded**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1743 rev 2 Cat: C (Rel-16)  
  
 Source: Ericsson /kaj*

(Replaces C1-198950)

**Discussion:**

Amer Catovic (Qualcomm): According to my understanding, the CR doesn’t have any UE impact. If that is correct, the ME box in the cover sheet should be unchecked.

Lin Shu (Huawei)

Comments:

1. The CPSR is dedicated for CP data transport and hence when the CP data transport failure at the NW side, it is reasonable to reject it and provide a reject cause value in the service reject message. This is simpler way.

2. The CR is not complete as the UE behavior is missing.

Alll in all, we do not like the CR direction and would prefer to go another direction, i.e. the NW rejects it.

-

KAJ

From Lin on “1. The CPSR is dedicated for CP data transport and hence when the CP data transport failure at the NW side, it is reasonable to reject it and provide a reject cause value in the service reject message. This is simpler way.”.

[kaj]: Wy is it more reasonable to reject the CPSR than to keep the UE in 5GMM-CONNECTED? If to reject the CPSR in this case, which 5GMM cause do you have in mind?

About UE behavior, I plan to add that in a possible new revision.

--

Lin Shu (Huawei)

I think for the reject cause value, it could be 5GMM #90 "Payload was not forwarded" as you proposed to be used in the accept message.

Even to do this by providing the accept message, normally the NW will also move the UE to the idle mode after sending the accept message. So this is a different topic whether the UE will be stay in connected mode or not.

It sounds not a good logic that you provide a failed cause in a Accept message, IMO.

Kaj Johansson (Ericsson)

@Lin, Peter

On ” It sounds not a good logic that you provide a failed cause in a Accept message, IMO.”

[kaj] Well I can agree if the cause concerns 5GMM, however the current service accept message has the PDU session reactivation result error cause IE that provides 5GMM cause value(s) but related to 5GSM.

Anyways, I postpone the CR.

**Decision:** The document was **postponed**.

**C1-200677 UAC updates for NB-IoT to include "MO exception data"**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1983 Cat: C (Rel-16)  
  
 Source: DOCOMO Communications Lab.*

**Discussion:**

Amer Catovic (Qualcomm): As I explained in the thread about C1-200421, there is no support for CP CIoT in SNPN, so the related subclause should be removed.

Ivo Sedlacek (Ericsson): OK to revert changes for SNPN, i.e. in Table 4.5.2A.2. However, I would like to see an editor's note, e.g. "The support for CP CIoT in SNPN is to be verified" under Table 4.5.2A.2.

**Decision:** The document was **revised to C1-200821**.

**C1-200821 UAC updates for NB-IoT to include "MO exception data"**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1983 rev 1 Cat: C (Rel-16)  
  
 Source: DOCOMO Communications Lab., Ericsson, Qualcomm, Huawei, HiSilicon*

(Replaces C1-200677)

**Decision:** The document was **agreed**.

**C1-200678 Service area restrictions, case missing for when UE is out of allowed tracking area list and RA**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1853 rev 3 Cat: F (Rel-16)  
  
 Source: Ericsson /kaj*

(Replaces C1ah-200203)

**Decision:** The document was **agreed**.

**C1-200679 Clarification on the use of exception data reporting**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1984 Cat: B (Rel-16)  
  
 Source: DOCOMO Communications Lab.*

**Discussion:**

Lin Shu (Huawei)

We do support the CR with some minor rewording comments to improve the CR as below. If our comments could be taken, we could like to co-sign the revision, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200679-Lin.doc

Ban Al Bakri (NTT DOCOMO): Thank you for your comments. They are all good for me.

I will provide a revision, but will wait a bit in case there are other comments.

**Decision:** The document was **revised to C1-200916**.

**C1-200916 Clarification on the use of exception data reporting**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1984 rev 1 Cat: B (Rel-16)  
  
 Source: DOCOMO Communications Lab.*

(Replaces C1-200679)

**Decision:** The document was **agreed**.

**C1-200682 MO exception data for NB-IoT in 5G**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1986 Cat: C (Rel-16)  
  
 Source: DOCOMO Communications Lab., Ericsson*

**Discussion:**

Requested against wrong spec. Re-issued in C1-200773.

**Decision:** The document was **withdrawn**.

**C1-200773 MO exception data reporting for NB-IoT in 5G**

*Type: CR For: (not specified)  
 24.368 v16.2.0 CR-0048 Cat: C (Rel-16)  
  
 Source: DOCOMO Communications Lab., Ericsson*

**Decision:** The document was **revised to C1-200917**.

**C1-200917 MO exception data reporting for NB-IoT in 5G**

*Type: CR For: -  
 24.368 v16.2.0 CR-0048 rev 1 Cat: C (Rel-16)  
  
 Source: DOCOMO Communications Lab., Ericsson*

(Replaces C1-200773)

**Decision:** The document was **agreed**.

#### 16.2.9 5WWC

**C1-200276 Secondary authentication and W-AGF acting on behalf of FN-RG**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1689 rev 2 Cat: C (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

(Replaces C1-198161)

**Decision:** The document was **agreed**.

**C1-200277 EAP-5G handling and transport of NAS messages for wireline access**

*Type: CR For: (not specified)  
 24.502 v16.2.0 CR-0110 rev 3 Cat: B (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

(Replaces C1-198159)

**Decision:** The document was **agreed**.

**C1-200278 SUCI used by W-AGF acting on behalf of FN-RG**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1870 Cat: F (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

**Discussion:**

Llazaros Gkatzikis (Nokia)The conflict mentioned below

“- CRs C1-200754 and C1-200278 conflict in subclause 5.3.2”

has been addressed.

In C1-200978 (revision of C1-200754) the part on W-AGF acting on behalf of an RG has been removed as it is correctly handled by C1-200278.

**Decision:** The document was **agreed**.

**C1-200279 Resolving editor's note on W-AGF acting on behalf of FN-RG not using the "null integrity protection algorithm" 5G-IA0**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1871 Cat: F (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

**Decision:** The document was **agreed**.

**C1-200280 Resolving editor's note on service area restrictions in case of FN-BRG**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1872 Cat: F (Rel-16)  
  
 Source: Ericsson / Ivo*

**Decision:** The document was **agreed**.

**C1-200281 Resolving editor's note in forbidden wireline access area**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1873 Cat: F (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

**Decision:** The document was **agreed**.

**C1-200282 Wireline 5G access network and wireline 5G access clean up**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1874 Cat: F (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

**Decision:** The document was **agreed**.

**C1-200283 PEI clean up**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1875 Cat: F (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

**Discussion:**

Roozbeh Atarius (Motorola Mobility): "IMEISV is not mandated" in the cover page sounds like it still can be there. If that is the case and it can still be there then the change in 5.3.2 can be the same. If not, then correct the cover page please.

Ivo Sedlacek (Ericsson) I am not sure I understand your comments.

24.501 states: "Each UE supporting at least one 3GPP access technology (i.e. NG-RAN, E-UTRAN, UTRAN or GERAN) contains a PEI in the IMEI format and shall be able to provide an IMEI and an IMEISV upon request from the network."

So, when the UE supports at least one 3GPP access technology, the UE has to contain IMEI. Containing IMEISV in the UE is not described but also not precluded.

Thus, when the network requests IMEISV, the UE:

a) might derive an IMEISV from the IMEI contained in the UE and UE's software version; or

b) might provide the IMEISV contained in the UE.

I expect a) will be implemented but see no reason to preclude b).

Or is your comment that 5G-RG supporting wireline access only migth have IMEISV but NOT IMEI? This would be very strange setup and I do not really see why we should support such 5G-RG configuration.

Any guidance on what changes you wish to make?

-

Roozbeh Atarius (Motorola Mobility): I was more referring to that 5G-RG does not contain either IMEI or IMEISV.

If you think the reader should know that IMEISV is derived from IMEI and removing the IMEISV from the above as an obvious thing, that is fine. But I have some concerns that is the case.

Ivo Sedlacek (Ericsson): I have to say I am not sure how to apply the comment.

What changes do you propose?

-

Ivo Sedlacek (Ericsson)

please see a draft revision of C1-200283 at [1].

main changes:

- 5G-RG uses the MAC address based PEI when the 5G-RG contains neither an IMEI nor an IMEISV, as requested by Roozbeh.

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaoa-was-C1-200283-v02.zip

Roozbeh Atarius (Motorola Mobility)I am fine with this

Christian Herrero (Huawei)

The CR is necessary indeed to remove current inconsistencies in the specification and also align with stage 2 (TS 23.316).

The latest draft revision is fine and we, Huawei and HiSilicon would like to co-sign the CR.

**Decision:** The document was **revised to C1-200925**.

**C1-200925 PEI clean up**

*Type: CR For: -  
 24.501 v16.3.0 CR-1875 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

(Replaces C1-200283)

**Decision:** The document was **agreed**.

**C1-200284 Alignment for stop of enforcement of mobility restrictions in 5G-RG and W-AGF acting on behalf of FN-CRG**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1876 Cat: F (Rel-16)  
  
 Source: Ericsson, Charter Communications, CableLabs / Ivo*

**Decision:** The document was **agreed**.

**C1-200285 Introduction of GCI and GLI**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1877 Cat: B (Rel-16)  
  
 Source: Ericsson, Nokia, Nokia Shanghai Bell / Ivo*

**Discussion:**

Roozbeh Atarius (Motorola Mobility): C1-200285 and C1-200761 are colliding.

Ivo Sedlacek (Ericsson): not sure I understand the comment.

C1-200285 is 24.501 CR.

C1-200761 is 24.502 CR.

Given that the CRs are against different TSs, both CRs can be progressed.

Or did you mean that there are some technical overlaps, which you wished to remove?

Roozbeh Atarius (Motorola Mobility): Ah ok, I oversaw that. Then I withdraw my comment

Christian Herrero (Huawei)

We support the CR but have the following comments:

(1) the CR indicates on the cover sheet a linkage to the CR# to TS 23.003 which is correct but we also believe that there is another CR to TS 23.003 which needs to be listed, i.e., #567; and

(2) the CR proposes to add the following texts in TS 24.501, quote “in subclause 28.15.x of 3GPP TS 23.003 [4]” and “in subclause 28.16.x of 3GPP TS 23.003 [4]”. There is need to sort out the exact clauses of TS 23.003. I know that you have taken the proposal from the CT4 CR which lacks the exact clause number but then I propose that you add under “Other comments” field that when implementing the CR the texts indicated before need to be replaced by the correct clause in TS 23.003. In this way, we should ensure correct reference to TS 23.003 to readers/implementers.

With the above changes both Huawei and HiSilicon would like to co-sign the CR.

--

Ivo Sedlacek (Ericsson)

(1) the CR indicates on the cover sheet a linkage to the CR# to TS 23.003 which is correct but we also believe that there is another CR to TS 23.003 which needs to be listed, i.e., #567; and

[Ivo]

Ok. Will be added.

(2) the CR proposes to add the following texts in TS 24.501, quote “in subclause 28.15.x of 3GPP TS 23.003 [4]” and “in subclause 28.16.x of 3GPP TS 23.003 [4]”. There is need to sort out the exact clauses of TS 23.003. I know that you have taken the proposal from the CT4 CR which lacks the exact clause number but then I propose that you add under “Other comments” field that when implementing the CR the texts indicated before need to be replaced by the correct clause in TS 23.003. In this way, we should ensure correct reference to TS 23.003 to readers/implementers.

[Ivo]

Not sure I understand.

"Other comments" already contains the following:

Other comments: Note to the editor: when implementing this CR in next baseline of 24.501, please align subclause numbers for "subclause 28.15.x" and "subclause 28.16.x" in Table 9.11.3.4.1 with implementation of TS 23.003 CR#0568 in next baseline of 23.003.

Is that sufficient or do you propose other text?

With the above changes both Huawei and HiSilicon would like to co-sign the CR.

[vo]

Ok. Will be added.

Please see a draft revision in [1]

Changes:

- "Other specs affected" extended with TS 23.003 CR#0567

- additional cosigners added

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iala-was-C1-200285-v01.zip

--

Lazaros Gkatzikis (Nokia)

I noticed the following typo. Please consider it in the revision.

5.3.2 Permanent identifiers

A globally unique permanent identity, the 5G subscription permanent identifier (SUPI), is allocated to each subscriber for 5GS-based services. The IMSI, the network specific identifier, the GCI and the GLI are valid SUPI types. When the SUPI contains a network specific identifier, an GCI or an GLI,

-

Christian Herrero (Huawei)

Thanks for considering our comments.

The revision of the CR on the Drafts folder (i.e., C1-20iala-was-C1-200285-v01.doc) is fine by me.

**Decision:** The document was **revised to C1-200926**.

**C1-200926 Introduction of GCI and GLI**

*Type: CR For: -  
 24.501 v16.3.0 CR-1877 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson, Nokia, Nokia Shanghai Bell / Ivo*

(Replaces C1-200285)

**Decision:** The document was **agreed**.

**C1-200297 Removal of editor notes**

*Type: CR For: Agreement  
 24.502 v16.2.0 CR-0114 rev 1 Cat: F (Rel-16)  
  
 Source: BlackBery UK Ltd. Motorola Mobility, Lenovo*

(Replaces C1-200114)

**Discussion:**

Ivo Sedlacek (Ericsson): a particular 23.003 subclause should be referenced.

John-Luc Bakker (BlackBerry): I will prepare a revision and reference clause 18 of 23.003. Would that be agreeable?

Ivo Sedlacek (Ericsson): the NAI is to be used in 5GS so a subclause in 23.003 clause 28 would be needed.

--

Ivo Sedlacek (Ericsson)

one more thing - please note that SA3 stated "sending IMSI in clear text violates subscriber privacy in 5G" in C1-200254 while the root NAI and decorated NAI in 23.003 clause 19 include IMSI.

19.3.2 Root NAI

The Root NAI shall take the form of an NAI, and shall have the form username@realm as specified in clause 2.1 of IETF RFC 4282 [53].

When the username part is the IMSI, the realm part of Root NAI shall be built according to the following steps:

1. Convert the leading digits of the IMSI, i.e. MNC and MCC, into a domain name, as described in clause 19.2.

2. Prefix domain name with the label of "nai".

The resulting realm part of the Root NAI will be in the form:

"@nai.epc.mnc<MNC>.mcc<MCC>.3gppnetwork.org"

When including the IMSI, the Root NAI is prepended with a specific leading digit when used for EAP authentication (see 3GPP TS 29.273 [78]) in order to differentiate between EAP authentication method. The leading digit is:

- "0" when used in EAP-AKA, as specified in IETF RFC 4187 [50]

- "6" when used in EAP-AKA', as specified in IETF RFC 5448 [82].

The resulting Root NAI will be in the form:

"0<IMSI>@nai.epc.mnc<MNC>.mcc<MCC>.3gppnetwork.org" when used for EAP AKA authentication

"6<IMSI>@nai.epc.mnc<MNC>.mcc<MCC>.3gppnetwork.org" when used for EAP AKA' authentication

For example, if the IMSI is 234150999999999 (MCC = 234, MNC = 15), the Root NAI takes the form 0234150999999999@nai.epc.mnc015.mcc234.3gppnetwork.org for EAP AKA authentication and the Root NAI takes the form 6234150999999999@nai.epc.mnc015.mcc234.3gppnetwork.org for EAP AKA' authentication.

The NAI sent in the Mobile Node Identifier field in PMIPv6 shall not include the digit prepended in front of the IMSI based username that is described above.

19.3.3 Decorated NAI

The Decorated NAI shall take the form of a NAI and shall have the form 'homerealm!username@otherrealm' or 'Visitedrealm!homerealm!username@otherrealm' as specified in clause 2.7 of the IETF RFC 4282 [53].

The realm part of Decorated NAI consists of 'otherrealm', see the IETF RFC 4282 [53]. 'Homerealm' is the realm as specified in clause 19.2, using the HPLMN ID ('homeMCC' + 'homeMNC)'. 'Visitedrealm' is the realm built using the VPLMN ID ('VisitedMCC' + 'VisitedMNC)', 'Otherrealm' is:

- the realm built using the PLMN ID (visitedMCC + visited MNC) if the service provider selected as a result of the service provider selection (see 3GPP TS 24.302 [77]) has a PLMN ID; or

- a domain name of a service provider if the selected service provider does not have a PLMN ID (3GPP TS 24.302 [77]).

When the username part of Decorated NAI includes the IMSI and the service provider has a PLMN ID, the Decorated NAI shall be built following the same steps as specified for Root NAI in clause 19.3.2.

The result will be a decorated NAI of the form:

- nai.epc.mnc<homeMNC>.mcc<homeMCC>.3gppnetwork.org !0<IMSI>@nai.epc.mnc<visitedMNC>.mcc<visitedMCC>.3gppnetwork.org for EAP AKA authentication.

or

- nai.epc.mnc<homeMNC>.mcc<homeMCC>.3gppnetwork.org !6<IMSI>@nai.epc.mnc<visitedMNC>.mcc<visitedMCC>.3gppnetwork.org for EAP AKA' authentication.

For example, if the service provider has a PLMN ID and the IMSI is 234150999999999 (MCC = 234, MNC = 15) and the PLMN ID of the Selected PLMN is MCC = 610, MNC = 71, then the Decorated NAI takes the form either as:

- nai.epc.mnc015.mcc234.3gppnetwork.org!0234150999999999@nai.epc.mnc071.mcc610.3gppnetwork.org for EAP AKA authentication

or

- nai.epc.mnc015.mcc234.3gppnetwork.org!6234150999999999@nai.epc.mnc071.mcc610.3gppnetwork.org for EAP AKA' authentication.

For example, if the domain name of a service provider is 'realm.org' and IMSI-based permanent username is used, then the Decorated NAI takes the form either as:

- nai.epc.mnc<homeMNC>.mcc<homeMCC>.3gppnetwork.org !0<IMSI>@realm.org for EAP AKA authentication

or

- nai.epc.mnc<homeMNC>.mcc<homeMCC>.3gppnetwork.org !6<IMSI>@realm.org for EAP AKA' authentication.

If the UE has selected a WLAN that directly interworks with a service provider in the Equivalent Visited Service Providers (EVSP) list provided by the RPLMN, see 3GPP TS 23.402 [77], clause 4.8.2b, then the decorated NAI is constructed to include the realm of this service provider and the realm of RPLMN. If the domain name of a service provider is 'realm.org' and IMSI-based permanent username is used, then the Decorated NAI with double decoration takes the form either as:

- nai.epc.mnc<rplmnMNC>.mcc<rplmnMCC>.3gppnetwork.org !nai.epc.mnc<homeMNC>.mcc<homeMCC>.3gppnetwork.org!0<IMSI>@realm.org for EAP AKA authentication

or

- nai.epc.mnc<rplmnMNC>.mcc<rplmnMCC>.3gppnetwork.org !nai.epc.mnc<homeMNC>.mcc<homeMCC>.3gppnetwork.org!6<IMSI>@realm.org for EAP AKA' authentication.

When the username part of Decorated NAI includes a Fast Re-authentication NAI, the Decorated NAI shall be built following the same steps as specified for the Fast Re-authentication NAI in clause 19.3.4.

When the username part of Decorated NAI includes a Pseudonym, the Decorated NAI shall be built following the same steps as specified for the Pseudonym identity in clause 19.3.5.

**Decision:** The document was **revised to C1-200781**.

**C1-200781 Removal of editor notes**

*Type: CR For: Agreement  
 24.502 v16.2.0 CR-0114 rev 2 Cat: F (Rel-16)  
  
 Source: BlackBery UK Ltd. Motorola Mobility, Lenovo*

(Replaces C1-200297)

**Decision:** The document was **revised to C1-200784**.

**C1-200784 Removal of editor notes**

*Type: CR For: Agreement  
 24.502 v16.2.0 CR-0114 rev 3 Cat: F (Rel-16)  
  
 Source: BlackBery UK Ltd. Motorola Mobility, Lenovo*

(Replaces C1-200781)

**Decision:** The document was **postponed**.

**C1-200300 Additional QoS Information in an untrusted non-3GPP network**

*Type: CR For: (not specified)  
 24.502 v16.2.0 CR-0111 rev 1 Cat: B (Rel-16)  
  
 Source: Motorola Mobility, Lenovo*

(Replaces C1-200002)

**Discussion:**

Ivo Sedlacek (Ericsson): - 4.4.2.3 - for untrusted non-3GPP access, the Additional QoS information is provided by N3IWF

- 4.4.2.3 - for untrusted non-3GPP access, usage of the Additional QoS information is optional ("After receiving the IKE Create\_Child\_SA request, if the Additional QoS Information is received, the UE may reserve non-3GPP access network resources according to the Additional QoS Information.")

- 7.5.2 - for untrusted non-3GPP access, the Additional QoS information is provided \*optionally\*

- 7.5.3 - for untrusted non-3GPP access, usage of the Additional QoS information is optional ("After receiving the IKE Create\_Child\_SA request, if the Additional QoS Information is received, the UE may reserve non-3GPP access network resources according to the Additional QoS Information.")

- 9.3.1.1 - for untrusted non-3GPP access, the Additional QoS information is provided \*optionally\*

-

Ivo Sedlacek (Ericsson)

comments:

- 4.4.2.3 -> sentence "The UE shall reserve non-3GPP access network QoS resources for the IPsec child SA according to the received Additional QoS Information when the selected IPsec child SA is established." needs to be linked to trusted non-3GPP access.

- 4.4.2.3 -> sentence "If the UE receives the Additional QoS Information from the N3IWF, the UE shall reserve non-3GPP access network QoS resources for the IPsec child SA according to the received Additional QoS Information when the selected IPsec child SA is established." needs to become optional since 23.502 states "After receiving the IKE Create\_Child\_SA request, if the Additional QoS Information is received, the UE may reserve non-3GPP access network resources according to the Additional QoS Information."

- 7.5.3 -> sentence "in case of untrusted non-3GPP access, shall reserve non-3GPP access QoS resources for the created child SA if the UE has received Additional QoS Information." needs to become optional since 23.501 states "After receiving the IKE Create\_Child\_SA request, if the Additional QoS Information is received, the UE may reserve non-3GPP access network resources according to the Additional QoS Information."

-

Ivo Sedlacek (Ericsson)

comments:

- "In case of trusted non-3GPP access, the UE receives an Additional QoS Information from the TNGF during IPsec child SA establishment, which shall be used by the UE to reserve non-3GPP access network QoS resources when establishing the selected IPsec child SA. " - strange and complex combination of active form informative statement and passive form normative statement. Can you please convert it to a normative active form statement (i.e. the UE shall / may / should)? E.g. "In case of trusted non-3GPP access, the UE shall reserve non-3GPP access network QoS resources for the IPsec child SA according to the received Additional QoS Information when the selected IPsec child SA is established."

-

Ivo Sedlacek (Ericsson)

My comments were addressed. Thank you.

Can you please indicate Ericsson as cosigner?

**Decision:** The document was **revised to C1-200984**.

**C1-200984 Additional QoS Information in an untrusted non-3GPP network**

*Type: CR For: -  
 24.502 v16.2.0 CR-0111 rev 2 Cat: B (Rel-16)  
  
 Source: Motorola Mobility, Lenovo*

(Replaces C1-200300)

**Decision:** The document was **agreed**.

**C1-200302 Removal of editor's notes for N5CW device**

*Type: CR For: (not specified)  
 24.502 v16.2.0 CR-0112 rev 1 Cat: F (Rel-16)  
  
 Source: Motorola Mobility, Lenovo*

(Replaces C1-200005)

**Discussion:**

Ivo Sedlacek (Ericsson)

- the editor's note in 7.3A.4.2 cannot be removed since subclause 28.7 of 3GPP TS 23.003 [8] is not sufficient clear on the NAI to be used.

**Decision:** The document was **postponed**.

**C1-200304 Removal of an editor's note**

*Type: CR For: (not specified)  
 24.502 v16.2.0 CR-0113 rev 1 Cat: F (Rel-16)  
  
 Source: Motorola Mobility, Lenovo, BlackBerry UK Ltd.*

(Replaces C1-200006)

**Decision:** The document was **agreed**.

**C1-200305 PDU session handling for N5CW device**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1641 rev 4 Cat: B (Rel-16)  
  
 Source: Motorola Mobility, Lenovo*

(Replaces C1-200007)

**Discussion:**

Ivo Sedlacek (Ericsson)

details on TWAN and TWAP are out of scope of 24.501, as they do not send NAS messages. It is sufficient to refer to TWIF only, as TWIF sends NAS messages.

Roozbeh Atarius (Motorola Mobility)

See the revision

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200XXX%20was%20C1-200305%20was%20C1-198761%20was%20C1-198020%20was%20C1-196955%20Session%20handling%20for%20N5CW%20device%2024.501-V00.zip

Christian Herrero (Huawei)

This CR is needed and we support the latest version we found on the Drafts folders. Can you please add Huawei and HiSilicon as co-signers? Thanks.

Roozbeh Atarius (Motorola Mobility) Thanks for your support. Please see the new revision

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200XXX%20was%20C1-200305%20was%20C1-198761%20was%20C1-198020%20was%20C1-196955%20Session%20handling%20for%20N5CW%20device%2024.501-V02.zip

-

John-Luc Bakker (BlackBerry)

Editorial:

There is a carriage return at the end or bullet b) that is not shown in change marks in 4.7.X.

Please use change marks.

**Decision:** The document was **revised to C1-200991**.

**C1-200991 PDU session handling for N5CW device**

*Type: CR For: -  
 24.501 v16.3.0 CR-1641 rev 5 Cat: B (Rel-16)  
  
 Source: Motorola Mobility, Lenovo*

(Replaces C1-200305)

**Decision:** The document was **agreed**.

**C1-200425 Correct reference**

*Type: CR For: Agreement  
 24.229 v16.4.0 CR-6410 Cat: B (Rel-16)  
  
 Source: BlackBerry UK Ltd.*

**Discussion:**

Ivo Sedlacek (Ericsson):

- the CR fixes errors created in Rel-15. The CR does not seem be related to 5WWC. The CR should have been submitted for 5GS\_Ph1-CT or 5GProtoc16, which are out of scope of the e-meeting, or for IMS TEI16.

John-Luc Bakker (BlackBerry): The CR is related to 5WWC as 5WWC introduced trusted WLAN connected to 5GCN. Furthermore, stage 2 clarified that emergency call are possible over trusted WLAN connected to 5GCN. The change in this CR is this aligning stage 3 with stage 2 for trusted WLAN connected to 5GCN.

I agree however that the CR is not limited to 5WWC.

I am okay to change the WID to (IMS) TEI16. Would that be agreeable?

**Decision:** The document was **revised to C1-200779**.

**C1-200779 Correct reference**

*Type: CR For: Agreement  
 24.229 v16.4.0 CR-6410 rev 1 Cat: B (Rel-16)  
  
 Source: BlackBerry UK Ltd.*

(Replaces C1-200425)

**Decision:** The document was **agreed**.

**C1-200426 Enabling mobility with (emergency) sessions/connections between the (trusted) non-3GPP access network connected to the 5GCN and the E-UTRAN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1910 Cat: F (Rel-16)  
  
 Source: BlackBerry UK Ltd.*

**Discussion:**

Ivo Sedlacek (Ericsson)

- 4.8.2.3.2 2nd part - see no need of ordering of UE-requested PDU session establishment procedures when performing interworking of PDN connections in EPS to PDU sessions in N1 mode, as the UE can initiate several UE-requested PDU session establishment procedures in one UL NAS TRANSPORT request.

- 6.4.1.2 - no need to add "connected to 5GC" to "non-3GPP access" as then we would need to put it everywhere.

John-Luc Bakker (BlackBerry): I am okay to remove the changes in the “2nd part” of 4.8.2.3.2

I am okay to remove “connected to 5GC”. I do note that 24.502 has two hits when searching for “non-3GPP access connected to 5GCN”. I will review these two “hits” and see if the qualifier can be removed.

Is that agreeable?

-

John-Luc Bakker (BlackBerry)

Roozbeh indicated a concern with replacing the “N3IWF connected to 5GCN” term with “N3AN”.

He preferred instead to spell out “TNGF or N3IWF connected to 5GCN”.

I have done so in the revision. You can find it in C1-200837 (it will be uploaded shortly).

--

Roozbeh Atarius (Motorola Mobility)

Thanks for your consideration.

Comment 1:

What is exactly following phrase:

Non-3GPP access (network): In this specification, the non-3GPP access (network) connects to the 5GC(N), unless otherwise qualified.

Does it mean if I remove the network so it is like

Non-3GPP access: In this specification, the non-3GPP access connects to the 5GC, unless otherwise qualified.

Beside why do we need to introduce this concept for two small changes which is actually better not to be changed. Meaning IMHO

In the present document the condition "the UE supports IMS voice over non-3GPP access" evaluates to "true" if the UE supports IMS voice over non-3GPP access connected to 5GCN.

Sounds better than

In the present document the condition "the UE supports IMS voice over non-3GPP access" evaluates to "true" if the UE supports IMS voice over N3AN (non-3GPP access network). [BTW a space is needed between “over” and N3AN.]

So I prefer

- Undo changes in 3.1

- Undo changes in 3.2

- Undo changes in 4.3.2 except the editorial ones.

- to remove the N3AN from the CR including the cover page

Comment 2:

Perhaps you should write the change in the general section 4.8.1 as follows and the rest can be the same. The wording is what we have done in 24.502 and perhaps if it is written once then it is enough rather than repeating it.

For interworking between E-UTRAN connected to EPC and:

a) in case of trusted non-3GPP access, TNGF connected to 5GCN; or

b) in case of untrusted non-3GPP access, N3IWF connected to 5GCN,

the UE shall operate as specified in either subclause 4.8.2.3 or subclause 4.8.3. Which subclause the UE follows is chosen by the UE irrespective of the interworking without N26 interface indicator.

Comment 3:

In 4.8.2.3.2, your first list should be itemize by a and b rather than “-“.

Comment 4:

In 4.8.2.3.2, your second list should be itemize by a and b rather than “i“ and “ii”.

Comment 5:

Undo the changes in subclause 4.9.3

Comment 6:

Undo changes in 7.2.2

Comment 7:

What is emergency PDU connection that you have introduced? You are distinguishing it from emergency PDU session by striking over it. For EPS your assumption is PDU session vs. for 5GS you have PDU connection. Could you please elaborate?

John-Luc Bakker (BlackBerry) provided detailed comments

-

Ivo Sedlacek (Ericsson)

- "Non-3GPP access (network): In this specification, the non-3GPP access (network) connects to the 5GC(N), unless otherwise qualified." - those are two separate definitions. Not sure why we need brackets in "5GC(N)".

- "N3AN (non-3GPP access network)" -> not sure why we need the brackets

- I see no need of NOTE 2 in 4.8.2.3.2

\*-

John-Luc Bakker (BlackBerry)

> - "Non-3GPP access (network): In this specification, the non-3GPP access (network) connects to the 5GC(N), unless otherwise qualified." - those are two separate definitions. Not sure why we need brackets in "5GC(N)".

I will consider whether 2 separate definitions are needed (they should be, but let me investigate).

> - "N3AN (non-3GPP access network)" -> not sure why we need the brackets

The first time an acronym is used, it is introduced in brackets. But then it should be the other way around: non-3GPP access network (N3AN)

I can change it and put the acronym in brackets due to using it for the first time, or?

- I see no need of NOTE 2 in 4.8.2.3.2

Removed

I will put a draft v2 in the draft folder with the changes within the hour.

-

Roozbeh Atarius (Motorola Mobility)

What TS is using this abbreviation. 24.502 is using it but not 24.501.

I think this is extremely confusing to add and subtract (network) in your abbreviation to identify which one is 5G and which one is EPS. I would like to avoid it. I am sure that many would think the same if they simply read your CR so I still think you should remove the definition and the abbreviation and leave the wording as they used to be.

Regarding explanation adding untrusted non-3GPP access for N3IWF and trusted non-3GPP access for TNGF, was to add something to show what the difference is and a reference can be added to 24.502. I am not religious about it if you don’t want to do it.

Regarding PDU connection, I misread it.

-

Roozbeh Atarius (Motorola Mobility)

I just realized that with those bracket JL wants to distinguish between 5G and EPS; meaning if the wording in the bracket is there then it is 5GC or NR or non-3GPP access to 5GC vs. if the wording in the bracket is not there then all 4G related. If this understanding is the right understanding, I cannot agree to it. I do not think we need any N3AN def or abbreviation and should be left out from this CR.

John-Luc Bakker (BlackBerry)

This is not the right understanding.

I have removed now the definitions and the acronym. A V3 will be on the server shortly

**Decision:** The document was **revised to C1-200780**.

**C1-200780 Enabling mobility with (emergency) sessions/connections between the (trusted) non-3GPP access network connected to the 5GCN and the E-UTRAN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1910 rev 1 Cat: F (Rel-16)  
  
 Source: BlackBerry UK Ltd.*

(Replaces C1-200426)

**Decision:** The document was **revised to C1-200837**.

**C1-200837 Enabling mobility with (emergency) sessions/connections between the (trusted) non-3GPP access network connected to the 5GCN and the E-UTRAN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1910 rev 2 Cat: F (Rel-16)  
  
 Source: BlackBerry UK Ltd.*

(Replaces C1-200780)

**Decision:** The document was **revised to C1-200945**.

**C1-200945 Enabling mobility with (emergency) sessions/connections between the (trusted) non-3GPP access network connected to the 5GCN and the E-UTRAN**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1910 rev 3 Cat: F (Rel-16)  
  
 Source: BlackBerry UK Ltd.*

(Replaces C1-200837)

**Decision:** The document was **agreed**.

**C1-200454 ACS information via DHCP**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1919 Cat: B (Rel-16)  
  
 Source: ZTE / Joy*

**Decision:** The document was **agreed**.

**C1-200455 LADN service does not apply for RG connected to 5GC via wireline access**

*Type: CR For: Agreement  
 24.526 v16.2.0 CR-0070 Cat: F (Rel-16)  
  
 Source: ZTE / Joy*

**Decision:** The document was **agreed**.

**C1-200518 Work plan for the CT1 part of 5WWC**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **noted**.

**C1-200754 Registration of N5GC devices via wireline access**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-2020 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell,Charter Communications*

**Discussion:**

Ivo Sedlacek (Ericsson):

- 3.1 "Access stratum connection" - incorrect usage of "or".

- 4.13 - last paragraph should remain last paragraph and should NOT be merged into the second last paragraph. Reason: the last paragraph describes handling for UEs behind RG, while previous paragraph describes handling for RG itself.

- 5.3.2 - conflicts with C1-200278 but misses FN-BRG. I suggest to remove statements of W-AGF acting on behalf of FN-RG from the scope of the CR.

- 5.3.2 last paragraph - conflicting information in 1st and 2nd sentence - MAC address and EUI-64 are two different codings of PEI.

- 5.5.1.2.2 - according to stage-2 in 23.316 Figure 4.10a-1, the W-AGF acting on behalf of the FN-CRG is already registered. Thus, it is not clear how the W-AGF can perform initial registration upon start of serving of the N5GC behind the FN-CRG.

- 9.11.3.x - should be type 2 IE, to conserve IEI space for type 1 IEs.

- general - there does not seem to be any usage of the N5GC indication. Why do we need it?

- general - terminology "the W-AGF acting on behalf of the N5GC device" seems incorrect as according to 23.316 the W-AGF is connected to FN-CRG which is connected to N5GC device. The terminology should be "an W-AGF acting on behalf of an FN-CRG with a connected N5GC device"

- it is not clear what SUPI is used for when the W-AGF acts on behalf of an FN-CRG with a connected N5GC device

-

Ivo Sedlacek (Ericsson)

The CR is nearly OK.

One minor comment

- 9.11.3.x, "The N5GC indication is a type 1 information element." - should be type 2 IE.

--

Lazaros Gkatzikis (Nokia)

Addressed in

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200978\_was\_754\_24501\_N5GC%20v9.docx

Ivo

my comments were addressed. Thank you for taking them into consideration.

**Decision:** The document was **revised to C1-200978**.

**C1-200978 Registration of N5GC devices via wireline access**

*Type: CR For: -  
 24.501 v16.3.0 CR-2020 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell,Charter Communications*

(Replaces C1-200754)

**Decision:** The document was **agreed**.

**C1-200755 Support of authentication and registration of N5GC devices via wireline access**

*Type: CR For: (not specified)  
 24.502 v16.2.0 CR-0116 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell,Charter Communications*

**Discussion:**

Ivo Sedlacek (Ericsson)

- 6.3.1 - "a cable wireline access" - undefined term

- 6.3.1 - interface between N5GC and CRG is out of scope of 3GPP. Thus, the statement cannot be normative.

- "CableLabs WR-TR-5WWC-ARCH [x]" - missing hard spaces

- 6.3.2 - too many details on handling on interface between N5GC and CRG which is out of scope of 3GPP.

- "An exchange of the EAP request and EAP response as described in IETF RFC 3748 [9] occurs until the N5GC device is authenticated by the 5GCN with the EAP authentication described in 3GPP TS 33.501 [5]." - unclear how the W-AGF receives the EAP-request and where it sends the EAP-responses - likely a 24.501 CR is needed.

Ivo Sedlacek (Ericsson)

comments:

- can you please import definition of "W-AGF acting on behalf of the N5GC device" from 24.501 (to be introduced by revision of C1-200754)?

- there are still several occurences of "cable wireline access". Can you please reformulate them as suggested in your mail below?

- "The CRG is configured to function as layer-2 bridge. " can be removed since this is detail of the wireline access which is out of scope of 24.502. This also applies for the part "How the CRG is configured to work in layer-2 bridge mode and " of the NOTE 2.

- "The W-AGF and an N5GC device initiate an exchange of EAP-Request/Identity message and EAP-Response/Identity message as specified in IETF RFC 3748 [9] for link layer authentication of the N5GC device by the W-AGF." - who initiates the EAP transaction? W-AGF or N5GC device or both? Furthermore, EAP-request/identity does not provide authentication - it only enables the authenticator to query an identity from the peer. Can we state "The W-AGF initiates an exchange of EAP-Request/Identity message and EAP-Response/Identity message as specified in IETF RFC 3748 [9] for obtaining identity of the N5GC device."

- there should be an editor's note on FFS what NAI to use.

-

Lazaros Gkatzikis (Nokia)

thanks for the careful review.

The new version has been uploaded in the drafts folder

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200979\_was\_755\_24502\_N5GC.docx

-

Ivo Sedlacek (Ericsson)

looks nearly OK.

one minor comment - for external documents, we need to identify a version (see 21.801 6.6.6.5.2), otherwise it is a moving target. Can you please add the version or publishing date in clause 2 for

[x] CableLabs WR-TR-5WWC-ARCH: "5G Wireless Wireline Converged Core Architecture".

**Decision:** The document was **revised to C1-200979**.

**C1-200979 Support of authentication and registration of N5GC devices via wireline access**

*Type: CR For: -  
 24.502 v16.2.0 CR-0116 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell,Charter Communications*

(Replaces C1-200755)

**Decision:** The document was **agreed**.

**C1-200756 Corrections on EUI-64 as PEI**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-2021 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ivo Sedlacek (Ericsson): summary of change, part 1) is confusing - EUI-64 is already part of the mobile identity IE.

Lazaros Gkatzikis (Nokia)

The summary of change has been rephrased to:

1) Clarification that EUI-64 is one possible type of identity.

Ivo Sedlacek (Ericsson): ok

**Decision:** The document was **revised to C1-200980**.

**C1-200980 Corrections on EUI-64 as PEI**

*Type: CR For: -  
 24.501 v16.3.0 CR-2021 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200756)

**Decision:** The document was **agreed**.

**C1-200757 Corrections on N5CW support**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-2022 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **agreed**.

**C1-200758 Supporting IPTV NAS impacts**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-2023 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **withdrawn**.

**C1-200759 Supporting IPTV via wireline access**

*Type: CR For: (not specified)  
 24.502 v16.2.0 CR-0117 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **withdrawn**.

**C1-200761 SUPI and SUCI for legacy wireline access**

*Type: CR For: (not specified)  
 24.502 v16.2.0 CR-0118 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ricky Kaura (Samsung):

4.3.1 - comma is missing at the end of the last addition

Roozbeh Atarius (Motorola Mobility): C1-200285 and C1-200761 are colliding.

Christian Herrero (Huawei)

We support the CR but we have the following comments:

(1) the CR indicates that the GCI or the GLI always takes the form of a NAI as defined in TS 23.003 but current version of this spec does not shows that. I see several CRs in CT4 attempting to do so, and therefore can you please add linkage to the necessary CT4 CRs?

We that change Huawei and HiSilicon would like to co-sign the CR. Thanks.

**Decision:** The document was **revised to C1-200981**.

**C1-200981 SUPI and SUCI for legacy wireline access**

*Type: CR For: -  
 24.502 v16.2.0 CR-0118 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200761)

**Decision:** The document was **agreed**.

#### 16.2.10 PARLOS

**C1-200322 Factoring in T3346 during access to RLOS**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3327 Cat: F (Rel-16)  
  
 Source: Samsung, Qualcomm Incorporated, Ericsson, Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to C1-200793**.

**C1-200793 Factoring in T3346 during access to RLOS**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3327 rev 1 Cat: F (Rel-16)  
  
 Source: Samsung, Qualcomm Incorporated, Ericsson, Nokia, Nokia Shanghai Bell*

(Replaces C1-200322)

**Decision:** The document was **agreed**.

**C1-200476 Support of restriction on access to RLOS**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3333 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell /Jennifer*

**Discussion:**

Lena Chaponnière (Qualcomm): - the MCC of the serving PLMN network name” should be “the MCC of the serving PLMN”

- “For UE with USIM” should be “if the UE has a valid USIM”

Ricky Kaura (Samsung)

On C1-200476, in the following text, “UE” should be changed to “ME” given that the white list is maintained on the ME according to the SA3 requirement:

If the serving PLMN supports RLOS and the UE is in limited service state, the UE shall verify that the MCC of the serving PLMN network name is present in the list of RLOS allowed MCCs configured in the UE before requesting access to RLOS. For UE with USIM, the UE shall additionally verify that the MCC part of the IMSI configured in the USIM is present in the list of RLOS allowed MCCs before requesting access to RLOS.

-

Ivo Sedlacek (Ericsson): "the MCC of the serving PLMN network name" - what is "serving PLMN network name"? Is it the same as "the MCC of the PLMN ID of the serving PLMN"? If so, then I prefer the updated term.

--

Jennifer Liu (Nokia): to Lena, Thanks for the feedback. I am fine with your rewording suggestions and will incorporate your comments in the revision.

To Ricky: Thanks for the feedback. Regarding the wording, I believe UE is more appropriate here. Relying on manufacturer to provision device for security control will not work well. RLOS services are normally country specific, for example, there are FCC regulations in the U.S. related to offering of such services, but not every country has regulations requiring such deployment. Some countries may not have regulatory requirements, but a network can still choose to offer RLOS services (albeit not mandatory). A device manufactured by Samsung could be used by users in US or France. The home operator needs to have the ultimate control in order for the service to work well.

To Ivo: Thanks for the comments. Will update the term in the revision

--

Jennifer Liu (Nokia)

Revision for C1-200476 is uploaded to draft folder:

ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/REV\_C1-200476\_24301\_rlos-restn.zip

Updates:

- changed "For UE with USIM” to “if the UE has a valid USIM"

- changed "the MCC of the serving PLMN network name” should be “the MCC of the PLMN ID of the serving PLMN"

\*-

Ivo Sedlacek (Ericsson)

REV\_C1-200476\_24301\_rlos-restn.zip is OK.

Can you please indicate Ericsson as cosigner? Thank you.

-

Lena Chaponnière (Qualcomm)

I am fine with this revision.

-

Jennifer Liu (Nokia)

Thanks for the support. Ericsson is added as cosigner. The revision to be uploaded (C1-200814) is in draft folder:

ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200814\_(was-476)\_24301\_rlos-restn.zip

**Decision:** The document was **revised to C1-200814**.

**C1-200814 Support of restriction on access to RLOS**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3333 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell /Jennifer*

(Replaces C1-200476)

**Decision:** The document was **agreed**.

**C1-200477 Support of restriction on access to RLOS**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0495 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell /Jennifer*

**Discussion:**

Lena Chaponnière (Qualcomm): : the added text about requesting user’s consent is not needed. CT1 has agreed an AT command which allows to set/unset user consent (see TS 27.007 subclause 8.80), so user consent does not need to be requested every time a PLMN is selected.

--

Ivo Sedlacek (Ericsson):

"If registration cannot be achieved because no PLMNs are available and allowable, and if no PLMN offering access to RLOS has been found, or none of the PLMNs offering access to RLOS is allowable according to RLOS allowed MCC list configured in the USIM (see 3GPP TS 31.102 [40]) or in the ME (see 3GPP TS 24.368 [50]), or the MS does not support access to RLOS, the MS indicates "no service" to the user, waits until a new PLMN is available and then repeats the procedure." - term "allowable PLMN" is defined in 23.122 as below and has nothing to do with the RLOS allowed MCC list.

---------------

Allowable PLMN: In the case of an MS operating in MS operation mode A or B, this is a PLMN which is not in the list of "forbidden PLMNs" in the MS. In the case of an MS operating in MS operation mode C or an MS not supporting A/Gb mode and not supporting Iu mode, this is a PLMN which is not in the list of "forbidden PLMNs" and not in the list of "forbidden PLMNs for GPRS service" in the MS.

---------------

RV Anikethan (Samsung)

We have a few comments wrt the changes. Picking one piece of the change for the same:

either the UICC containing the USIM is not present on the MS, or the UICC containing the USIM is present on the MS and the MCC part of the IMSI in the USIM is present in the RLOS allowed MCC list configured in the USIM (see 3GPP TS 31.102 [40]) or in the ME (see 3GPP TS 24.368 [50]);

 There is no RLOS allowed MCC list in the USIM it is present only in the ME.

 Also the intent of the sentence is unclear wrt “UICC containing USIM”

These two comments are for other similar changes in the CR.

We think the text could be:

there is no SIM in the MS or if the SIM is present in the MS and the MCC part of the IMSI in the SIM is present in the RLOS allowed MCC list configured in the ME (see 3GPP TS 24.368 [50]);

--

Jennifer Liu (Nokia)

To Ivo: Thanks for the comments. So instead of using “allowable”, how about changing to more explicit wording “is allowed to be accessed”?

none of the PLMNs offering access to RLOS is allowed to be accessed according to RLOS allowed MCC list

To Lena: Thanks for the feedback. Will remove text about requesting user’s consent in the revision.

-

Jennifer Liu (Nokia)

Revision for C1-200477 is uploaded to draft folder:

ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/REV\_C1-200477\_23122\_rlos\_restn.zip

Updates:

- removed text about requesting user's consent;

- changed "allowable" to "is allowed to be accessed" to avoid mixed with existing terminology.

--

Ivo Sedlacek (Ericsson)

REV\_C1-200477\_23122\_rlos\_restn.zip addresses my comment. Thank you.

Ericsson would like to cosign.

-

Lena Chaponnière (Qualcomm)

Thanks for taking into account my comments. I have the following further comments on the draft revision:

- “the MCC part of the preferred PLMN” should be “the MCC part of the preferred PLMN ID”

- “the MCC part of the PLMN” should be “the MCC part of the PLMN ID”

- “according to RLOS allowed MCC list” should be “according to the RLOS allowed MCC list”

-

Jennifer Liu (Nokia)

Thanks for the support. Ericsson is now added as cosigner. The revision to be uploaded (C1-200815) is in draft folder:

ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200815\_(was-477)\_23122\_rlos\_restn.zip

-

RV Anikethan (Samsung)

This change of having the MCC list in the USIM is a new one and is not present anywhere else. Even 22.011 and 33.401 just mention ME.

Could you please add in the cover page additional details that this requirement is being introduced in the USIM via the current CR.

-

RV Anikethan (Samsung)

This change of having the MCC list in the USIM is a new one and is not present anywhere else. Even 22.011 and 33.401 just mention ME.

Could you please add in the cover page additional details that this requirement is being introduced in the USIM via the current CR.

-

Jennifer Liu (Nokia)

Your further comments have been incorporated in the revision below. Thanks to please check:

ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/REV\_C1-200815\_(was-477)\_23122\_rlos\_restn\_v3.zip

Lena Chaponnière (Qualcomm)

You still have one occurrence of “If the MCC part of a PLMN is present in the RLOS allowed MCC list” that should be “If the MCC part of a PLMN ID is present in the RLOS allowed MCC list” (in new bullet b) of subclause 4.4.3.1.1).

Jennifer Liu (Nokia)

This occurrence in subclause 4.4.3.1.1 has been fixed now:

ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/REV\_C1-200815\_(was-477)\_23122\_rlos\_restn\_v4.zip

Lena Chaponnière (Qualcomm)

The version you pointed to below, and C1-200815 already uploaded to the docs folder, do not take into account my comments sent on Monday (cf attached email). Here they are again:

- “the MCC part of the preferred PLMN” should be “the MCC part of the preferred PLMN ID”

- “the MCC part of the PLMN” should be “the MCC part of the PLMN ID”

- “according to RLOS allowed MCC list” should be “according to the RLOS allowed MCC list”

Could you please revised C1-200815 to take these comments into account?

**Decision:** The document was **revised to C1-200815**.

**C1-200815 Support of restriction on access to RLOS**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0495 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell /Jennifer*

(Replaces C1-200477)

**Decision:** The document was **revised to C1-200986**.

**C1-200986 Support of restriction on access to RLOS**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0495 rev 2 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell /Jennifer*

(Replaces C1-200815)

**Decision:** The document was **agreed**.

**C1-200478 NAS configuration on access to RLOS**

*Type: CR For: Agreement  
 24.368 v16.2.0 CR-0046 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell /Jennifer*

**Discussion:**

Lena Chaponnière (Qualcomm): the DDF needs to be updated.

-

Ricky Kaura (Samsung):I have the following comments and questions on this CR:

“5.10zg /<X>/RLOSPreferredPLMNList/<X>” should be “5.10zg /<X>/RLOSAllowedMCCList/<X>”

General question on the MO parameter: The SA3 requirement talks only about preconfiguring the white list either at the time of ME manufacturing or hardcoding with {310, 311, 312, 313, 314, 315, 316}. So is there a need for an MO parameter, if this is purely pre-configuration?

-

Ivo Sedlacek (Ericsson):

- 5.10zf last para - it is not clear where is stage-1 or stage-2 requirement related to "the interior node <X> that holds the following MCC leaf values {310, 311, 312, 313, 314, 315, 316}. ". If there is such stage-1 or stage-2 requirement, then the requirement should be enforced in 23.122, without need to configure the UE.

- 5.10zh last para - similar as previous.

-

Jennifer Liu (Nokia):

Thanks for the comments. Will fix the title for 5.10zg in the revision.

Regarding the MO configuration, so far only in the US there are mandatory FCC requirements for accessing RLOS services, so these MCCs {310, 311, 312, 313, 314, 315, 316} must be allowed (in the allowed MCC list). For other countries, it would not be mandatory, but a network can still choose to offer RLOS services (therefore configuring more allowed MCCs in the Allowed MCC list).

-

Jennifer Liu (Nokia):

to Ivo, Thanks for the comments. These texts are not needed here and will be removed from revision.

To Lena,

Thanks for the feedback. Will update DDF in the revision

-

Jennifer Liu (Nokia)

Revision for C1-200478 is uploaded to draft folder:

ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/REV\_C1-200478\_24368\_rlos-restn.zip

Updates:

- corrected title of subclause 5.10zg;

- removed detailed MCC allowed list for the US;

- added DDF.

-

Ivo Sedlacek (Ericsson)

REV\_C1-200478\_24368\_rlos-restn.zip addresses my comments.

Ericsson would like to cosign.

--

Lena Chaponnière (Qualcomm)

I have the following comments on the draft revision:

- The text in subclause 5.10zg still talks about preferred PLMNs. “one or more RLOS preferred PLMNs” should be instead “one or more RLOS allowed MCCs”

- “MCC” already includes the work “Code”, so “the MCC code” is redundant. I suggest replacing it by “the MCC value”

-

Jennifer Liu (Nokia)

Ericsson is now added as cosigner. The revision to be uploaded (C1-200816) is in draft folder:

ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200816\_(was-478)\_24368\_rlos-restn.zip

-

Lena Chaponnière (Qualcomm)

The version of C1-200816 that was uploaded to the docs folder does not take into account my comments sent on Monday (cf attached email). Here they are again.

- The text in subclause 5.10zg still talks about preferred PLMNs. “one or more RLOS preferred PLMNs” should be instead “one or more RLOS allowed MCCs”

- “MCC” already includes the work “Code”, so “the MCC code” is redundant. I suggest replacing it by “the MCC value”

Could you please revise C1-200816 to take these comments into account?

-

Jennifer Liu (Nokia)

Sorry somehow I missed to see this email. Your further comments have been incorporated in the revision below. Thanks to please check:

ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/REV\_C1-200816\_(was-478)\_24368\_rlos-restn.zip

Lena Chaponnière (Qualcomm) This draft revision addresses my comments

**Decision:** The document was **revised to C1-200816**.

**C1-200816 NAS configuration on access to RLOS**

*Type: CR For: Agreement  
 24.368 v16.2.0 CR-0046 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell /Jennifer*

(Replaces C1-200478)

**Decision:** The document was **revised to C1-200987**.

**C1-200987 NAS configuration on access to RLOS**

*Type: CR For: Agreement  
 24.368 v16.2.0 CR-0046 rev 2 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell /Jennifer*

(Replaces C1-200816)

**Decision:** The document was **agreed**.

**C1-200479 Authentication and security handling for RLOS**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3334 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell /Jennifer*

**Discussion:**

Ivo Sedlacek (Ericsson):

- 5.4.3.3 - the UE has to be attached for RLOS, in order to be able to establish an RLOS PDN connection. This is different from emergency PDN connection which can be established even when the UE is non-emergency non-RLOS registered. If change is needed, it would be better to add "or is attached for access to RLOS".

Jennifer Liu (Nokia)

Thanks for the comments. I am fine to change wording in subclause 5.4.3.3 to “or is attached for access to RLOS”.

Will incorporate the change in the revision.

Jennifer Liu (Nokia)

Revision for C1-200476 is uploaded to draft folder:

ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/REV\_C1-200479\_24301\_rlos-authen.zip

Updates:

- changed wording in subclause 5.4.3.3 to “or is attached for access to RLOS”.

--

Ivo Sedlacek (Ericsson)

REV\_C1-200479\_24301\_rlos-authen.zip is nearly OK.

In 5.4.3.3, can you please consider adding "a UE that " as follows: "The UE shall accept a SECURITY MODE COMMAND message indicating the "null integrity protection algorithm" EIA0 as the selected NAS integrity algorithm only if the message is received for a UE that has a PDN connection for emergency bearer services established, or a UE that is attached for access to RLOS, or a UE that is establishing a PDN connection for emergency bearer services or a UE that is requesting attach for access to RLOS."

Reason: all the other sub-conditions contain "a UE that".

With such change, Ericsson would like to cosign.

-

Jennifer Liu (Nokia)

I have added the wording “a UE that” and also included Ericsson as cosigner. The revision to be uploaded (C1-200817) is in draft folder:

ftp://ftp.3gpp.org/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200817\_(was-479)\_24301\_rlos-authen.zip

Ivo Sedlacek (Ericsson)

Ok with me.

**Decision:** The document was **revised to C1-200817**.

**C1-200817 Authentication and security handling for RLOS**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3334 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell /Jennifer*

(Replaces C1-200479)

**Decision:** The document was **agreed**.

**C1-200480 Manual network selection procedure for access to RLOS**

*Type: CR For: Agreement  
 23.122 v16.4.0 CR-0496 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell /Jennifer*

**Decision:** The document was **agreed**.

**C1-200748 Detach before RLOS and Emergency Attach**

*Type: CR For: (not specified)  
 24.301 v16.3.0 CR-3338 Cat: F (Rel-16)  
  
 Source: MediaTek / Marko*

**Discussion:**

Ricky Kaura (Samsung): CR cover sheet needs to add TEI16 to the work item code as the “may detach locally and initiate attach for emergency bearer services” is not a related to RLOS.

OK to add the clarification, but surely it is obvious that the UE will perform a local detach, as it is unable to perform the detach procedure by explicit signalling since the UE in these states is unable to perform the detach procedure (as stated in the cover sheet).

Marko Niemi (Mediatek): The local detach is indeed obvious for emergency attach (it’s well-known), but for RLOS the UE behavior better to be written, and then to express that the same behavior is need in both, texts are aligned.

I’m find to indicate also TEI16 in the cover page.

**Decision:** The document was **revised to C1-201029**.

**C1-201029 Detach before RLOS and Emergency Attach**

*Type: CR For: -  
 24.301 v16.3.0 CR-3338 rev 1 Cat: F (Rel-16)  
  
 Source: MediaTek / Marko*

(Replaces C1-200748)

**Decision:** The document was **agreed**.

**C1-200763 De-registration before initial registration for RLOS and Emergency**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-2025 Cat: F (Rel-16)  
  
 Source: MediaTek / Marko*

**Decision:** The document was **withdrawn**.

#### 16.2.11 5G\_eLCS (CT4)

**C1-200568 Adding UE initiated LCS service operations**

*Type: pCR For: Approval  
 24.571 v1.0.0  
 Source: CATT/Scott*

**Discussion:**

Lena Chaponnière (Qualcomm)

1) There are several spelling errors (e.g. 5.2.2.x title “Informtion” and 5.2.2.y.2 title “Operaton”)

2) In the first text box of Figure 5.2.2.x-1: Periodic and triggered 5GC-MT-LR is missing and should be added

3) In the last text box of Figure 5.2.2.x-1: the text should be changed as follows to allow for the case where there is no positioning session (which applies to Periodic or Triggered MT-LR) and to add a missing parameter:

The AMF determines the LMF and, except in the case of a Periodic or Triggered 5GC-MT-LR (see 3GPP TS 23.273 [2]), the appropriate positioning session from the Routing Identifier received in the Additional information IE of the UL NAS TRANSPORT message, and forwards the LPP messages via triggering Namf\_Communication\_N1MessageNotify service operation to the LMF. The AMF also includes the Payload container type and the Correlation Identifier set to the Routing Identifier in Additional information IE in UL NAS TRANSPORT message.

4) In the third text box of Figure 5.2.2.y.1-1: there is no positioning session in the AMF (see 23.273 clause 6.3.1 step 25 and Note 7), and a parameter is also missing, so the text should be changed as follows:

The AMF determines the LMF and the appropriate positioning session from the Deferred Routing Identifier received in the Additional information IE of the UL NAS TRANSPORT message, and forwards the LPP messages via triggering Namf\_Communication\_N1MessageNotify service operation to the LMF. The AMF also includes the Payload container type and the Correlation Identifier set to the Deferred Routing Identifierassociated with the session.

5) In the fourth text box of Figure 5.2.2.y.1-1: the LMF assigns the Correlation ID (see 23.273 clause 6.3.1 Note 9). This could be the deferred routing identifier or a different identifier. So the text should be changed as follows:

Upon receipt of the EventReport message from AMF, if the LMF can handle the event report, it returns a supplementary service acknowledgement for the event report to the UE via triggering an Namf\_Communication\_N1N2MessageTransfer service operation to the serving AMF. The LMF also assigns and includes a the Correlation Identifier identifying the LMF.

-

Mikael Wass (Ericsson)

Wording: use ”signalling” and not ”signaling” (both in body text and figures) to align within TS and to other TSs (e.g. 24.501).

Clause heading: Can we use a better more descriptive cause heading than “EventReport”? E.g. “UE initiated event reporting procedure”?

--

Mikael Wass (Ericsson)

Wording: use ”signalling” and not ”signaling” (both in body text and figures) to align within TS and to other TSs (e.g. 24.501).

Clause heading: Can we use a better more descriptive cause heading than “EventReport”? E.g. “UE initiated event reporting procedure”?

**Decision:** The document was **revised to C1-201060**.

**C1-201060 Adding UE initiated LCS service operations**

*Type: pCR For: Approval  
 24.571 v1.0.0  
 Source: CATT/Scott*

(Replaces C1-200568)

**Decision:** The document was **postponed**.

**C1-200569 LCS messages and coding**

*Type: pCR For: Approval  
 24.571 v1.0.0  
 Source: CATT/Scott*

**Discussion:**

Lena Chaponnière (Qualcomm)

The text in subclause 5.3.2.1 is not aligned with TS 23.273 clause 6.3.1 NOTE 9 which describes a case where there is no positioning session in the AMF. It needs to be modified as follows:

The AMF includes a Routing Identifier in the Additional information IE of the DL NAS TRANSPORT message which identifies the LMF and associated with the positioning session between the AMF and LMF when a positioning session is being used.

The Routing identifier is the Correlation ID, which is defined in 3GPP TS 29.572 [6], so that the AMF can map the Routing identifier to the LMF and the Correlation identifier when the AMF receives a UL NAS TRANSPORT message including the responding LPP message.

**Decision:** The document was **revised to C1-201061**.

**C1-201061 LCS messages and coding**

*Type: pCR For: Approval  
 24.571 v1.0.0  
 Source: CATT/Scott*

(Replaces C1-200569)

**Decision:** The document was **postponed**.

#### 16.2.12 V2XAPP

**C1-200519 Work plan for the CT1 part of V2XAPP**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **noted**.

**C1-200522 Latest reference version of draft TS 24.486**

*Type: draft TS For: Information  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **noted**.

**C1-200528 Application level location tracking procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

Mikael Wass (Ericsson)

The pCR looks good in general. Only a minor comment:

In 6.4.1:

“shall include a <geographical-identifier> element with a <geo-id> child element set to the identity of the geographical location to be subscribed.”

“location” (or possibly “area”?) needs to be added after “geographical”. 2 occurrences.

**Decision:** The document was **revised to C1-200944**.

**C1-200944 Application level location tracking procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

(Replaces C1-200528)

**Decision:** The document was **agreed**.

**C1-200529 V2X message delivery procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

Mikael Wass (Ericsson)

The contents of the procedures seem to be for Location tracking and not for Message delivery procedure

Christian Herrero (Huawei)

I have revised C1-200529 to include the correct p-CR, i.e., which provides the V2X message delivery procedure.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-revision-of-C1-200529-v1.doc

Please, let me know if the revision is fine by you.

**Decision:** The document was **revised to C1-200903**.

**C1-200903 V2X message delivery procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

(Replaces C1-200529)

**Decision:** The document was **agreed**.

**C1-200530 V2X service discovery procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **agreed**.

**C1-200532 V2X sevice continuity procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **agreed**.

**C1-200533 General on provisioning of parameters**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **agreed**.

**C1-200534 void**

*Type: pCR For: (not specified)  
 24.486 v0.3.0  
 Source: void*

**Decision:** The document was **withdrawn**.

**C1-200535 void**

*Type: pCR For: (not specified)  
 24.486 v0.3.0  
 Source: void*

**Decision:** The document was **withdrawn**.

**C1-200619 Structure and data semantics for application level location tracking procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

Mikael Wass (/Ericsson) The zip file seems to include the wrong TDoc, C1-200621 and not C1-200619.

Christian Herrero (Huawei)

I believe that your comments is that C1-200621 includes wrongly C1-200619. I have therefore revised C1-200621 to include the correct p-CR, i.e., which provides the structure and semantics of the V2X message delivery procedure.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-revision-of-C1-200621-v1.doc

Please, let me know if the revision is fine by you.

-

I am sorry for this mistake. I have therefore revised C1-200619 to include the correct p-CR.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-revision-of-C1-200619-v1.doc

Please, let me know if the revision is fine by you.

-

Mikael Wass (Ericsson)

Thanks for the draft revision. I uploaded draft-revision-of-C1-200619-v1+MW.doc to the drafts folder marking a couple of things unclear to me:

1) Don’t we need to add further description of <geographical-identifier>?

2) Mismatch of <location-tracking-info> vs <location-tracking>?

**Decision:** The document was **revised to C1-200905**.

**C1-200905 Structure and data semantics for application level location tracking procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

(Replaces C1-200619)

**Decision:** The document was **agreed**.

**C1-200621 Structure and data semantics for V2X message delivery procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

Mikael Wass (Ericsson)

The contents seem to cover Location tracking procedure rather than Message delivery procedure.

Wording: “elemen” should be “element”

Christian Herrero (Huawei)

I have revised C1-200621 to include the correct p-CR, i.e., which provides the structure and semantics of the V2X message delivery procedure.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-revision-of-C1-200621-v1.doc

Please, let me know if the revision is fine by you.

--

Mikael Wass (Ericsson)

Thanks for providing the draft revision. I made some corrections in draft-revision-of-C1-200621-v1+MW.doc in the drafts folder.

Main question is on:

a) a <polygon-area> element shall include a <trigger-id> element; and

b) an <ellipsoid-arc-area> element shall include a <trigger-id> element.

I don´t quite understand this <trigger-id> and how it matches the information in the semantics clause:

“an optional element specifying the area as a polygon specified in subclause…”

**Decision:** The document was **revised to C1-200906**.

**C1-200906 Structure and data semantics for V2X message delivery procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

(Replaces C1-200621)

**Decision:** The document was **agreed**.

**C1-200622 Structure and data semantics for V2X service discovery procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **agreed**.

**C1-200623 Structure and data semantics for V2X UE registration procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **agreed**.

**C1-200624 Structure and data semantics for V2X UE de-registration procedure**

*Type: pCR For: Agreement  
 24.486 v0.3.0  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

Mariusz Skrocki (ORANGE)

Regarding the „Activated” leaf, I’m ok to not include it in both the cases of Shared Identity and Delegated User, and to have it up to the configuration.

However, regarding the call log URI for the shared Identity, I believe that we still have a need to have this leaf.

As described in the draft document revising C1-200664 I’ve described the case that I have in mind.

The draft revision doc is available in draft folder here: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C-200xxx\_C1-200664%20MO%20for%20MuD%20and%20MiD%20correction.doc

Namely, we have a requirement in 22.173 for MuD and MiD saying that: Synchronization of communication logs between the multiple devices that are registered under the user identity shall be possible

There is possibility, that there are two devices in multidevice case that are allowed to use commonly a third identity (identity Virtual A in the figures in the document). And in this case, it is possible that identity Virtual A can be registered by both. Then, following the requirement cited above, there should be a possibility to synchronize the call log related to this identity. But in the current MO case, this is not possible since there is no place to provide the call log URI related to this identity to the devices.

For this reason, I think that the CallLogURI leaf behind SharedIdentity node is needed.

We can agree that call log URI is not needed in the case the Shared Identity is not registered by other devices. In this case, the leaf CallLogURI is not applicable, and therefore I propose to modify its occurrence to be “ZeroOrOne”.

I would be glad to get your point of view, taking into consideration this scenario as well.

**Decision:** The document was **agreed**.

#### 16.2.13 eV2XARC

**C1-200292 UE policies for V2X communication over PC5**

*Type: pCR For: (not specified)  
 24.588 v1.0.1  
 Source: Ericsson, LG Electronics / Ivo*

**Discussion:**

Christian Herrero (Huawei) We are supporting of completing the UE policies for V2X communication over PC5 but we have the following comments to improve the p-CR and allow interworking to EPS and compatibility:

(1) as shown by our p-CR in C1-200286, there is need to correct the Configuration parameters for V2X communication over PC5 so that it is made optional the list of the V2X services authorized for ProSe Per-Packet Reliability (PPPR). Noe that this list is used for configuration parameters for a V2X communication over PC5 in E-UTRA. The need of making the list optional aligns with TS 24.386 and allows inteworking to EPS;

(2) we further believe that there is need to make optional the list of list of V2X service identifier to Tx profiles mapping rules and the list of V2X service identifier to V2X E-UTRA frequency mapping rules over V2X PC5 for similar reasons as per (1) (see p-CRs in C1-200388 and 389) ; and

(3) in light of SA2 LS in C1-200231 and latest version of TS 23.387, CT1 need to be aligned with SA2 decisions and also keep consistency in our TS 24.587, and therefore we propose to replace the “expiration timer” wording by “validity timer” and remove the editor’s notes regarding this (see C1-200391). Hence, we would like that the revision of C1-200292 also uses “validity timer” wording.

With those changes, Huawei and HiSilicon would like to co-sign the p-CR.

--

Ivo Sedlacek (Ericsson)

please see draft revision of C1-200292 in [1].

Main changes:

- additional cosigners added

- Expiration field became validity field. Semantic of the validity field is FFS since it is not clear whether to use relative time or absolute UTC time.

- V2X service identifier to Tx profiles mapping rules field is optional and its presence is controlled by the V2X service identifier to Tx profiles mapping rules indicator bit.

- V2X service identifier to V2X E-UTRA frequency mapping rule field is optional and its presence is controlled by V2X service identifier to V2X E-UTRA frequency mapping rule indicator bit.

- V2X services authorized for PPPR field is optional and its presence is controlled by V2X services authorized for PPPR indicator bit.

- V2X service identifier to V2X NR frequency mapping rule field is optional and its presence is controlled by V2X service identifier to V2X NR frequency mapping rule indicator bit.

- "figure 5.4.1.31" -> "figure 5.3.1.31"

- bit numberring added to figures where missing

- titles of figures and tables corrected

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaaa-was-C1-200292-v04.zip

--

Ivo Sedlacek (Ericsson)

I have updated the draft revision of C1-200292 in [2].

Main changes above the previous draft revision [1]:

- "validity" field renamed to "validity timer" field. Length of the validity timer is FFS (in addition to semantic of the validity field being FFS as indicated below). Same reason as below - it is not clear whether to use relative time or absolute UTC time.

- order of fields in Figure 5.3.1.1 swapped, to have the same ordering as in C1-200295 - i.e. the validity timer is first.

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaaa-was-C1-200292-v04.zip

[2] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaaa-was-C1-200292-v06.zip

**Decision:** The document was **revised to C1-200933**.

**C1-200933 UE policies for V2X communication over PC5**

*Type: pCR For: -  
 24.588 v1.0.1  
 Source: Ericsson, LG Electronics / Ivo*

(Replaces C1-200292)

**Decision:** The document was **agreed**.

**C1-200293 Updates of configuration parameters for V2X communication over Uu**

*Type: pCR For: (not specified)  
 24.587 v1.0.0  
 Source: Ericsson / Ivo*

**Discussion:**

Haorui Yang (OPPO): One comment for the authorization policy for Uu interface.

There is no such stage-2 requirement.

Since for EPS the authorization policy for Uu is related to MBMS, but for eV2CARC there is no such MBMS.

So there is no need for special authorization policy for V2X Uu.

--

Ivo Sedlacek (Ericsson)

please see draft revision of C1-200293 at [1]

Main changes:

- "authorized" -> "configured"

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iama-was-C1-200293-v03.zip

**Decision:** The document was **revised to C1-200934**.

**C1-200934 Updates of configuration parameters for V2X communication over Uu**

*Type: pCR For: -  
 24.587 v1.0.0  
 Source: Ericsson / Ivo*

(Replaces C1-200293)

**Decision:** The document was **agreed**.

**C1-200294 V2X communication over Uu**

*Type: pCR For: (not specified)  
 24.587 v1.0.0  
 Source: Ericsson / Ivo*

**Discussion:**

Christian Herrero (Huawei) We support the intend of the p-CR as this allows interworking with EPS which we are also very interested in achieving but we would like to consider the following comments:

(1) the “V2X message family” encoding is not fully aligned with V2X in EPS, i.e., TS 24.386. The value 0 and other values not defined by C1-200293 are “spare” while they are “reserved” in TS 24.386. We would like to know the rationale behind this diversion and whether you have analyzed the impact for interworking to EPS. We initially want to keep aligned with TS 24.386;

(2) there is some minor issue in the proposal for clause 6.2.7 item b), quote: "b) with one or more UDP for downlink transport;". Can you please replace it by "with one or more UDP ports for downlink transport";

(3) the p-CR adds 5GSM layer requirements into TS 24.587 (i.e., for establishment of PDU session). This is not correct as establishment of the PDU session should be part of TS 24.501, i.e., 6.4.1.2 on “UE-requested PDU session establishment procedure initiation”. Your proposal unfortunately adds 5GSM-layer functionality into the V2X layer which is not acceptable as it in fact breaks the NAS architectural layering principles we have in CT1. We propose to have those parts of C1-200294 moved out and produce a CR to TS 24.501 instead; and

(4) in light of SA2 LS in C1-200231 and latest version of TS 23.387, CT1 need to be aligned with SA2 decisions and also keep consistency in our TS 24.587, and therefore we propose to replace the “expiration timer” wording by “validity timer” and remove the editor’s notes regarding this (see C1-200391). Hence, we would like that the revision of C1-200294 also uses “validity timer” wording for the encoding rules of the IE.

With those changes, Huawei and HiSilicon would like to co-sign the p-CR.

--

Ivo Sedlacek (Ericsson)

please see draft revision in [1].

Changes:

- additional cosigners added

- "authorized" -> "configured"

- establishment of a PDU session for V2X communication over Uu is moved to editor's note

- expiration time -> validity time

- "with one or more UDP for downlink transport" -> "with one or more UDP ports for downlink transport"

- unassigned values of V2X message family are reserved

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iana-was-C1-200294-v02.zip

Christian Herrero (Huawei) Thanks for the revision of the p-CR and considering our comments.

The revision is fine.

**Decision:** The document was **revised to C1-200935**.

**C1-200935 V2X communication over Uu**

*Type: pCR For: -  
 24.587 v1.0.0  
 Source: Ericsson / Ivo*

(Replaces C1-200294)

**Decision:** The document was **agreed**.

**C1-200295 UE policies for V2X communication over Uu**

*Type: pCR For: (not specified)  
 24.588 v1.0.1  
 Source: Ericsson, LG Electronics / Ivo*

**Discussion:**

Christian Herrero (Huawei) We are supporters of completing the UE policies for V2X communication over Uu but we have the following comment to improve the p-CR:

(1) in light of SA2 LS in C1-200231 and latest version of TS 23.387, CT1 need to be aligned with SA2 decisions and also keep consistency in our TS 24.587, and therefore we propose to replace the “expiration timer” wording by “validity timer” and remove the editor’s notes regarding this (see C1-200391). Hence, we would like that the revision of C1-200295 also uses “validity timer” wording. If not, then we are now adding a new term “expiration”.

With that change, Huawei and HiSilicon would like to co-sign the p-CR.

-

Ivo Sedlacek (Ericsson): please see a draft revision of C1-200295 in [1]

Main changes:

- additional cosigners added

- "expiration" -> "validity", with semantic being FFS, as it is not clear whether the validity time is relative or absolute UTC time

- "authorized PLMN info" -> "PLMN info" and "authorized V2X service info" -> "Authorized V2X service info", as Rea commented that there is no authorization policy in V2X over Uu in 5GS

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaba-was-C1-200295-v03.zip

--

Ivo Sedlacek (Ericsson)

I have updated the draft revision of C1-200295 in [2].

Main changes above the previous draft revision [1]:

- "validity" field renamed to "validity timer" field. Length of the validity timer is FFS, in addition to the semantic of the validity field being FFS. Same reason as below - it is not clear whether to use relative time or absolute UTC time.

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaba-was-C1-200295-v03.zip

[2] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaba-was-C1-200295-v05.zip

**Decision:** The document was **revised to C1-200936**.

**C1-200936 UE policies for V2X communication over Uu**

*Type: pCR For: -  
 24.588 v1.0.1  
 Source: Ericsson, LG Electronics / Ivo*

(Replaces C1-200295)

**Decision:** The document was **agreed**.

**C1-200324 Direct link establishment procedure update based on SA3 LS**

*Type: pCR For: (not specified)  
 24.587 v1.0.1  
 Source: OPPO / Rae*

**Discussion:**

Yanchao Kang (vivo):

For paper C1-200324, we have the following comments:

1. In Table 7.3.2.1.1, the length of sequence number should be 1 octet.

Copied form TS24.587,

“8.4.2 Sequence number

The purpose of the Sequence number IE is to uniquely identify a PC5 signalling message being sent or received. The sending UE will increment the sequence number for each outgoing new PC5 signalling message.

The Sequence number IE is an integer in the 0-255 range.

The Sequence number IE is a type 3 information element, with a length of 1 octet.”

-

Ivo Sedlacek (Ericsson):

- "if the result of the above check is yes" -> "If the request is accepted"

- it is not clear how the UE figures out whether "the security association with the initiating UE is successful". Maybe an editor's note is needed.

Haorui Yang (OPPO): Thanks for your comments and and I take them on board.

Please find the drafted revision as following:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Draft%20revision%20of%20C1-200324\_ev2x\_Direct%20link%20establishment%20procedure%20update%20based%20on%20SA3%20LS.doc

--

Christian Herrero (Huawei)

Thanks for providing a draft revision version of C1-200324. We are supporters of the intent of the p-CR but we have got the following comments to the draft revision:

(1) I do wonder; how many similar editor’s on security we want to add into TS 24.587? There are already many and even with most of them being very similar in wording. At least; can you please use the same text as the previous one in the specification, i.e., “Editor’s note: This section needs to be revisited after SA3 have determined the full set of security requirements for unicast link establishment.”;

(2) your proposal of deletion of the bullet item c under 6.1.2.2.3 is not correct to me as it is not aligned with TS 23.387 clause 6.3.3.1. Hence, can you please reverse your deletion?; and

(3) I hope that the highlighted colour you use on the p-CR will be removed in the actual final revision (to be uploaded to the inbox/3GPP portal). As rapporteur, I do not want to deal with colourful text when implementing p-CRs as I believe that it is already enough with the usual template style corruption and editorials.

With those changes, Huawei and HiSilicon would like to co-sign the revision of the p-CR.

-

Ivo Sedlacek (Ericsson): on:

(1) I do wonder; how many similar editor’s on security we want to add into TS 24.587? There are already many and even with most of them being very similar in wording. At least; can you please use the same text as the previous one in the specification, i.e., “Editor’s note: This section needs to be revisited after SA3 have determined the full set of security requirements for unicast link establishment.”;

IMO, the new editor's note below is needed - the normative text refers to security association which does not exist.

Editor’s note: The details about security association are FFS and will be updated based on SA3 requirements.

No strong view on (2) and (3).

--

Haorui Yang (OPPO)

For (1): no strong view;

For (2): I deleted the bullet c in 6.1.2.2.3 because now the IP address configuration IE is not included in DIRECT LINK ESTABLISHMENT REQUEST message and is going to add the description after SA3 determines which message is used.

But if you cannot live with the deletion, how about change as the below in this meeting and I will update this bullet after SA3 requirements is stable:

c) if the IP address configuration IE is received included in the DIRECT LINK ESTABLISHMENT REQUEST message, the target UE checks whether there is at least one common IP address configuration option supported by both the initiating UE and the target UE.

For (3): I will, don’t worry.

-

Christian Herrero (Huawei) @Rae

I have checked your latest draft version and unfortunately does not consider our comments.

Our point is that TS 23.287 in the clause 6.3.3.1 indicates that still there is need to consider the IP address configuration. I fail to see that this stage 2 requirement is removed so is it possible to do as you propose (see below)?

But if you cannot live with the deletion, how about change as the below in this meeting and I will update this bullet after SA3 requirements is stable:

c) if the IP address configuration IE is received included in the DIRECT LINK ESTABLISHMENT REQUEST message, the target UE checks whether there is at least one common IP address configuration option supported by both the initiating UE and the target UE.

With that change, Huawei and HiSilicon would like to co-sign the revision of the p-CR.

-.

Haorui Yang (OPPO)

Sorry for not updating the revision in time.

Now C1-200324 is merged to the revision of C1-200349 and I checked that what you commented has been covered in C1-200349.

Merged into C1-200349 and its revisions.

**Decision:** The document was **merged**.

**C1-200325 Remove the FFS on non-IP**

*Type: pCR For: (not specified)  
 24.587 v1.0.1  
 Source: OPPO / Rae*

**Decision:** The document was **agreed**.

**C1-200326 Decoding on V2X service ID and application ID**

*Type: pCR For: (not specified)  
 24.587 v1.0.1  
 Source: OPPO / Rae*

**Discussion:**

Ivo Sedlacek (Ericsson): - V2X service identifier is PSID or ITS-AID, and the coding should point to ISO TS 17419 ITS-AID AssignedNumbers : http://standards.iso.org/iso/ts/17419/TS17419%20Assigned%20Numbers/TS17419\_ITS-AID\_AssignedNumbers.pdf similarly as done in V2X in EPS.

- V2X service identifier cannot be out-of-scope since it is used to distinguish different formattings of V2X messages

Lena Chaponnière (Qualcomm):

- For the V2X service identifier, I would prefer to go with a fixed length of 4 octets since this field carries a PSID or ITS-AIDs of the V2X application

- All messages in which the V2X service identifier and/or an Application layer ID are included need to be updated to reflect the new formats of the Ies

Haorui Yang (OPPO) commented that she would change the format as proposed.

Ivo Sedlacek (Ericsson): this is OK for me and Ericsson would like to cosign.

However, please be aware that there is a conflicting CR in C1-200597.

Either the below or the solution in C1-200597 would be OK with me.

Christian Herrero (Huawei): Thanks for indicating how the revision should look like. We support the intent of the p-CR and if you revise the CR as indicated by your e-mail (below), can you please add Huawei and HiSilicon as co-signers of the revision of the p-CR?

-

Sang Min Park (LG Electronics)

As indicated below, 0326 conflicts with 0597.

In the discussion on the multiple V2X service identifiers issue in 0596, two companies support single V2X service per each request while one company support multiple V2X service per each request. (and it seems Ericsson is okay for both ways) We will follow the majority view, so please share your view on this to this thread or the thread on 0596.

\*

Yanchao Kang (vivo)

As Sang Min indicated below, we support single V2X service per request. We are ok with the definition of V2X service identifier IE Rae proposed in C1-200326 and align with that in our papers.

-

Haorui Yang (OPPO)

I have revised C1-200326 to C1-200820 as the drafted changes and add the co-signers.

The Tdoc has been uploaded to 3GU, whose link is the following:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs/C1-200820.zip

Further comments are welcomed.

-

Ivo Sedlacek (Ericsson)

"Ericsson is okay for both ways" is correct.

**Decision:** The document was **revised to C1-200820**.

**C1-200820 Decoding on V2X service ID and application ID**

*Type: pCR For: -  
 24.587 v1.0.1  
 Source: OPPO / Rae*

(Replaces C1-200326)

**Discussion:**

Lena Chaponnière (Qualcomm)

Even though Qualcomm prefers the proposal in C1-200597, Qualcomm does not object to C1-200820. However I have just noticed a copy-and-paste error in C1-200820:

In table 8.4.4.1, “The length of Application layer ID contents field contains the binary coded representation of the length of the V2X service identifier contents field” should be “The length of Application layer ID contents field contains the binary coded representation of the length of the Application layer ID contents field”.

If Christian, as rapporteur of TS 24.587, is ok to fix this when implementing the pCR then we are fine with agreeing the pCR.

Sang Min Park (LG Electronics)

CT1 has not reached a consensus on the issue of multiple V2X service identifiers, so LGE still believes that CT1 needs to be aligned with stage 2 agreements. Although, this pCR does not mention clearly about the issue, but just specifies some basic IE coding of V2X service identifier and Application layer ID, then LGE does not have any technical concerns on C1-200820. If we all agree that the number of V2X service ID in a single message issue will be revisited in the next meeting, then LGE will be fine with the pCR.

If adding an EN by the spec rapporteur is allowed, please add following EN the end of subclause 8.4.3:

Editor’s note: the number of V2X service identifiers that can be included in a single message for the unicast mode communication over PC5 is FFS.

If adding EN is not possible after the revision deadline even by the spec rapporteur, we would like to ask to leave following sentence in the meeting report.

The number of V2X service identifiers that can be included in a single message for the unicast mode communication over PC5 is not yet decided. CT1 will continue to work on this aspect in the following WG meetings.

Hope my suggestion is acceptable for you.

-

Christian Herrero (Huawei) @sangmin

Thanks for your proposal and willingness to find a compromise in this controversial issue. I appreciate it as rapporteur of the work item.

As for your question “If adding EN is not possible after the revision deadline even by the spec rapporteur, we would like to ask to leave following sentence in the meeting report.”; as a rapporteur of TS 24.587, if agreed by CT1, I could add the editor’s notes when implementing the p-CR.

Please, Lena, Peter, let us know how to proceed so we can progress is this electronic meeting.

Chairman: We can’t want to modify text of pCRs.

Let’s go forward with what SangMin stated.

The meeting report to state:

The number of V2X service identifiers that can be included in a single message for the unicast mode communication over PC5 is not yet decided. CT1 will continue to work on this aspect in the following WG meetings.

And with the above statement, CR will get agreed.

Thank you all for your support here.

--

Christian Herrero (Huawei)

@Rae

Thanks for spotting that minor issue.

If the p-CR in C1-200820 is finally agreed during this electronic meeting, I will implement the p-CR in the specification by making the minor correction you indicate. No issue on that aspect from my side.

**Decision:** The document was **agreed**.

**C1-200327 Keep alive procedure**

*Type: pCR For: (not specified)  
 24.587 v1.0.1  
 Source: OPPO / Rae*

**Discussion:**

Lena Chaponnière (Qualcomm)- This pCR overlaps with C1-200350. We suggest merging C1-200327 into C1-200350.

- Mention of radio link failure is out of scope of CT1 spec. It is sufficient to say that a trigger from the lower layers is received. Also we would prefer to keep these triggers UE implementation specific.

- Inconsistent use of T5yyy and T500y

- Title of figure in 6.1.2.X.2 is wrong

- Sending of the Maximum inactivity period info is missing. It is useful to determine how to set the inactivity timer at the peer UE and minimize colliding keep-alive procedures.

- Handling of a Keep-alive counter is missing. Such counter is useful to detect duplicate messages, it should be added to the procedure

- “requesting UE” should be “initiating UE”

- In 6.1.2.X.5.2, “the peer UE” should be “the target UE”

Haorui Yang (OPPO)

As I said in the thread for C1-200350, I’m OK to merge.

If people think Maximum inactivity period and Keep-alive counter are useful, I am also OK.

Still a question for the Maximum inactivity period, what’s the relation between this period T5zzz and the T5xxx on the target UE side?

-

Christian Herrero (Huawei): We are supporters of adding this in TS 24.587 as your proposals are related to LS in C1-200242 so we eventually would like to co-sign the related p-CR. Merging of the proposals is fine by us but I wonder which direction is the merging taking.

In my analysis of the proposals in C1-200327 and C1-200350; C1-200350 (from Qualcomm) seems to be taken directly from the LTE ProSe keep-alive procedure, and therefore more complete whereas C1-200327 (from OPPO) is a lightweight version which seems simpler for implementations. In my view, we can make things a sort of better than in LTE ProSe. Can you please at least restrict the trigger of start or restart of the T5XXX within the V2X layer (to avoid cross-layer interaction)?

-

Lena Chaponnière (Qualcomm)

Thanks for your feedback. The SA2-agreed CR (S2-200972) does mention triggers from the lower layers several times:

The PC5 Signalling Protocol shall support keep-alive functionality that is used to detect if a particular PC5 unicast link is still valid. Either side of the PC5 unicast link can initiate the layer-2 link maintenance procedure (i.e. keep-alive procedure), based on for example triggers from the AS layer or internal timers.

(…)

NOTE 1: It is left to Stage 3 to determine the exact triggers for the keep-alive messages. For example, the trigger can be based on a timer associated with the Layer-2 link. The timer can be reset with a successful reception event defined by TS 38.300 [11].

As a compromise, would it be acceptable to have the triggers from the lower layers optional, as in:

The initiating UE shall initiate the PC5 unicast link keep-alive procedure when:

a) optionally, a request from the lower layers to check the viability of the PC5 unicast link is received;

b) timer T5xxx for this link expires; or

NOTE 1: Whether the lower layers can request the initiation of the PC5 unicast link keep-alive procedure, and what the triggers for the lower layers are to request the initiation of the PC5 unicast link keep-alive procedure are UE implementation specific.

Lena Chaponnière (Qualcomm): @Rae

Thanks for your reply. To answer your question, it is up to implementation but the target UE can use the Maximum inactivity period info to set T5xxx to a value slightly larger than T5zzzz, so as to minimize the number of keep-alive procedures initiated by the target UE.

Merged into C1-200350 and its revisions.

**Decision:** The document was **merged**.

**C1-200349 Security establishment for PC5 unicast link**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Qualcomm Incorporated / Lena*

**Discussion:**

Haorui Yang (OPPO):For the deletion of FFS on Non-IP, I think this part can be left to my C1-200325 since this CR covers security issues and has a lot of information already.

For the security procedures, I cannot find SA3 V2X TS.

I agree that the security procedures in principle may be the same with what defined in EPS.

But is it better to wait for SA3 TS?

Yanchao Kang (vivo)

1. The length of sequence number should be 1 octet.

2. Which UE can trigger the PC5 unicast link authentication procedure:

a) the "initiating UE" of the PC5 unicast link establishment procedure;

b) the "target UE" of the PC5 unicast link establishment procedure; or

c) both.

3. Which UE can trigger the SMC during the link establishment procedure?

a) the "initiating UE" of the PC5 unicast link establishment procedure;

b) the "target UE" of the PC5 unicast link establishment procedure; or

c) both.

-

Ivo Sedlacek (Ericsson):

- too early to bring security in CT1 specs - no version of 33.536 exists yet and there are no security details available in 23.287 either

--

Haorui Yang (OPPO)

C1-200349 does not delete the Editor’s note on non-IP communication, so there is no conflict with C1-200325.

Regarding the security procedures, Qualcomm is submitting pCRs to the V2X TS in SA3 and the contents of C1-200349 are based on those pCRs (SA3 meets from March 2nd to March 6). We can either agree C1-200349 and update TS 24.587 in April to align with any updates made by SA3 at their March meeting, or we can postpone C1-200349 to the April meeting if people want to wait until the security procedures are in the V2X TS.

--

Lena Chaponnière (Qualcomm)

To Yanchao: I have fixed the length of the sequence number in Revision\_of\_C1-200349\_v1 which was uploaded to the drafts folder:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200349\_v1.zip

About your questions 2 & 3, the UE triggering the PC5 unicast link authentication procedure and the UE triggering the SMC is the target UE of the PC5 unicast link establishment procedure.

To Ivo:

Thanks for your feedback. As I already replied to Rae, the contents of C1-200349 are based on input contributions in SA3, but if most companies prefer to wait until those contributions are added into the SA3 V2X TS that is also ok, I can postpone the pCR to the April meeting. I would be happy though to get any technical comments so as to make progress between now and the April meeting.

--

Christian Herrero (Huawei)

I have to agree with Lena that the proposals in C1-200349 are based on LSs in C1-200230, 231, 241, and possibly 253 so in my view as rapporteur I would like to have security aspects added to TS 24.587 for the PC5 unicast link establishment procedure and adding the (new) PC5 unicast link authentication procedure.

Having said that I understand that some companies want to ask for having more time as the p-CR proposal is based on current situation which may change in the upcoming SA3 meeting (I guess from the raised comments that things could change?).

In my personal view in light of the LSs and what SA3 have worked out, the new procedure is needed and should be added to TS 24.587. Furthermore, the Qualcomm proposal seems aligned with present situation. We could add editor’s notes to cover up for the case that SA3 decide to update or add some small details in the upcoming meeting.

-

Xiaoguang Chen

- This p-CR adds a PC5 unicast link authentication procedure and a PC5 unicast link security mode control procedure in the PC5 unicast link establishment procedure, but only the security mode control procedure was updated in the link establishment procedure. Therefore, the authentication procedure should be updated in the link establishment procedure too. And I suggest a new/replaced figure of the all procedures to make it clear enough.

- There’s no clarification about the relationship of T5000 and T5aaa and T5bbb. In my understanding, T5aaa and T5bbb is in the T5000, and all of them would not last too long, because vehicles moves fast which means the surroundings are changed fast and there’s a shortage of PC5 resources untill now. Therefore, I concern about the procedure when the T5aaa and T5bbb expires. If the retransmission occurrs, there would be a high risk that the total time is beyond T5000 that would cause conflicts between the establishment procedure and the sub procedure.

- Lack of procedures of the link establishment procedure in the case of the authentication procedure not accepted by the target UE and the security mode control procedure not accepted by the target UE and their related abnormal cases.

- In 6.1.2.x.5, the cause value #y should be “authentication failure” instead of “Unspecified error”.

-

Yanchao Kang (vivo)

For the revision, I have the following comments:

1. In 6.1.2.2.3, the new added bullet a) has style issue.

2. In 6.1.2.y.2, the highlighted condition “if the initiating UE does not share a known KNRP with the target UE” in bullet b is confusing, does the condition mean “if the KNRP ID is not included in the DIRECT LINK ESTABLISHMENT REQUEST message”?

3. In 6.1.2.y.3, there is a similar condition here, but the use of “target UE ”and “initiating UE” is on the contrary.

Haorui Yang (OPPO):

A reminder:

1. C1-200324 is covered by C1-200349 so if the major agree C1-200349 as a way forward, C1-200324 can be merged to C1-200349.

2. I also submitted a LS out for SA3 LS C1-200253. If QC’s pCR finally survive, maybe the LS out should also be sent by QC since the contact person in SA3 LS is QC?

-

Ivo Sedlacek (Ericsson)

I still prefer to wait for SA3 to have some agreed stage-2 text on security details, before progressing security details in stage-3.

--

Lena Chaponnière (Qualcomm)

1. In 6.1.2.2.3, the new added bullet a) has style issue.

[Lena] Thanks for pointing this out. I have fixed it in v2 of the draft revision which is available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200349\_v2.zip

2. In 6.1.2.y.2, the highlighted condition “if the initiating UE does not share a known KNRP with the target UE” in bullet b is confusing, does the condition mean “if the KNRP ID is not included in the DIRECT LINK ESTABLISHMENT REQUEST message”?

[Lena] It means “if KNRP ID is not included in the DIRECT LINK ESTABLISHMENT REQUEST message or the target UE does not have an existing KNRP for the KNRP ID included in DIRECT LINK ESTABLISHMENT REQUEST message”. I have updated the wording accordingly in v2 of the draft revision.

3. In 6.1.2.y.3, there is a similar condition here, but the use of “target UE ”and “initiating UE” is on the contrary.

Lena] In this case it means “if the target UE did not include a KNRP ID in the DIRECT LINK ESTABLISHMENT REQUEST message. I have updated the wording accordingly in v2 of the draft revision.

--

Lena Chaponnière (Qualcomm)

- This p-CR adds a PC5 unicast link authentication procedure and a PC5 unicast link security mode control procedure in the PC5 unicast link establishment procedure, but only the security mode control procedure was updated in the link establishment procedure. Therefore, the authentication procedure should be updated in the link establishment procedure too. And I suggest a new/replaced figure of the all procedures to make it clear enough.

[Lena] I have added a reference to the authentication procedure in the link establishment procedure in v2 of the CR revision, available in the drafts folder at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200349\_v2.zip

Regarding a figure with all procedures, I don’t think this is needed in CT1 stage 3: for instance in TS 24.301 we do not have a figure showing e.g an attach procedure combined with an authentication procedure and a security mode control procedure. The figure showing how all procedures combine will be in the SA3 TS (TS 33.536).

- There’s no clarification about the relationship of T5000 and T5aaa and T5bbb. In my understanding, T5aaa and T5bbb is in the T5000, and all of them would not last too long, because vehicles moves fast which means the surroundings are changed fast and there’s a shortage of PC5 resources untill now. Therefore, I concern about the procedure when the T5aaa and T5bbb expires. If the retransmission occurrs, there would be a high risk that the total time is beyond T5000 that would cause conflicts between the establishment procedure and the sub procedure.

[Lena] Indeed T5000 should be set to a value larger than T5aaa and T5bbb. In v2 of the draft CR revision, I have added a note in the link establishment procedure stating “In order to ensure successful PC5 unicast link establishment procedure, T5000 should be set to a value larger than the sum of T5aaa and T5bbb”. Please let me know if this does not address your comment.

- Lack of procedures of the link establishment procedure in the case of the authentication procedure not accepted by the target UE and the security mode control procedure not accepted by the target UE and their related abnormal cases.

[Lena] The subclause on the authentication procedure not accepted by the target UE already says “Upon receipt of the DIRECT LINK AUTHENTICATION REJECT message, the initiating UE shall stop timer T5aaa and abort the ongoing procedure that triggered the initiation of the PC5 unicast link authentication procedure.” Similarly the subclause on the security mode control procedure not accepted by the target UE says “Upon receipt of the DIRECT LINK SECURITY MODE REJECT message, the initiating UE shall stop timer T5bbb and abort the ongoing procedure that triggered the initiation of the PC5 unicast link security mode control procedure”. Similar statements are also in the abnormal case handling of each procedure. I have added statements about the behavior of the target UE sending the reject (which is the initiating UE of the PC5 unicast link establishment procedure) in v2 of the draft CR revision. If you think something is still missing, could you please specifically list the scenarios which are not covered?

- In 6.1.2.x.5, the cause value #y should be “authentication failure” instead of “Unspecified error”.

[Lena] Thanks for pointing this out, I have fixed this in v2 of the draft CR revision. I have also aligned the wording in the PC5 signalling protocol cause value IE definition as discussed on the other thread about C1-200347.

--

Lena Chaponnière (Qualcomm)

In v2 of the draft revision (available at https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200349\_v2.zip), I have added the following Editor’s notes:

- In the general subclause of the PC5 unicast link authentication procedure:

Editor’s note: The PC5 unicast link authentication procedure will need to be updated once SA3 has finalized the requirements in TS 33.356.

- In the general subclause of the PC5 unicast link security mode control procedure:

Editor’s note: The PC5 unicast link security mode control procedure will need to be updated once SA3 has finalized the requirements in TS 33.356.

Is the pCR acceptable to you with these Editor’s notes?

--

Chen

[Lena] Indeed T5000 should be set to a value larger than T5aaa and T5bbb. In v2 of the draft CR revision, I have added a note in the link establishment procedure stating “In order to ensure successful PC5 unicast link establishment procedure, T5000 should be set to a value larger than the sum of T5aaa and T5bbb”. Please let me know if this does not address your comment.

[Chen] partially OK. My additional point is the retransmission procedure when T5aaa and T5bbb expires will cause conflicts between the T5000 and the sum of T5aaa(s) and T5bbb(s) too. Based on TS 24.334 clause 10.4.5.6.1, quote:

If timer T4111 expires, then

- if the direct security mode control procedure is triggered by a DIRECT\_COMMUNICATION\_REQUEST message, the commanding UE shall discard any derived keys with Nonce\_1 and initiate the transmission of the DIRECT\_COMMUNICATION\_REJECT message with the PC5 Signaling Protocol Cause Value IE set to #10 "non-responsive peer during the direct security mode procedure"; or

there’s no retransmission procedure due to the short timers. Therefore, from my side, the retransmission procedure could be safely removed and just send the REJECT message.

- Lack of procedures of the link establishment procedure in the case of the authentication procedure not accepted by the target UE and the security mode control procedure not accepted by the target UE and their related abnormal cases.

[Lena] The subclause on the authentication procedure not accepted by the target UE already says “Upon receipt of the DIRECT LINK AUTHENTICATION REJECT message, the initiating UE shall stop timer T5aaa and abort the ongoing procedure that triggered the initiation of the PC5 unicast link authentication procedure.” Similarly the subclause on the security mode control procedure not accepted by the target UE says “Upon receipt of the DIRECT LINK SECURITY MODE REJECT message, the initiating UE shall stop timer T5bbb and abort the ongoing procedure that triggered the initiation of the PC5 unicast link security mode control procedure”. Similar statements are also in the abnormal case handling of each procedure. I have added statements about the behavior of the target UE sending the reject (which is the initiating UE of the PC5 unicast link establishment procedure) in v2 of the draft CR revision. If you think something is still missing, could you please specifically list the scenarios which are not covered?

[Chen] I suggest to merge the “DIRECT LINK AUTHENTICATION REJECT message” into the “DIRECT LINK ESTABLISHMENT REJECT message”, which means if the initiating UE (which is the target UE of the PC5 unicast link establishment procedure) rejects, the initiating UE just send the DIRECT LINK ESTABLISHMENT REJECT message with the cause value instead of DIRECT LINK AUTHENTICATION REJECT message so that the target UE (which is the initiating UE of the PC5 unicast link establishment procedure) will proceed the same procedure as PC5 unicast link establishment procedure describes. And that would deduce both the UE’s overhead.

Similar suggestion to the security mode control procedure and the related abnormal cases.

Based on the above suggestion and as shown in the last above reply of mine, we should use “if the PC5 unicast link security mode control procedure is triggered by a DIRECT LINK ESTABLISHMENT REQUEST message”, …, because the authentication procedure and the security mode control procedure may be not only to the PC5 unicast link establishment procedure.

--

Ivo Sedlacek (Ericsson)

IMO, this is still not acceptable - we cannot jump into stage-3 details on security before SA3 specifies stage-2 security architecture.

All the details on security need to be removed from the CR.

I do agree that we need PC5 unicast link authentication procedure and PC5 unicast link security mode control procedure, but we can only give general overview for them, without mentioning any security details. Also, we do not know what messages will be required by SA3.

-

Lena Chaponnière (Qualcomm)

@Ivo

Thanks for you feedback.

In the interest of progress, I have revised the pCR to remove the details about the PC5 unicast authentication procedure and the PC5 unicast link security mode control procedure, as well as remove the definition of the associated messages. The updated draft revision is available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200349\_v3.zip

Please let me know if you have any comments on this updated draft revision.

@Chen

Hello Chen,

Thanks for your further feedback and the additional info on the interaction between T5000 and T5aaa & T5bbb as well as the handling of the PC5 unicast link establishment procedure in case the authentication procedure is not accepted by the target UE or the security mode control procedure is not accepted by the target UE, it is very useful. I understand your points and I will take them into account when preparing a contribution to the April meeting, after SA3 has agreed the corresponding procedures.

For this meeting, since Ivo has indicated during this morning’s CT1 conference call that he prefers to wait for SA3 to make agreements, I have revised the pCR to remove the details about the PC5 unicast authentication procedure and the PC5 unicast link security mode control procedure, as well as remove the definition of the associated messages. The updated draft revision is available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200349\_v3.zip

Please let me know if you have any comment on this updated draft revision.

-

Ivo Sedlacek (Ericsson)

in general, the Revision\_of\_C1-200349\_v3.zip goes in the right direction.

Comments:

- in 6.1.2.x.1

- the text refers to new KNRP which is a security detailed to be decided by SA3.

- shouldn't the PC5 unicast link authentication procedure primarily ensure mutual authentication of the UEs establishing the PC5 unicast link?

I propose:

6.1.2.x.1 General

The PC5 unicast link authentication procedure is used to perform mutual authentication of UEs establishing a PC5 unicast list and to derive a key shared between two UEs during the PC5 unicast link establishment procedure. After successful completion of the PC5 unicast link authentication procedure, the key is used for security establishment during the PC5 unicast link security mode control procedure as specified in subclause 6.1.2.y. The UE initiating the procedure is called the "initiating UE" and the other UE is called the "target UE".

Editor’s note: The details of the PC5 unicast link authentication procedure are FFS.

- in 6.1.2.y.1

- the text refers to "integrity protect and cipher" while SA3 LS C1-198441 referred solely to "protection".

- the text expects protection of user plane data, which was not mentioned in SA3 LS C1-198441.

6.1.2.y.1 General

The PC5 unicast link security mode control procedure is used to establish a security association between two UEs during the PC5 unicast link establishment procedure. After successful completion of the PC5 unicast link security mode control procedure, the selected security algorithms and keys are used to protect all PC5 signalling messages exchanged between the UEs. The UE initating the procedure is called the "initiating UE" and the other UE is called the "target UE".

Editor’s note: The details of the PC5 unicast link security mode control procedure are FFS.

Editor's note: it is FFS whether user plane is protected by the security association.

See [1] addressing the comments above.

If [1] is acceptable, Ericsson would like to cosign.

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200349\_v3-ISED.zip

-

Lena Chaponnière (Qualcomm)

Your proposed edits are fine with me, I have taken them onboard in an updated revision and added Ericsson as co-signer:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200349\_v4.zip

Please let me know if you have any further comments. Also please note that the tdoc number for the revision will be C1-200844.

-

Ivo Sedlacek (Ericsson)

Thank you for taking my comments into consideration.

**Decision:** The document was **revised to C1-200844**.

**C1-200844 Security establishment for PC5 unicast link**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Qualcomm Incorporated / Lena*

(Replaces C1-200349)

**Decision:** The document was **agreed**.

**C1-200350 PC5 unicast link keep-alive procedure**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Qualcomm Incorporated / Lena*

**Discussion:**

Yanchao Kang (vivo) made a number of comments on the reflector.

Lena Chaponnière (Qualcomm): Thanks for your comments. I have fixed the sequence number length and also removed the start of timer T5xxx from the figure in Revision\_of\_C1-200350\_v1 which has been uploaded to the drafts folder:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200350\_v1.zip

For now I have not added any trigger from the upper layer because it is not mentioned in the SA2-agreed CR. Are you aware of any stage 2 requirement for a trigger from upper layers?

Haorui Yang (OPPO): For the trigger of keepalive message, SA2 left this to CT1, described in the agreed S2-2000972.

W.r.t. trigger from upper layer, this trigger is already included in the EPS ProSe. And I think it is reasonable to let upper layer to check whether link is alive if not receiving the report for a period.

Since I also submit C1-200327 for keepalive procedure, maybe we can merge.

Krisztian Kiss (Apple): We submitted C1-200632 with the aim to merge into the revision of C1-200350. I guess we can discuss any technical comments under [16.2.13\_C1-200632] subject line.

--

Lena Chaponnière (Qualcomm)

A draft merge of C1-200350, C1-200327 and C1-200632 on the PC5 unicast link keep-alive procedure is available in the drafts folder at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200350\_v4.zip

The following changes were made on top of C1-200350:

- Merged in the following changes from C1-200327:

o Added the changes to subclause 6.1.2.1

o added an optional trigger from upper layers for the procedure

- Merged in the following changes from C1-200632:

o Added a NOTE stating “Whether the PC5 unicast link keep-alive procedure is initiated by only one UE or both UEs in the established PC5 unicast link is UE implementation specific”

o Added an Editor’s note stating “Whether the keep-alive timer T5xxx value needs to be included or negotiated as part of the PC5 unicast link establishment procedure is FFS”

o Added a NOTE stating “The value chosen for the maximum inactivity period of the initiating UE is UE implementation specific with the objective to minimize the number of keep-alive procedures as much as possible. It is desirable to have the maximum inactivity period value to be slightly higher than the value of keep-alive timer T5xxx”

o Added handling of the abnormal case when the initiating UE receives a DIRECT LINK KEEPALIVE RESPONSE message and T5yyy is not running

o added the requirement that the initiating UE considers a PC5 signalling message (other than DIRECT LINK KEEPALIVE RESPONSE message) or a PC5 user plane data from the target UE over this PC5 unicast link while timer T5yyy is running to be an implicit DIRECT LINK KEEPALIVE RESPONSE message

o added a requirement for the initiating UE to discard a DIRECT LINK KEEPALIVE RESPONSE message received while T5yyy is not running

o added the requirement that if the target is generating a PC5 signalling when it receives the DIRECT LINK KEEP ALIVE REQUEST, the UE may skip sending of the DIRECT LINK KEEP ALIVE RESPONSE

- Added OPPO as co-signer

- Changed initiating the PC5 unicast link release procedure to local release in abnormal case a) of 6.1.2.x.5.1.

- Removed ENs on PC5 unicast link release procedure since vivo has a pCR to define this procedure

- Made the trigger from the lower layers optional

Please let me know if you have any comments on this draft revision.

-

Lena Chaponnière (Qualcomm)

An updated revision is available:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200350\_v5.zip

Changes from v4 to v5 include:

- Confirming Apple as co-signer

- Updating the stop condition for timer T5yyy to “Upon receiving a PC5 signalling message or PC5 user plane data”

-

Christian Herrero (Huawei)

Thanks for considering our comments which are covered in the latest version.

We would like to co-sign the p-CR.

-

Lena Chaponnière (Qualcomm)

A further draft revision is available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200350\_v6.zip

Changes from v5 to v6 include:

- Adding Huawei, HiSilicon as co-signers

- Adding the stopping of T5xxx in Figure 6.1.2.x.2 (since the initiating UE stops T5xxx before sending the DIRECT LINK KEEPALIVE REQUEST message)

Please let me know if you have further comments. Also note that the tdoc number for the revision will be C1-200845.

**Decision:** The document was **revised to C1-200845**.

**C1-200845 PC5 unicast link keep-alive procedure**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Qualcomm Incorporated / Lena*

(Replaces C1-200350)

**Decision:** The document was **agreed**.

**C1-200385 Adding abnormal case on the network side**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

**Discussion:**

Ivo Sedlacek (Ericsson): - in case REJECT is not delivered, the PCF should wait for retransmission of REQUEST. If the procedure is aborted, the PCF will need to handle any retransmitted REQUEST again.

Xiaoguang Chen (Huawei):

The abnormal case is dealt with as other 3GPP specifications do, quote:

TS 24.334 clause 7.2.9.2:

7.2.9.2 Abnormal cases in the ProSe Function

In case of the messages listed below:

- UE\_REGISTRATION\_RESPONSE;

- APPLICATION\_REGISTRATION\_RESPONSE;

- PROXIMITY\_REQUEST\_RESPONSE;

- PROXIMITY\_ALERT;

- UE\_DEREGISTRATION\_RESPONSE;

- CANCEL\_PROXIMITY\_RESPONSE; and

- PROXIMITY\_REQUEST\_VALIDATION\_RESPONSE.

the following abnormal cases can be identified.

a) Indication from the lower layer of transmission failure of a message

After receiving an indication from lower layer that a message has not been successfully acknowledged (e.g. TCP ACK is not received), the ProSe Function shall abort the procedure.

---------------------------------------------------------------------------------------------------

TS 24.501 clause 5.4.2.6:

5.4.2.6 Abnormal cases in the UE

The following abnormal cases can be identified:

a) Transmission failure of SECURITY MODE COMPLETE message or SECURITY MODE REJECT message indication from lower layers (if the security mode control procedure is triggered by a registration procedure).

The UE shall abort the security mode control procedure and re-initiate the registration procedure.

---------------------------------------------------------------------------------------------------

TS 24.501 clause 5.4.2.7:

5.4.2.7 Abnormal cases on the network side

The following abnormal cases can be identified:

a) Lower layer failure before the SECURITY MODE COMPLETE or SECURITY MODE REJECT message is received.

The network shall abort the security mode control procedure.

-----------------------------------------------------------------------------------------------------

On the other hand, there is a timer for UE for retransmission of REQUEST, but there is not a timer for PCF in case REJECT.

-

Ivo Sedlacek (Ericsson) the cases below are different than the one discussed.

However, after some further thinking, I withdraw the comment.

**Decision:** The document was **agreed**.

**C1-200386 Correction for the list of the V2X services authorized for PPPR over V2X PC5 in E-UTRA**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

**Discussion:**

Ivo Sedlacek (Ericsson): We generally support the pCR.

However, the pCR does not contain the entire subclause 5.2.3. Can you please update the pCR so that entire modified subclause is shown? Thank you.

With the change, Ericsson would like to cosign revision of C1-200386.

--

Xiaoguang Chen

please see a draft revision of C1-200386 & C1-200388 in [1] and [2],respectively.

Changes are almost same:

- Ericsson as cosigner added;

- Clause 5.2.3 complemented entirely with a minor change “a” to “an”;

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200386-draft\_v1.doc

[2] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200388-draft\_v1.doc

-

Ivo Sedlacek (Ericsson)

nearly ok.

Very minor comment "Clause 5.2.3 complemented entirely with a minor change “a” to “an”" seems to be done in both pCRs. It should be in one pCR only.

--

Chen

Thanks for your feedback. I removed the minor change in C1-200388 so that only kept in C1-200386 as the below:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200388-draft\_v2.doc

Ivo Sedlacek (Ericsson)

Looks OK. Thank you.

**Decision:** The document was **revised to C1-200874**.

**C1-200874 Correction for the list of the V2X services authorized for PPPR over V2X PC5 in E-UTRA**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200386)

**Decision:** The document was **revised to C1-201015**.

**C1-201015 Correction for the list of the V2X services authorized for PPPR over V2X PC5 in E-UTRA**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200874)

**Decision:** The document was **agreed**.

**C1-200387 Correction for the list of V2X service identifier to PDU session parameters mapping rules over V2X Uu**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

**Decision:** The document was **agreed**.

**C1-200388 Correction for the list of V2X service identifier to Tx profiles mapping rules over V2X PC5**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

**Discussion:**

Ivo Sedlacek (Ericsson) We generally support the pCR.

However, the pCR does not contain the entire subclause 5.2.3. Can you please update the pCR so that entire modified subclause is shown? Thank you.

With the change, Ericsson would like to cosign revision of C1-200388.

**Decision:** The document was **revised to C1-200875**.

**C1-200875 Correction for the list of V2X service identifier to Tx profiles mapping rules over V2X PC5**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200388)

**Decision:** The document was **revised to C1-201016**.

**C1-201016 Correction for the list of V2X service identifier to Tx profiles mapping rules over V2X PC5**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200875)

**Decision:** The document was **agreed**.

**C1-200389 Correction for the list of V2X service identifier to V2X E-UTRA frequency mapping rules over V2X PC5**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

**Decision:** The document was **agreed**.

**C1-200390 Resolution of the editor's note on details about PC5 unicast link establishment procedure not accepted by the target UE**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

**Discussion:**

Ivo Sedlacek (Ericsson): Table8.4.x.1 not aligned with Figure 8.4.x.1 on fields in 2nd octet

Xiaoguang Chen (Huawei): The table and the figure will be aligned and made in the same width in the last revision.

Lena Chaponnière (Qualcomm): - This pCR conflicts with C1-200349 which also introduces the PC5 signalilng protocol cause value IE

- An authentication failure would not be sent in the DIRECT LINK ESTABLISHMENT REJECT message, it would be sent in the DIRECT LINK AUTHENTICATION REJECT message (see C1-200349)

- “Link setup failure due to other errors” should be ”Protocol error, unspecified” to be consistent with the terminology in e.g. TS 24.501

- NOTE 1 in 6.1.2.2.5 should be just “NOTE” as there is only one note in this subclause

- Rather than just using 4 bits in the octet for the PC5 signalling protocol cause value, it is more easily extensible to use the full octet and to make unused values spare (as done for e.g. the 5GMM cause value IE in TS 24.501)

Xiaoguang:

- This pCR conflicts with C1-200349 which also introduces the PC5 signalilng protocol cause value IE

OK. They will be merged at last.

- An authentication failure would not be sent in the DIRECT LINK ESTABLISHMENT REJECT message, it would be sent in the DIRECT LINK AUTHENTICATION REJECT message (see C1-200349)

This will be updated after C1-200349 agreed.

- “Link setup failure due to other errors” should be ”Protocol error, unspecified” to be consistent with the terminology in e.g. TS 24.501

OK.

- NOTE 1 in 6.1.2.2.5 should be just “NOTE” as there is only one note in this subclause

OK.

- Rather than just using 4 bits in the octet for the PC5 signalling protocol cause value, it is more easily extensible to use the full octet and to make unused values spare (as done for e.g. the 5GMM cause value IE in TS 24.501)

The related words have been already in the existing pCR:

All other values are reserved.

Bit 5 to 8 of octet 2 are spare and shall be coded as zero.

-

Lena Chaponnière (Qualcomm)

Thanks for your answers. About the last point, what I am proposing is to reuse the encoding of the 5GMM cause value IE, ie use the full octet, not just 4 bits out of it, as in:

The PC5 signalling protocol cause value information element is coded as shown in figure 8.4.j.1 and table 8.4.j.1.

8 7 6 5 4 3 2 1

PC5 signalling protocol cause value IEI octet 1

PC5 signalling protocol cause value contents octet 2

Figure 8.4.j.1: PC5 signaling protocol cause value information element

Table 8.4.j.1: PC5 signaling protocol cause value information element

PC5 signaling cause value (octet 2)

Bits

8 7 6 5 4 3 2 1

0 0 0 0 0 0 0 1 Integrity failure

0 0 0 0 0 0 1 0 UE security capabilities mismatch

0 0 0 0 0 0 1 1 Protocol error, unspecifiedr

Any other value received by the UE shall be treated as 0000 0011, "protocol error, unspecified".

--

Xiaoguang Chen(Huawei): I take it on board, but I will provide the revision including other comments after the IE-related p-CRs agreed.

-

Chen

The revision of C1-200390 is as below:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200390-draft\_v1.doc

Changes:

- The value numbering changed to “aaa”, ”bbb”, ”ccc”, ”ddd”

- Security related cause value removed

- “Link setup failure due to other errors” changed to ”Protocol error, unspecified”

- “NOTE 1” changed to “NOTE”

- "PC5 signalling protocol cause value contents" changed to "PC5 signalling cause value”

- “The purpose of the PC5 signaling protocol cause value information element is to indicate the error cause values used in the PC5 signalling protocol procedures”

- “Table 8.4.x.1: PC5 signaling protocol cause value information element” aligned (use the full octet)

- Wording: use ”signalling” and not ”signaling” (both in body text and figures) to align within TS and to other TSs (e.g. 24.501)

-

Ivo Sedlacek (Ericsson)

minor comment:

- "PC5 Signalling Protocol cause value" -> "PC5 signalling protocol cause value"

Chen (Huawei)

The updated revision is available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200876\_was\_C1-200390-draft\_v2.doc

Changes:

- Every "PC5 Signalling Protocol cause value" -> "PC5 signalling protocol cause value"

- Minor editorial changes to “NOTE”

Ivo Sedlacek (Ericsson)My comments were addressed. Thank you.

Lena Chaponnière (Qualcomm)

The revision looks good except that you will need to remove changes on changes (new text shown as deleted) in the submitted version of the revision.

Chen

I’ve removed the changes on changes and the updated revision is at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200876\_was\_C1-200390-draft\_v3.doc

new version:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200876\_was\_C1-200390-draft\_v4.doc

Lena: good

**Decision:** The document was **revised to C1-200876**.

**C1-200876 Resolution of the editor's note on details about PC5 unicast link establishment procedure not accepted by the target UE**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200390)

**Decision:** The document was **revised to C1-201017**.

**C1-201017 Resolution of the editor's note on details about PC5 unicast link establishment procedure not accepted by the target UE**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200876)

**Decision:** The document was **agreed**.

**C1-200391 Resolution of the editor's note on validity timer**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon / Chen*

**Discussion:**

Lena Chaponnière (Qualcomm) This pCR seems to conflict with C1-200292 and C1-200293 which specify an expiration time (ie absolute UTC time) rather than a validity timer.

Xiaoguang Chen(Huawei) The expiration time and the validity timer is the same thing. I’ve found that in stage 2 TS 23.287 uses validity timer, and the validity timer is first used in TS 24.587 and then the expiration time is added. Therefore, from my side, it should be aligned with stage 2 and early TS24.587. But it is OK to use “expiration time”. The word should be kept consistent.

Christian Herrero (Huawei): I kindly disagree. As per my comments to C1-200292 and others, in light of SA2 LS in C1-200231 and latest version of TS 23.387, CT1 need to be aligned with SA2 decisions and also keep consistency in our TS 24.587, and therefore we propose to replace the “expiration timer” wording by “validity timer” and remove the editor’s notes regarding this (see C1-200391). Hence, we would like that the specification uses a single wording and not two to refer to the very same thing, i.e., “validity timer”.

Ivo: if "validity timer" is used in the V2X configuration, would the "validity timer" be an absolute UTC time as in 24.385 or a relative time?

Lena Chaponnière (Qualcomm) If the parameter is called “validity timer” then to be consistent it should be a relative time. Using a relative time over an absolute UTC time also has the advantage that you can set to the timer to a special value (0 or deactivated) so that it never expires (for operators who want the policy to be valid until it is updated).

Ivo Sedlacek (Ericsson)

if the validity time in the V2X configuration is a relative time, the UE would need to remember when the UE received the UE policy sections with the V2XP, right? The UE is not required to do so today.

Also, operator might want to configure its UEs so that the V2X configuration for PC5 stops being valid at more-or-less the same absolute time (not exactly, but e.g. end in the same day). Then, PCF would need to calculate the relative time based on when the PCF provides the V2XP to the UE.

It deserves proper thinking-through.

I put an editor's note on this issue in the CR.

-

Lena Chaponnière (Qualcomm): I am fine with having an Editor’s note on this for now.

**Decision:** The document was **agreed**.

**C1-200437 PC5 unicast link release procedure**

*Type: pCR For: Approval  
 24.587 v1.0.1  
 Source: vivo*

**Discussion:**

Ivo Sedlacek (Ericsson):

- "PC5 Signalling Protocol procedures" - unnecessary capitalization

- 6.1.2.X.3 + 6.1.2.X.4 - why is the release of the PC5 unicast link after DIRECT LINK RELEASE ACCEPT optional?

Lena Chaponnière (Qualcomm):

- In 6.1.2.X.2, “The initiating UE shall initiate the PC5 unicast link release procedure by generating” should be “In order to initiate the PC5 unicast link release procedure, the initiating UE shall create” to be aligned with existing procedures already in TS 24.587

- In 6.1.2.X.2, I don’t see a need to introduce a separate Release Reason IE. The PC5 signalling protocol cause value IE (introduced in C1-200390 and in C1-200349) can be used. So “with a Release Reason IE indicating one of the following cause values” should be “In this message, the UE shall include a PC5 signalling protocol cause value IE indicating one of the following cause values”

- In 6.1.2.X.2, “Direct communication with the target UE is no longer allowed” should be “Direct communication with the target UE no longer allowed

- In 6.1.2.X.2, “any more” should be “anymore”

- In 6.1.2.X.3, “for this link” should be “for this PC5 unicast link”

- In 6.1.2.X.4, “may release” should be “shall release”

Yanchao Kang (vivo), to Lena:

Thanks for your comments. We are ok with most of them.

For the 2nd comment:

- In 6.1.2.X.2, I don’t see a need to introduce a separate Release Reason IE. The PC5 signalling protocol cause value IE (introduced in C1-200390 and in C1-200349) can be used. So “with a Release Reason IE indicating one of the following cause values” should be “In this message, the UE shall include a PC5 signalling protocol cause value IE indicating one of the following cause values”

We are ok to use the PC5 signalling protocol cause value IE to convey the release reason information. However I am not sure how to proceed with this comment. As you said, there are two papers that define the same IE (C1-200390 and in C1-200349), so I just define the same IE in the revision of C1-200437 and use three values of this IE for the release reason that C1-200437 needed?

-

Lena Chaponnière (Qualcomm)

Yes, my proposal would be that you define the same IE (as that defined in C1-200390 and C1-00349) in the revision of C1-200437 and use three values of this IE (e.g. ‘xxxxxxxx’, ‘yyyyyyyy’ and ‘zzzzzzzz’) for the release reasons that C1-200437 needed. Since TS 24.587 is not yet under change control, the TS rapporteur would then have to add the new IE only once in the TS, and allocate values for the code points defined in this IE by C1-200437, C1-200390 and C1-200349 when implementing the pCRs.

Christian, would this be acceptable for you?

Christian Herrero (Huawei): Yes, that would acceptable for me and will solve the current issue.

Yanchao Kang (vivo): Thanks for your clarification on how to proceed with the definition of the PC5 signalling protocol cause value IE. I am ok with the way forward.

Hello Lena and Xiaoguang,

Since we are defining the same IE in our papers (C1-200390 & in C1-200349& C1-200437), I think we better align on the wording. I have some comments for the purpose of the PC5 signalling protocol cause value IE:

“The purpose of the PC5 signaling protocol cause value information element is to indicate the error cause values used in the PC5 signalling protocol procedures.”

Since this IE is used to convey the release reason of PC5 link:

#x Direct communication to target UE no longer needed;

#y Direct communication with the target UE no longer allowed; or

#z Direct connection is not available anymore.

I think the use of “error” cause values is not proper, because now some values are not about errors.

Inspired by the purpose of the 5GSM cause value “The purpose of the 5GSM cause information element is to indicate the reason why a 5GSM request is rejected.”, I propose to use this following wording:

The purpose of the PC5 signalling protocol cause value information element is to indicate the reason why a PC5 signalling protocol procedure is rejected.

Your feedback are appreciated.

-

Xiaoguang Chen(Huawei

“The purpose of the PC5 signaling protocol cause value information element is to indicate the error cause values used in the PC5 signalling protocol procedures.” is from ProSe PC5 standard TS24.334 clause 12.5.1.7. And the release reason of C1-200437 is a new IE in TS 24.334 clause 12.5.1.8.

The release procedure in C1-200437 is not a REJECT procedure. I therefore don’t think your proposal is appropriate.

I’d prefer to add a new Release Reason IE as ProSe does for the release procedure in C1-200437.

--

Yanchao Kang (vivo)

I am ok with either new release reason IE or reuse of the PC5 signaling protocol cause value IE.

Hope to hear your opinion on this, so I can go with what most people prefers.

@Xiaoguang:

5GSM cause value is also used in PDU session release procedure.

--

Xiaoguang Chen

Thanks for your clarification.

PC5 is for both ProSe and V2X, I therefore would prefer to be aligned with ProSe. But either is OK to me too.

-

Lena Chaponnière (Qualcomm):

@Yanchao and Chen: We have a preference for re-using the PC5 signalling protocol cause value, in the same way as the 5GSM cause value can be included in a PDU session release request (as pointed out by Yanchao).

To resolve the wording issue pointed out by Chen, I suggest defining the IE as follows:

“The purpose of the PC5 signaling protocol cause value information element is to indicate the error cause values used in the PC5 signalling protocol procedures.”

-

Chen (Huawei)

I’m fine with Lena’s suggestion.

-

Yanchao Kang (vivo)

The revision of C1-200437 is now available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200824\_was\_0437\_eV2XARC\_PC5%20unicast%20link%20release%20procedure.doc

The revision of C1-200438 is now available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200825\_was\_0438\_eV2XARC\_Encoding%20of%20direct%20link%20release%20messages%20and%20parameters.doc

-

Ivo Sedlacek (Ericsson) gave comments to table and figure

Yanchao Kang (vivo)

provided detailed comments

Lena Chaponnière (Qualcomm)

Please note that in the latest draft revision of C1-200349 (available here), I am no longer defining the PC5 signaling protocol cause value IE, based on Ivo’s comments that he cannot accept message and IE definitions before SA3 has agreed contents into the V2X TS about the security procedures. So you will need to define the code point for “Protocol error, unspecified” in your pCR.

Regarding the name of the IE , I have no strong view, I am ok with either “PC5 signalling protocol cause” or “PC5-S cause” (but whatever you choose will not impact C1-200349 and its revisions as explained above).

Chen: I’d prefer “PC5 signalling”. There are a lot of “PC5 signalling” in TS 24.587 and there is no abbreviation for “PC5 signalling” in the clause 3.2 Abbrevations.

Ivo Sedlacek (Ericsson)

"PC5 signaling cause" is OK with me, as long as it is used consistently everywhere.

--

Ivo Sedlacek (Ericsson)

nearly OK.

Minor issue. The references seem to be incorrect:

8.4.x PC5 signalling protocol cause value

The purpose of the PC5 signalling protocol cause value information element is to indicate the cause value used in the PC5 signalling protocol procedures.

The PC5 signalling protocol cause value is a type 3 information element with a length of 2 octets.

The PC5 signalling protocol cause value information element is coded as shown in figure 8.4.x.1 and table 8.4.x.1.

8 7 6 5 4 3 2 1

PC5 signalling protocol cause value IEI octet 1

PC5 signalling cause value octet 2

Figure 8.4.j.1: PC5 signalling protocol cause value information element

Table 8.4.j.1: PC5 signalling protocol cause value information element

PC5 signalling cause value (octet 2)

Bits

8 7 6 5 4 3 2 1

a a a a a a a a Direct communication to the peer UE no longer needed

b b b b b b b b Direct communication with the peer UE no longer allowed

c c c c c c c c Direct connection is not available anymore

d

d

d

d

d

d

d

d

Protocol error, unspecified

Any other value received by the UE shall be treated as dddd dddd, "protocol error, unspecified".

Rest OK.

-

Christian Herrero (Huawei)

As we have expressed, we believe that the PC5 unicast link authentication procedure and the PC5 unicast link security control mode procedure need to be part of the specification and the latest version distributed is fine by us. Can you please add Huawei and HiSilicon as co-signing companies to the revision of C1-200349?

Lena Chaponnière (Qualcomm):

Thanks for your support. I have updated the draft revision to add Huawei and HiSilicon as co-signers:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200349\_v5.zip

Please note that the tdoc number for the revision will be C1-200844.

Yanchao Kang (vivo)

Figure number and table number are all corrected to 8.4.x.1, please see:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200825\_was\_0438\_eV2XARC\_Encoding%20of%20direct%20link%20release.doc

Any comments?

**Decision:** The document was **revised to C1-200824**.

**C1-200824 PC5 unicast link release procedure**

*Type: pCR For: Approval  
 24.587 v1.0.1  
 Source: vivo*

(Replaces C1-200437)

**Decision:** The document was **agreed**.

**C1-200438 Encoding of direct link release messages and parameters**

*Type: pCR For: Approval  
 24.587 v1.0.1  
 Source: vivo*

**Discussion:**

Ivo Sedlacek (Ericsson):

- "Sequence Number" + "Release Reason" + "Release Reason Content" - remove unncessary capitalization

- incorrect styles in 7.3.X.1, message type

- Table 7.3.X.1.1 - length of Release Reason should be 1 octet

- Table 7.3.X.1.1 + Table 7.3.y.1 - length of sequence number should be 1 octet

- Table 8.4.x.1 inconsistent on length of Release Reason value

- Figure 8.4.x.1 not aligned with Table 8.4.x.1 on fields in 2nd octet

Lena Chaponnière (Qualcomm): - I don’t see a need to introduce a separate Release Reason IE. The PC5 signalling protocol cause value IE (introduced in C1-200390 and in C1-200349) can be used.

- The length of the Sequence number IE should be 1 octet

-

Yanchao Kang (vivo)

Revision of C1-200438 is now available at：here

The follwing changes are made:

1. Add Ericsson as co-singer;

2. Use “PC5 signaling cause value”in the table and figure， based on Ivo’s 2nd comment;

3. Add "protocol error, unspecified"，based on Ivo’s 3rd comment;

**Decision:** The document was **revised to C1-200825**.

**C1-200825 Encoding of direct link release messages and parameters**

*Type: pCR For: Approval  
 24.587 v1.0.1  
 Source: vivo, Ericsson*

(Replaces C1-200438)

**Decision:** The document was **agreed**.

**C1-200439 PC5 unicast link identifier update procedure**

*Type: pCR For: Approval  
 24.587 v1.0.1  
 Source: vivo*

**Discussion:**

Ivo Sedlacek (Ericsson)

- 6.1.2.x.2 bullet a) - not English sentence

- "the Security Information" - unnecessary capitalization

- 6.1.2.x.3 - 2nd para should be normative

Lena Chaponnière (Qualcomm): - In subclause 6.1.2.x.3, it is not explained how the target UE determines whether it can accept the request

- The definition of the new messages introduced by this procedure is missing

Yanchao Kang (vivo)

The revision of C1-200439 is now available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200826\_was\_0439\_eV2XARC\_PC5%20unicast%20link%20identifier%20update%20procedure\_r1.doc

The following changes are made since last share:

1. Take Ivo’s comments on board.

2. Add “ InterDigital Communications?, Huawei, HiSilicon, Ericsson” as co-source.

**Decision:** The document was **revised to C1-200826**.

**C1-200826 PC5 unicast link identifier update procedure**

*Type: pCR For: Approval  
 24.587 v1.0.1  
 Source: vivo*

(Replaces C1-200439)

**Decision:** The document was **agreed**.

**C1-200440 Updates to the link modification procedure**

*Type: pCR For: Approval  
 24.587 v1.0.1  
 Source: vivo*

**Discussion:**

Lena Chaponnière (Qualcomm) It seems more robust to keep the link modification operation code. For 5G NAS, we do include the e.g. both the QoS rule identifier, and the rule operation code. This helps with error handling, for instance if one side asks the other side to delete a non-existing QoS rule.

Same comment applies to C1-200441.

Xiaoguang Chen(Huawei)

- In the last 3rd and 4th paragraph of Reason for change, “POFI” should be “PQFI”;

- The case "remove existing PC5 QoS flow(s) in the existing PC5 unicast link" should be added in the DIRECT LINK MODIFICATION ACCEPT message;

- In case of "remove an existing V2X service in the PC5 unicast link", the information should be added in the DIRECT LINK MODIFICATION ACCEPT message;

Yanchao Kang (vivo): to Xiaoguang: I will take the first comment on board.

For the 2nd and 3rd comments, if I understand you correctly, you want me to add the removed V2X service ID or the removed PQFI to the DIRECT LINK MODIFICATION ACCEPT message.

I understand you intention, but I think this is not needed, the DIRECT LINK MODIFICATION ACCEPT message itself could be the ACK for the removal of V2X service or PQF. That is the same as what we have done for the PDU session modification procedure in TS24.501, wherein the network could remove some QoS flow by the authorized QoS rules IE of the PDU SESSION MODIFICATION COMMAND message, and The UE respond with PDU SESSSION MODIFICATION COMPLETE message without indication of the removed QoS flows.

Xiaoguang Chen! My confusion is:

Your p-CR states:

If the DIRECT LINK MODIFICATION REQUEST message is to add a new V2X service, add new PC5 QoS flow(s) or modify any existing PC5 QoS flow(s) in the PC5 unicast link, the target UE shall include in the DIRECT LINK MODIFICATION ACCEPT message:

a) the PQFI and the corresponding PC5 QoS parameters that the target UE accepts.

What if the DIRECT LINK MODIFICATION REQUEST message is to remove existing PC5 QoS flow(s) in the existing PC5 unicast link? Your reply means the target UE will include in the DIRECT LINK MODIFICATION ACCEPT message ACK? Then what if only part of PC5 QoS flow(s) removal are accepted?

BTW, this specification has not specified the ACK in the DIRECT LINK MODIFICATION ACCEPT message

-

Yanchao Kang (vivo): First of all, I want to clarify that I didn’t intend to add an ACK in the DIRECT LINK MODIFICATION ACCEPT message. I am saying “the DIRECT LINK MODIFICATION ACCEPT message itself could be the ACK for the removal of V2X service or PQF”.

Secondly, regarding your question why “the PQFI and the corresponding PC5 QoS parameters that the target UE accepts” is only added for case of ” add a new V2X service, add new PC5 QoS flow(s) or modify any existing PC5 QoS flow(s)”,not for case of ” remove existing PC5 QoS flow(s) in the existing PC5 unicast link”, my understanding is :

1. For the case of “add a new V2X service, add new PC5 QoS flow(s) or modify any existing PC5 QoS flow”: It is possible that the target UE didn’t accept some PCS5 QoS flow or QoS parameters that the initiating UE sent.

2. For the case of “remove existing PC5 QoS flow(s) in the existing PC5 unicast link”, when the imitating UE want to remove some V2X service or the PC5 QoS flow, the target UE has no choice but to accept the release.

-

Xiaoguang Chen

Therefore, I suggest to add clarification for the confusion.

I provide u some exceptional use cases about “when the initiating UE wants to remove some V2X service or the PC5 QoS flow, the target UE has no choice but to accept the release”, which based on the role equivalence of the initiating UE and the target UE. But in the practical situation, there are many higher-class vehicles, e.g., police vehicles, emergency vehicles, the head vehicle of the vehicle fleet, and so on.

-

Yanchao Kang (vivo)

I don’t understand your exceptional case. For example, for the normal 3GPP service, when the UE want to release a PDU session, the network can only accept the release, no matter the PDU session is for emergency or not.

And there is no SA2 requirement that the target UE could reject the remove of a V2X service or a PQF. I think what you proposed here is a new service requirement where the “higher-class vehicles” could reject the removal of a V2X service or a PQF, and should be discussed in SA2 first.

(By the way, I don’t remember SA2 has defined such high –Class vehicles anywhere)

Xiaoguang Chen: From my side, the P-CR lacks the two cases, right? Your point is that it’s common sense on the two cases in 3GPP, and there is no need to specify the two cases, right?

Yanchao Kang (vivo): If you could show me that SA2 requirement that the target UE can reject the removal of a V2X service or PC5 QoS flow requested by the initiating UE, I will take your comment onboard.

Xiaoguang Chen:My point is no matter what the SA2 requirement is, the procedures of the two cases should be specified, just because they are missing in the P-CR.

Yanchao Kang (vivo) As I said, for the removal case, there is no need to add explicit ID in the DIRECT LINK MODIFICATION ACCEPT message. Because the target UE always accept the removal. That is the same as what we done for the PDU session modification procedure.

I can’t take your comments on board unless you provide valid reason or solid SA2 requirement

--

Xiaoguang Chen(Huawei)

I didn’t intend to add explicit ID. As you said, “remove an existing V2X service in the PC5 unicast link” is kept in the accept procedure in your P-CR, but “remove existing PC5 QoS flow(s) in the existing PC5 unicast link” is missing.

--

Yanchao Kang (vivo) I will add the description for “remove existing PC5 QoS flow(s) in the existing PC5 unicast link” in the subclause 6.1.2.3.3 and will share the draft later.

--

Yanchao Kang (vivo)

A draft revision is now available at: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision%20of%20C1-200440\_eV2XARC\_Updates%20to%20the%20link%20modification%20procedure.doc

The following changes are made:

1. Undelete the link modification operation code;

2. add the description for “remove existing PC5 QoS flow(s) in the existing PC5 unicast link” in the subclause 6.1.2.3.3

any comments?

-

Lena Chaponnière (Qualcomm)

I am fine with this revision.

-

Xiaoguang Chen(Huawei)

the link modification operation code was added 2 values. Could you please add them in subclause 8.4.5 of TS 24.587?

Then I will be fine.

-

Yanchao Kang (vivo)

I am a little confused.

The link modification operation code IE is a new IE in the Direct link modification procedure, please see C1-200441 for Encoding of direct link modification messages and parameters. I am not sure how to add that in 8.4.5 for PC5 QoS flow descriptions.

Chen provided comments to Yanchao

Yanchao Kang (vivo)

The Link modification operation code IE is a new IE, which is defined in C1-200441 now, not the “Operation code” field of the PC5 QoS flow description IE.

The two values you mentioned below are “add a new V2X service” and “remove an existing V2X service”, which are operations for a V2X service, not for a PC5 QoS flow.

I guess you have this confusion is because these two IEs both have 3 same values.

1. Firstly, we propose to delete the Link modification operation code IE in the submitted version of C1-200440, please refer the cover page for the reason for change in the original version

2. Now we add the Link modification operation code IE back based on Lena’s comments, for the sake of robust. We think the comment makes a point and take it onboard.

--

Yanchao Kang (vivo)

The revision of C1-200440 is now available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200827\_was\_0440\_eV2XARC\_Updates%20to%20the%20link%20modification%20procedure.doc

Any comments?

**Decision:** The document was **revised to C1-200827**.

**C1-200827 Updates to the link modification procedure**

*Type: pCR For: Approval  
 24.587 v1.0.1  
 Source: vivo*

(Replaces C1-200440)

**Decision:** The document was **revised to C1-200907**.

**C1-200907 Updates to the link modification procedure**

*Type: pCR For: Approval  
 24.587 v1.0.1  
 Source: vivo, Huawei, HiSilicon*

(Replaces C1-200827)

**Decision:** The document was **agreed**.

**C1-200441 Encoding of direct link modification messages and parameters**

*Type: pCR For: Approval  
 24.587 v1.0.1  
 Source: vivo*

**Discussion:**

Ivo Sedlacek (Ericsson): V2X service identifier can be a type 3 IE, with total length of 5 octets in TV formatting (rather than type 4 IE with total length of 6 octets in TLV formatting).

Xiaoguang Chen(Huawei)

- TS24.587 clause 8.4.5 states: “The PC5 QoS flow descriptions IE is a type 6 information element with a minimum length of 6 octets. The maximum length for the information element is 65538 octets.” Why is the length of PC5 QoS flow descriptions in the P-CR 3-253?

Yanchao Kang (vivo) Thanks for your comment. I will fix the length issue and share the draft later.

Yanchao Kang (vivo)

A draft revision of C1-200441 is now available at：

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision%20of%20C1-200441\_eV2XARC\_Encoding%20of%20direct%20link%20modification%20messages%20and%20parameters-r2%20(2).doc

the following change are make

1. Keep the link modification operation code

2. Correct the format of V2X service ID

3. Correct length of PC5 QoS flow descriptions

-

Ivo Sedlacek (Ericsson)

comments to the revision:

1) is it necessary to \*always\* include V2X service identifier in DIRECT LINK MODIFICATION REQUEST ? If not, the IE should have IEI and be in TV or TLV format.

2) given the size of QoS flow descriptions IE, the format should be LV-E or TLV-E.

3) QoS flow descriptions is mandatory IE in DIRECT LINK MODIFICATION REQUEST but it is indicated in TLV format. Why? Either it is mandatory and then the format should be LV-E or it is optional and then the format should be TLV-E format and IEI should be indicated (at least as TBD).

-

Yanchao Kang (vivo)

We are ok to take the first two comments on board.

For 3rd comment, QoS flow descriptions IE is an optional IE in Direct link modification request message, for example this IE is not included for the removal of a V2X service. Now its format is TLV in Table 7.3.X.1.1, I will correct it to TLV-E as you suggested.

-

Yanchao Kang (vivo)

The revision of C1-200441 is now available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200828\_was\_0441\_eV2XARC\_Encoding%20of%20direct%20link%20modification%20messages%20and%20parameters-r2.doc

Any comments?

-

Ivo Sedlacek (Ericsson)

nearly OK and Ericsson would like to cosign.

One minor comment - is it possible to indicate that IEIs need to be assigned to the optional IEs, by stating "TBD" in the IEI column?

Christian Herrero (Huawei) Thank you, Yanchao, for your work on this.

As already indicated by Chen, we are fine with your proposal. We would also like to co-sign it so can you please add both Huawei and HiSilicon? Thanks.

**Decision:** The document was **revised to C1-200828**.

**C1-200828 Encoding of direct link modification messages and parameters**

*Type: pCR For: Approval  
 24.587 v1.0.1  
 Source: vivo*

(Replaces C1-200441)

**Decision:** The document was **revised to C1-200909**.

**C1-200909 Encoding of direct link modification messages and parameters**

*Type: pCR For: Approval  
 24.587 v1.0.1  
 Source: vivo, Ericsson, Huawei, HiSilicon*

(Replaces C1-200828)

**Decision:** The document was **agreed**.

**C1-200520 Work plan for the CT1 part of eV2XARC**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **noted**.

**C1-200521 Latest reference version of draft TS 24.587**

*Type: draft TS For: Information  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **noted**.

**C1-200525 Resolution of the editor's notes on precedence of V2X configuration parameters**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

Lena Chaponnière (Qualcomm) CT1’s question to SA2 was whether the UE could “mix and match“ configuration parameters received from different sources, or should only use parameters from one given source. SA2’s answer in C1-200240 is the latter, with the exception of the parameters received from a V2X application server over V1 which can be combined with parameters received from another source (the reason for this is that a V2X application server cannot send the authorization policy parameters over V1). However the modifications in the pCR do not make this fully clear. I suggest rewording the text in 5.2.2 to:

The V2X configuration parameters can be:

a) pre-configured in the ME;

b) configured in the USIM;

c) provided as a V2XP using the UE policy delivery service as specified in annex D of 3GPP TS 24.501 [3]; or

d) provided by a V2X application server via V1 reference point; or

e) a combination of d) and either a), b), c) or d)

The UE shall use the V2X configuration parameters in the following order of decreasing precedence:

a) the V2X configuration parameters provided as a V2XP using the UE policy delivery service as specified in annex D of 3GPP TS 24.501 [3];

b) the V2X configuration parameters provided by a V2X application server via V1 reference point

c) the V2X configuration parameters configured in the USIM; and

d) the V2X configuration parameters pre-configured in the ME.

-

Christian Herrero (Huawei)

I have produced a revision which should take your comment into account:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-revision-of-C1-200525-v1.doc

Please, let me know if the revision is fine by you.

-

Christian Herrero (Huawei)

Please, consider only v2 of the document:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-revision-of-C1-200525-v2.doc

Lena Chaponnière (Qualcomm)

Thanks for taking into account my feedback. v2 addresses my comments.

**Decision:** The document was **revised to C1-201028**.

**C1-201028 Resolution of the editor's notes on precedence of V2X configuration parameters**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon /Christian*

(Replaces C1-200525)

**Decision:** The document was **agreed**.

**C1-200536 Operations for broadcast mode and groupcast mode communication over PC5**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

Ivo Sedlacek (Ericsson):

- broken styles of headlines

- wrong style of A) bullet list

- "Then, there can be two conditions:" seems strange

- "according to the mapping rules specified in subclause 5.2.3" - which mapping rules? There are several.

- what is meant by " build a new context for the destination layer-2 ID"?

- "set up a new PC5 QoS rule, the PC5 QoS rule contains:" and "a set of packet filters" - which packet filters?

- 6.1.3.2.4 - the bullet list starting with 3) should start with 1)

Christian Herrero (Huawei) replied to Ivo in details.

Ivo provided further comments

**Decision:** The document was **revised to C1-200900**.

**C1-200900 Operations for broadcast mode and groupcast mode communication over PC5**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon /Christian*

(Replaces C1-200536)

**Decision:** The document was **agreed**.

**C1-200537 Data transmission over PC5 unicast link**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

Ivo Sedlacek (Ericsson):

- "The pair of layer-2 IDs shall be associated with a PC5 unicast link context." - which pair?

- 6.1.2.X - why is providing source layer-2 ID and destination layer-2 ID to lower layers optional? Shouldn't it be conditional or mandatory?

Christian Herrero (Huawei) made a detailed reply to Ivo;

Ivo Sedlacek (Ericsson)

draft-revision-of-C1-200537-v1.doc looks OK. Thank you for taking my comment into consideration.

Ericssson would like to cosign.

**Decision:** The document was **revised to C1-200899**.

**C1-200899 Data transmission over PC5 unicast link**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Huawei, HiSilicon /Christian*

(Replaces C1-200537)

**Decision:** The document was **agreed**.

**C1-200538 Introduction of “PC5 Unicast Link Identifier Update Procedure”**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: InterDigital Communications*

**Discussion:**

Yanchao Kang (vivo):

1. According to the agreed paper S2-2000953, if the target UE has the pravicy configuration, it will update its identifier after receiving the link id update rrequest message

2. In clause 6.1.2.4.3, bullet f), g) and h) are not the IEs included in the link update accept message. These are the UE’s behaviours. Same as the bullet e) and f) in subclause 6.1.2.4.4.

3. The format of figure 6.1.2.4.2 is not right.

4. The number of the timers are not defined yet.

Lena Chaponnière (Qualcomm)

- overlaps with C1-200439

- subclause 6.1.2.4 (and its subclauses) should be numbered 6.1.2.x instead

- issues with style of bulleted lists in several subclauses (bullets ending with “.” Instead of “;” or ending with nothing, missing “and/or”)

- New timer should be numbered T5xxx instead of T5002

- There seems to be an issue with the formatting of Figure 6.1.2.4.2

- In subclause 6.1.2.4.3, it is not explained how the target UE determines whether it can accept the request

- Definition of the new messages introduced by this procedure is missing

Christian Herrero (Huawei): We support to add the PC5 Unicast link identifier update procedure so we eventually would like to co-sign the final p-CR.

However, we agree that C1-200538 and C1-200439 overlap and they are in fact very similar so they should be merged but both p-CRs have a number of issues to be corrected (as already indicated by Ivo and Lena so no need to repeat any of them plus some editorials, e.g., unnecessary capitalizations, ..). My question is which one of the p-CRs is going for revision? I have a preference for vivo’s p-CR as the basis.

Behrouz Aghili (Interdigital): And thanks for the provided comments. I will touch base with vivo (Yanchao?) and ask for a possible merger of the two pCRs. On Lena's comments:

- overlaps with C1-200439

- subclause 6.1.2.4 (and its subclauses) should be numbered 6.1.2.x instead [BA: May I ask “why”? Subclause 6.1.2 is about Unicast mode communication over NR based PC5 and the other procedures (Link Establishment and Modification have already been presented in 6.1.2.2 and 6.1.2.3 respectively, so the next procedure should be 6.1.2.4]

- issues with style of bulleted lists in several subclauses (bullets ending with “.” Instead of “;” or ending with nothing, missing “and/or”)

- New timer should be numbered T5xxx instead of T5002 [BA: Since T5000 & T5001 were already defined, I only stepped up the Timer number. Is there any specific reason behind your request?]

- There seems to be an issue with the formatting of Figure 6.1.2.4.2 [BA: Yes, I know. I have an issue with Visio and have asked my colleagues for help!]

- In subclause 6.1.2.4.3, it is not explained how the target UE determines whether it can accept the request [BA: Ok, I will modify that part to resemble the other cases]

- Definition of the new messages introduced by this procedure is missing [BA: In fact, I was initially leaning toward defining the message. However, I noticed that the messages for the Modification procedure are also missing and decided, therefore, to wait…]

--

Yanchao Kang (vivo)

Sorry for the late response, I have been discussing with my colleague on how to merging these two paper. A draft revision of C1-2000439 is now available at: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision%20of%20C1-200439\_eV2XARC\_PC5%20unicast%20link%20identifier%20update%20procedure.doc

To Lena:

Some text is added to the beginning of 6.1.2.x.3 to address your comments.

To Behrouz,

The draft revision merge the 6.1.2.x.4 and 6.1.2.x.7.2 from interdigital’s paper in C1-200538.

There are some difference between C1-200538 and C1-200439, but we didn’t take it into the revision:

1. According to the agreed paper S2-2000953, if the target UE has the pravicy configuration, it will update its identifier after receiving the link id update rrequest message, this is not captured in C1-200538

2. In clause 6.1.2.4.3, bullet f), g) and h) are not the IEs included in the link update accept message. These are the UE’s behaviours. Same commets to the bullet e) and f) in subclause 6.1.2.4.4.

3. C1-200538 has some requirement on cypher the new identifiers, such as ”The target UE shall cypher the new identifiers before transmitting the message” ,“The initiating UE shall cypher the new identifiers before transmitting the message. ”

we thought with the paper C1-200349 and its revision, which define the authentication and SMC procedure for PC5 link, all the PC5-signalling message sent with cipher and integrity protection after the establishment of security context for PC5 link.

Not sure if SA3 has any specific cypher requirement for transmission

--

Ivo Sedlacek (Ericsson)

1) in creation of DIRECT LINK IDENTIFIER UPDATE ACCEPT in 6.1.2.x.3, would it be possible to use similar style as in creation of DIRECT LINK IDENTIFIER UPDATE REQUEST in 6.1.2.x.2? I.e.:

---------------

If the target UE has the privacy configuration as specified in clause 5.2.3 and decides to change its identifier, the target UE shall create the DIRECT LINK IDENTIFIER UPDATE ACCEPT message. In this message, the target UE:

a) shall include the target UE’s new layer 2 ID assigned by itself;

b) shall include the new security information;

c) may include the target UE’s new application layer ID received from upper layer; and

d) may include the new IP address/prefix if IP communication is used.

---------------

Reason: the structure above allows for "should" and "may", while the other structure does not.

2) bullets b) and c) in 6.1.2.x.4 seem to provide conflicting information - only one of the bullets should remain.

Upon receipt of the DIRECT LINK IDENTIFIER UPDATE ACCEPT message, the initiating UE shall stop timer Txxxx and respond with a DIRECT LINK IDENTIFIER UPDATE ACK message. In this message, the initiating UE:

a) shall include the target UE’s new layer 2 ID, if received;

b) shall include the target UE new Application Layer ID, if received;

c) may include the target UE’s new application layer ID, if received; and

d) may include the new IP address/prefix, if received.

With the changes above, Ericsson would like to cosign.

-

Ivo Sedlacek (Ericsson)

My comments were addressed.

Behrouz Aghili (Interdigital):Thanks a lot Yanchao. I have sent it to my colleagues who follow V2X closely and hope that we could get back to you soon. I have to say that the time difference does not really help!

Yanchao Kang (vivo)

I have upload a draft which addresses comments received from Behrouz offline, please see:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200826\_was\_0439\_eV2XARC\_PC5%20unicast%20link%20identifier%20update\_0227.doc

Merged into C1-200439 and its revisions.

**Decision:** The document was **merged**.

**C1-200595 Triggering service request procedure for V2X communication over PC5 interface**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1968 Cat: B (Rel-16)  
  
 Source: LG Electronics / SangMin*

**Decision:** The document was **agreed**.

**C1-200596 Discussion on multiple V2X services during the direct link establishment procedure**

*Type: discussion For: Discussion  
 Source: LG Electronics / SangMin*

**Discussion:**

Yanchao Kang (vivo):

For the paper C1-200596, vivo don’t agree with proposal 1:

Proposal 1. Current description and coding of direct link establishment request message shall be updated to support inclusion of multiple V2X service identifiers

The reasons are as following:

1. We see no strong reason from the real V2X services that have to support multiple V2X service during the PC5 link establishment procedure.

2. The current link modification procedure can add new V2X service to the existing PC5 link.

3. Inclusion of multiple V2X service identifier to the direct link establishment request will introduce lots complexity in the PC5 link establishment procedure:

a) If multiple V2X service are included in one link establishment request message, it needs to convey the relationship between V2X service and the PQFIs;

b) The link establishment accept message has to be extended to include the V2X service ID that target UE accepts;

4. According to the descriptions in TS23.287, if the UE has the interest on the announcing V2X service, it responds with a accept message. (This mean only one V2X service). If multiple V2X service are include, there is no SA2 requirement that the target UE are interested on all the V2X service or some of the V2X servicess.

5. If multiple V2X service are included in a establishment request message, the UE has to ensure that all the V2X service ID are linked to the same UE application layer ID.

--

Sang Min Park (LG Electronics)

Thanks for your comment on this discussion paper.

I understand your observations / reasons for disagreeing the proposal 1. I have waited for other company’s view on this issue, but since not so much interests on this issue were identified…

So I assume that

1) for a direct link establishment procedure, only one V2X service is added to the PC5 link.

2) After that, if more V2X services are to be added, direct link modification procedure can do so.

If CT1 has such an understanding on the scenario, we are fine to withdraw or postpone relevant documents (0597 is related to proposals 1,2 and 3).

One additional question is that, is this principle also applied to the modification procedure, i.e. one direct link modification procedure only handles one V2X service including adding a new service and providing PC5 QoS flow descriptions for the V2X service?

If so, then we also don’t need any further update to PC5 QoS flow description IE as suggested in C1-200598 (or other way), but if a modification procedure can update more than one V2X services, still mapping between PQF description and V2X service needs to be considered.

Also if there are more companies interested in this issue, please provide your opinion. It would be appreciated.

-

Lena Chaponnière (Qualcomm)

Qualcomm’s view is that LGE’s proposal is aligned with the current SA2 requirements, so we support the proposal. Also note that it would be difficult to add this capability of supporting multiple V2X service identifiers in e.g. Rel-17 as the initiating UE would not know in advance if the target UE supports receiving multiple V2X service identifiers in the DIRECT LINK ESTABLISHMENT REQUEST message.

Another comment is that the 1-1 mapping of V2X Service and PC5 QoS Flow (PFI) is only for non-IP based services (this is because for non-IP bases services, there is no port information to do the traffic differentiation).

**Decision:** The document was **noted**.

**C1-200597 Multiple V2X service identifiers in DIRECT LINK ESTABLISHMENT REQUEST message**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: LG Electronics / SangMin*

**Discussion:**

Ivo Sedlacek (Ericsson)

- 6.1.2.2.2 "V2X service identifier(s)" -> "one or more V2X service identifier(s)"

- 6.1.2.2.3 "it is interested in the V2X service(s) identified by the V2X service identifiers IE" - can you please clarify whether the target UE has to be interested in \*all of them\* or \*at least one of them\*. If \*at least one of them\*, then DIRECT LINK ESTABLISHMENT ACCEPT should indicate which of the V2X service identifier(s) indicated in the DIRECT LINK ESTABLISHMENT REQUEST are interesting for the target UE.

Xiaoguang Chen(Huawei)

- Conflicts with C1-200326 on the V2X service identifier IE;

Sang Min Park (LG Electronics)

The first comment is valid, I’ll fix it.

For the second comment, my understanding is the latter, “at least one of them”. If so, the V2X service identifiers IE should be added to the ACCEPT message as well. I’ll update accordingly.

Note that CT1 has not reached a consensus on whether multiple V2X service ids are included in a single message or not. So if we get agreement on the way forward, I’ll revise this pCR and update for your comments, or withdraw it.

Also Xiaoguang has notified the conflict with 0326, which we had discussed during the CC#2. As I said above, I’ll revise this pCR after we agree on the way forward.

**Decision:** The document was **postponed**.

**C1-200598 Association between V2X service id and PC5 QoS flow description**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: LG Electronics / SangMin*

**Discussion:**

Ivo Sedlacek (Ericsson): V2X services can be added to and removed from the PC5 unicast link. It is not clear how to identify the V2X service in such case, given that the coding refers solely to DIRECT LINK ESTABLISHMENT REQUEST.

Xiaoguang Chen(Huawei)

- This pCR conflicts with C1-200326 which defines the V2X service identifier IE, especially the length;

- This pCR Alt b) conflicts with C1-200440 in operation code. C1-200440 would delete the link modification operation code and the operation code octet may be deleted.

- In alt b, there is a risk that 5 bits index is not enough for 4 octets V2X service identifier when a lot of V2X service identifiers are included.

Sang Min Park (LG Electronics)

So according to your opinion, the other alternative (alt a) using full V2X service ID itself seems simpler and better solution.

For the 1st comment, I also understand and will follow the conclusion of the discussion on multiple V2X service ID.

For the 2nd and 3rd comments, how many V2X service in one unicast link is not clear, but considering the nature of “sidelink” connection, 32 seems enough.

Anyway, if the group prefer to use full V2X service id, which may resolve your concerns, I’ll revise the pCR accordingly.

Anyway, the life of this pCR depends on the multiple V2X service ID issue, so I would rather wait for the conclusion of that discussion, and then I’ll revise the paper or postpone it accordingly.

**Decision:** The document was **postponed**.

**C1-200603 Latest reference version of draft TS 24.588**

*Type: draft TS For: Information  
 24.588 v1.0.1  
 Source: LG Electronics / SangMin*

**Decision:** The document was **noted**.

**C1-200632 PC5 unicast link keep-alive procedure – additions to C1-200350**

*Type: pCR For: Agreement  
 24.587 v1.0.1  
 Source: Apple*

**Abstract:**

Propose additional text on top of C1-200350.

**Discussion:**

Merged into C1-200350 and its revisions.

**Decision:** The document was **merged**.

**C1-200652 Clean-up for TS 24.588**

*Type: pCR For: Agreement  
 24.588 v1.0.1  
 Source: LG Electronics / SangMin*

**Decision:** The document was **agreed**.

#### 16.2.14 RACS (CT4 lead)

**C1-200340 RACS CT work plan**

*Type: discussion For: Information  
 Source: Qualcomm Incorporated / Lena*

**Decision:** The document was **noted**.

**C1-200341 Proposed way forward on remaining CT1 items for RACS**

*Type: discussion For: Decision  
 Source: Qualcomm Incorporated / Lena*

**Decision:** The document was **noted**.

**C1-200342 UE radio capability ID assignment via GUTI reallocation procedure**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3328 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

**Discussion:**

Mikael Wass (Ericsson): My comment on this CR is that the deletion indication in GUTI reallocation command seems to be handled in the UE as a parameter to store (5.4.1.3):

“in WB-S1 mode, if the UE supports RACS, store the UE radio capability ID or UE radio capability ID deletion indication, if provided”

Whereas my understanding is that it is an indication that triggers UE action (delete Network-assigned RACS IDs) and there will be no storing of this indication.

Further I think that for the two new IEs, only one of then shall be provided in the message. We normally do not use Conditional IEs (even if that might be an option), but I think it would be good to express in inclusion criteria, or in some other way.

Lena Chaponnière (Qualcomm): Thanks for your comments, I agree with them. I have attempted to address them in Revision\_of\_C1-200324\_v1 which has been uploaded to the drafts folder:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200342\_v1.zip

Please let me know if you have any remaining comments.

Mikael Wass (Ericsson): Thanks for the revision. Resolves my concerns/comments and I have no further comments.

Lena Chaponnière (Qualcomm)

Thanks for your feedback. I have uploaded the revision to the 3GPP server, the tdoc number of the revision is C1-200841.

**Decision:** The document was **revised to C1-200841**.

**C1-200841 UE radio capability ID assignment via GUTI reallocation procedure**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3328 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

(Replaces C1-200342)

**Decision:** The document was **agreed**.

**C1-200343 Finalizing provisioning of manufacturer-assigned UE radio capability IDs at the UE**

*Type: CR For: Agreement  
 24.368 v16.2.0 CR-0045 Cat: C (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

**Decision:** The document was **agreed**.

**C1-200344 Removal of Editor’s note on applicability of RACS to SNPNs**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1886 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

**Decision:** The document was **agreed**.

**C1-200345 Finalizing the encoding of the UE radio capability ID**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1887 Cat: C (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

**Decision:** The document was **agreed**.

**C1-200346 UE radio capability ID deletion upon Version ID change**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1888 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

**Discussion:**

Sung Hwan Won (Nokia) on 346, 347

I would like to request to add Nokia, Nokia Shanghai Bell as co-sourcing companies.

Lena Chaponnière (Qualcomm)

I have uploaded draft revision of both CRs to the drafts folder:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200346\_v1.zip

and

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200347\_v1.zip

The only change in the revisions is to add Nokia, Nokia Shanghai Bell as co-sourcing company.

Lena Chaponnière (Qualcomm)

I have now revised C1-200346 and C1-200347 to, respectively, C1-200842 and C1-200843, which have been uploaded to the 3GPP server. Again the only change in the revisions is to is to add Nokia, Nokia Shanghai Bell as co-sourcing companies.

Sung Hwan Won (Nokia)

Thank you for adding the co-sourcing companies. They look good.

**Decision:** The document was **revised to C1-200842**.

**C1-200842 UE radio capability ID deletion upon Version ID change**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1888 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated, Nokia, Nokia Shanghai Bell*

(Replaces C1-200346)

**Decision:** The document was **agreed**.

**C1-200347 UE radio capability ID deletion upon Version ID change**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3329 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

**Discussion:**

Lena Chaponnière (Qualcomm)

I have uploaded draft revision of both CRs to the drafts folder:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200346\_v1.zip

and

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/Revision\_of\_C1-200347\_v1.zip

The only change in the revisions is to add Nokia, Nokia Shanghai Bell as co-sourcing company.

**Decision:** The document was **revised to C1-200843**.

**C1-200843 UE radio capability ID deletion upon Version ID change**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3329 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated / Lena*

(Replaces C1-200347)

**Decision:** The document was **agreed**.

**C1-200402 RACS not apply for non-3GPP access**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1902 Cat: F (Rel-16)  
  
 Source: vivo / Yanchao*

**Discussion:**

Lena Chaponnière (Qualcomm): this CR overlaps with the changes on C1-200725, which covers more changes. Have a preference for progressing C1-200725.

Yanchao Kang (vivo): For those features that only apply to 3GPP access, such as: LADN, MICO, CIoT, UAC, DRX, service area restrictions and etc., we only mention that in the general sub clause 4.7.2.1, and no conditions are added for detailed behaviors.If we add the corresponding conditions for every detailed behaviors, the specification would be too complex and redundant.

I think we should follow the same principle for RACS not applicable to non-3GPP access, and only capture “RACS does not apply to Non-3GPP access” in the general section.

Therefore, all the detailed changes of “the procedure is for 3GPP access” in C1-200725 are not needed. We propose C1-200402 as way forward.

Lena Chaponnière (Qualcomm): As mentioned on the other thread about C1-200725, I can accept C1-200402 as the way forward if that is preferred by most companies.

-

Yanchao Kang (vivo)

I have draft a revision of C1-200402, which is available at: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/revision%20of%20C1-200402.docx

The only change is:

- Add the change in subclause 4.16, which was original from C1-200725.

Comments are welcome.

Hello sung,

Are you ok to merge C1-200725 into the revision of C1-200402? Hope to hear your reply. Thanks.

Lena Chaponnière (Qualcomm): The draft revision looks good to me except that 4.16 is missing from the clauses affected in the coversheet.

Yanchao Kang (vivo);: I will fix the cover page.

Sung Hwan Won (Nokia): I am fine with Yanchao’s revised paper and would like to co-source it. I think that still one part in my CR is worthy to be kept. Please see the revision in the following link.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200xxx\_was\_0725\_non-3GPP\_access.docx

Lena Chaponnière (Qualcomm) I agree that this change is useful, so I am fine with your revision.

Yanchao Kang (vivo)

The revision of C1-200402 is now available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200829.zip

Any comments?

**Decision:** The document was **revised to C1-200829**.

**C1-200829 RACS not apply for non-3GPP access**

*Type: CR For: -  
 24.501 v16.3.0 CR-1902 rev 1 Cat: F (Rel-16)  
  
 Source: vivo / Yanchao*

(Replaces C1-200402)

**Decision:** The document was **agreed**.

**C1-200463 Clarification of the cause of start of T3550**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1922 Cat: F (Rel-16)  
  
 Source: vivo*

**Decision:** The document was **agreed**.

**C1-200720 UE behaviour upon receipt of a UE radio capability ID deletion indication**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2002 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **agreed**.

**C1-200722 UE behaviour upon receipt of a UE radio capability ID deletion indication**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3336 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **agreed**.

**C1-200723 Format of the UE radio capability ID**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2003 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lena Chaponnière (Qualcomm): fine with the change but it is already covered in C1-200345, which covers more changes. I suggest merging C1-200723 into C1-200345

Sung Hwan Won (Nokia): OK with the suggestion.

Merged into C1-200345 and its revisions

**Decision:** The document was **merged**.

**C1-200725 RACS not applicable for non-3GPP access**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2005 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lena Chaponnière (Qualcomm): changes in subclause 4.7.2 (as done in C1-200402) are missing.

Mikael Wass (Ericsson): For the proposed changes, what is the justification to add “the procedure is for 3GPP access” for the RACS parameters? I cannot see that this has been done for other parameters applicable to 3GPP access only, so I think these additions are not needed.

Yanchao Kang (vivo): I think we should follow the same principle for capturing a specific feature not applicable for non-3GPP access, which is only capture that in general section, same as LADN, MICO, CIoT, UAC, DRX, service area restrictions and etc.

Therefore, all the detailed changes of “the procedure is for 3GPP access” in C1-200725 are not needed. We propose C1-200402 as way forward.

Lena Chaponnière (Qualcomm): If the majority view is to only make the change in 4.7.2, I can live with that and accept C1-200402 as the way forward.

**Decision:** The document was **revised to C1-200809**.

**C1-200809 Additional condition to change UE radio capability ID during mobility registration update**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2005 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200725)

**Decision:** The document was **agreed**.

**C1-200726 UE radio capability information storage not needed for RACS**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2006 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lena Chaponnière (Qualcomm): The CR coversheet states that there is no need for the AMF to store the UE radio capabilities when the UE supports RACS, but this does not seem correct: TS 23.501 subclause 5.4.4.1a contains the following requirement on the AMF supporting RACS:

In order to be able to interpret the UE Radio Capability ID a Network Function or node may store a local copy of the mapping between the UE Radio Capability ID and its corresponding UE Radio Capability information (…).

- An AMF which supports RACS shall store such UE Radio Capability ID mapping at least for all the UEs that it serves that have a UE Radio Capability ID assigned.

Similar comment applies to C1-200727 for storage of the UE radio capabilities at the MME

-

Mikael Wass (Ericsson): In the updated paragraphs the possibility of no stored UE Radio capabilities is covered by “any”/”if any”, and there is no need to add a RACS dependency.

I think this CR is not needed.

Same comment for C1-200727

-

Yanchao Kang (vivo): Same comments as Lena.

--

Sung Hwan Won (Nokia)

I disagree with comments from Lena, Yanchao, and Mikael.

If the RACS feature is enabled for a UE, the AMF does not manage UE radio capability information per UE. What is managed per UE is UE radio capability ID. The mapping is not managed per UE, but it is managed for all the UEs served by the AMF.

Now, even if a specific UE sets the NG-RAN-RCU bit to "NG-RAN radio capability update needed", if the RACS is enabled, the AMF does not delete the UE radio capability information for the UE because there is no UE-specific UE radio capability information and, even though the AMF has the UE radio capability information matching the UE radio capability ID for the UE (the AMF must be possessing it based on the stage 2 requirement), the AMF should not delete the UE radio capability information because it can be used for other UEs.

-

Mikael Wass (Ericsson)

The paragraph you are changing is not new and in my view it is a requirement to delete any UE radio capability information stored for this UE (information stored in the UE context of the AMF).

When adding RACS support, and for a UE when RACS is used, the actual UE radio capabilities are not stored in the UE context but a RACS ID.

My interpretation of “delete any stored UE radio capability information” is that this can be either actual UE radio capabilities (when RACS is not used) or RACS ID (when RACS is used) stored in the UE context. Therefore I see the paragraph equally valid for legacy non-RACS use as for RACS use. In the non-RACS case the UE radio capabilities in the UE context are deleted, and in the RACS case the RACS ID in the UE context is deleted, if any of the two are stored.

How the AMF handles RACS ID to UE radio capability mappings is a different thing that is not part of the information stored for individual UEs.

Also, your proposed change is incorrect as we cannot rely on UE supporting RACS. Even if the UE supports RACS there is no guarantee that RACS can be used and there is a RACS ID for the currently used UE radio capabilities.

If something is unclear we can consider some clarification, but I see the changed paragraphs correct as they are.

--

Sung Hwan Won (Nokia)

In my understanding, the UE radio capability information has specific meaning and it does not include UE radio capability ID. Please see S2-1912059 and S2-1912060.

-

Sung Hwan Won (Nokia)

Anyways, based on Mikael’s comment “Even if the UE supports RACS there is no guarantee that RACS can be used and there is a RACS ID for the currently used UE radio capabilities”, in order to cover deletion of UE radio capability ID explicitly, I made some changes as can be found in the following links:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20raaa\_was\_0726\_UE\_rad\_cap\_info.docx

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20raab\_was\_0727\_UE\_rad\_cap\_info.docx

--

Mikael Wass (Ericsson)

Yes, this proposal I believe extends the existing paragraph to cover also RACS in a good way and resolves my comments/concerns.

Lena Chaponnière (Qualcomm): ok too

**Decision:** The document was **revised to C1-200966**.

**C1-200966 UE radio capability information storage not needed for RACS**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-2006 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200726)

**Decision:** The document was **agreed**.

**C1-200727 UE radio capability information storage not needed for RACS**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3337 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to C1-200968**.

**C1-200968 UE radio capability information storage not needed for RACS**

*Type: CR For: Agreement  
 24.301 v16.3.0 CR-3337 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200727)

**Decision:** The document was **agreed**.

#### 16.2.15 5G\_SRVCC (CT4 lead)

**C1-200427 Use registration message to inform the network when the SRVCC information changes**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1911 Cat: B (Rel-16)  
  
 Source: BlackBerry UK Ltd.*

**Discussion:**

Ivo Sedlacek (Ericsson):

- 5.5.1.2.2 - not needed, the 24.501 baseline text is correct

- 5.5.1.3.2 - not needed, 24.301 uses similar wording as in 24.501 baseline

John-Luc Bakker (BlackBerry): Stage 2 defines that changing the service configuration on the UE can result in changing even the value of the 5GSRVCC capability bit.

The changes proposed in 5.5.1.2.2 and 5.5.1.3.2 align stage 3 with stage 2.

In particular in 5.5.1.3.2 the option to change the 5GSRVCC capability was omitted.

This omission appears even incorrect in 24.301 as now a compliant UE can change e.g. classmark or codecs to the point it no longer supports SRVCC, yet it would be unable to negate the SRVCC capability bit in the network?

-

Lena Chaponnière (Qualcomm): We have the following comments:

- We agree with Ivo that the change in 5.5.1.2.2 is not needed, as the existing text is aligned with the text used for other capabilities (“if the UE supports… “)

- For the change in 5.5.1.3.2, we would prefer to add a separate registration trigger for a change in the indication of support for 5G-SRVCC from NG-RAN to UTRAN rather than modifying existing bullet v). Also, do you have a CR to TS 24.301 to add a similar TAU trigger?

--

Lin Shu (Huawei):

John-Luc, I would be better if you could share related stage 2 spec text for “Stage 2 defines that changing the service configuration on the UE can result in changing even the value of the 5GSRVCC capability bit.” in your reason for change.

I recalled that UE’s (v)SRVCC capability from L to G/U cannot be dynamically changed, so it would be better to know why now the capability from NR to U can be changed. Thanks.

Forget to say the CR should be category F, not B

--

Fei Lu (ZTE)

I agree with Ivo,

I agree that the service configuration can change the 5G-SRVCC bit, however it has been covered by the bullet g)

g) when the UE changes the 5GMM capability or the S1 UE network capability or both;

-

John-Luc Bakker (BlackBerry)

Thanks for your comments.

• I have looked again at the change in 5.5.1.2.2 and I will remove it.

• I am fine to add a separate trigger.

• I have a draft CR to provide similar changes to 24.301. It is intended to be submitted to the Dubrovnik meeting (because I could not think of a suitable work item?).

I intend to revise the 24.501 CR in accordance to your comments.

-

Ivo Sedlacek (Ericsson): Fei's right. I.e. CR is not needed.

-

John-Luc Bakker (BlackBerry)

Fine … BlackBerry likes to withdraw the CR (C1-200811).

Peter, can I ask to add to the notes that “the CR is proposed to be withdrawn because the proposed change was covered already by bullet g) in the 5.5.1.3.2”

**Decision:** The document was **revised to C1-200811**.

**C1-200811 Use registration message to inform the network when the SRVCC information changes**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1911 rev 1 Cat: B (Rel-16)  
  
 Source: BlackBerry UK Ltd.*

(Replaces C1-200427)

**Decision:** The document was **withdrawn**.

**C1-200436 PDU session release at the UE side**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1918 Cat: C (Rel-16)  
  
 Source: ZTE, China Unicom, Ericsson*

**Discussion:**

Lin Shu (Huawei):

We do support to do something in stage 3 to implement stage 2 requirement.

But it is a little strange you put the changes in the 5GSM state machine part which is very general.

I would propose to add a new general subclause and to put the required change under it. Also, what you proposed is only cover the UE while NW side is missing. IMHO, all PDU session needs to be locally released at both the UE and the NW sides. The proposed change looks like e.g.:

“6.1.4a Coordination between 5GSM and SM

Coordination between 5GSM and SM states is not required.

After the 5G-SRVCC handover from NG-RAN to UTRAN (see 3GPP TS 23.216 [6A]), all the PDU sessions of the UE are locally released at the UE and the nework.

”

With above change, you also need to tick NW box in the cover page.

-

Fei Lu (ZTE)

I am fine with your proposal.

Fei Lu (ZTE)

Please find the revision taking your proposal into account.

The title of the CR has also been updated and the revision number is 0833

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200833\_was0436\_5GSRVCC.docx

**Decision:** The document was **revised to C1-200833**.

**C1-200833 PDU session release**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1918 rev 1 Cat: C (Rel-16)  
  
 Source: ZTE, China Unicom, Ericsson*

(Replaces C1-200436)

**Decision:** The document was **agreed**.

#### 16.2.16 xBDT (CT3 lead)

#### 16.2.17 IAB-CT (CT4 lead)

#### 16.2.18 5GS\_OTAF (CT4 lead)

#### 16.2.19 5G\_URLLC (CT4 lead)

**C1-200290 Always-On PDU session and URLLC**

*Type: CR For: (not specified)  
 24.501 v16.3.0 CR-1878 Cat: F (Rel-16)  
  
 Source: Ericsson / Ivo*

**Discussion:**

Sung Hwan Won (Nokia): This e-mail is to make a comment to C1-200290 as well as to reply to Ivo’s comment on C1-200685.

Subclause 6.3.2.2

The change is incorrect because the main use case which CT1 agreed to cover by introducing the erased sentence is addition of a new QoS flow for URLLC via modifying a PDU session, not 4G-5G interworking. In that sense, the current text is OK.

Subclause 6.4.1.3

I prefer modification in C1-200685 because A or B covers both A and B. Throughout the TS, “or” has been always meant to be OR not XOR.

So, if you still want to make some changes on subclause 6.3.2.2, please revise your CR. But as long as subclause 6.4.1.3 is concerned, C1-200685 is a better choice in our view.

-

Lin Shu (Huawei): on 290 and 685

It would be better to merge two email threads into single one as I believe only one CR will move forward.

I agree with what Sung commented, cases are different between modification and establishment. So better C1-200290 can be merged into C1-200685.

So I would prefer Sung’s CR C1-200685 and I have no comment on Sung’s CR.

- Ivo Sedlacek (Ericsson)

Subclause 6.3.2.2

The change is incorrect because the main use case which CT1 agreed to cover by introducing the erased sentence is addition of a new QoS flow for URLLC via modifying a PDU session, not 4G-5G interworking. In that sense, the current text is OK.

[Ivo]

Text in 6.3.3.2 was added by C1-195204.

Use case in C1-195204 is "the SMF decides to perform URLLC service for the new QoS Flow of the PDU session after a PDU session has been established".

However, this is not aligned with the actual baseline text "If the PDU session is to be established for URLLC service, the SMF shall include the Always-on PDU session indication IE in the PDU SESSION ESTABLISHMENT ACCEPT message and shall set the value to "Always-on PDU session required"."

In this baseline text, SMF has to provide the Always-on PDU session indication IE set to "Always-on PDU session required" not just when the new QoS flow for URLLC is created, but in each PDU SESSION MODIFICATION COMMAND afterwards.

I see no reason to send the Always-on PDU session indication IE set to "Always-on PDU session required" to the UE several times.

This should be clarified to state "If a QoS flow for URLL is created in a PDU session, the SMF shall include the Always-on PDU session indication IE in the PDU SESSION MODIFICATION COMMAND message and shall set the value to "Always-on PDU session required"." This would also make clear that there is no overlap between the PDU session modification after inter-system change from S1 mode to N1 mode.

Would this be agreeable?

Subclause 6.4.1.3

I prefer modification in C1-200685 because A or B covers both A and B. Throughout the TS, “or” has been always meant to be OR not XOR.

[Ivo]

21.801 states: Use "and" or "or" at the end (following the semicolon) of the penultimate element of a list to indicate unambiguously whether the elements are combinable or whether they are mutually exclusive.

So, I would like to see a clear possibility of a PDU session being used for both TSC and URLLC.

If we can agree on changes in Subclause 6.4.1.3, I will remove Subclause 6.4.1.3 from scope of C1-200290, merge this part into C1-200685, and focus C1-200290 solely on Subclause 6.3.2.2.

Would this be agreeable?

-

Sung Hwan Won (Nokia)

On 6.3.2.2, I would like to add something more:

If a QoS flow for URLL is created in a PDU session and the SMF has not sent the Always-on PDU session indication IE with the value set to "Always-on PDU session required" for this PDU session, the SMF shall include the Always-on PDU session indication IE in the PDU SESSION MODIFICATION COMMAND message and shall set the value to "Always-on PDU session required"

And OK, I can modify 0685 to explicitly cover a PDU session for both TSC and URLLC, which is available in: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20URLa\_was\_0685\_always-on.docx.

-

Ban Al Bakri (NTT DOCOMO)

In regard to the change proposed in the draft revised CR;

a) the requested PDU session needs to be established as an always-on PDU session (e.g. because the PDU session is for TSC, for URLLC, or for both), the SMF shall include the Always-on PDU session indication IE in the PDU SESSION ESTABLISHMENT ACCEPT message and shall set the value to "Always-on PDU session required"; or

Adding TSC supposed to be an example, as there can be other reasons why an “Always-on” PDU session is marked as such. Another example could be emergency service PDU session.

Therefore if we change the text as suggested here, we kind of giving impression to the reader that these are the services you need to have “Always-on” for, or shall we add all the examples here?!!

As a way forward, I suggest that we remove the (e.g ……..) and explicitly indicate for the cases of TSC and URLLC we shall have “Always-on”, in normative text (or informative note if preferable?!!).

What do you think?

--

Ivo Sedlacek (Ericsson)

@Ban: Always-on PDU session is a general functionality introduced in Rel-15. For PDU session establishment, nothing has changed in Rel-16, just TSC and URLLC features use it. Thus, listing TSC and URRL as examples of Always-on PDU session seems appropriate.

@Sung:

C1-20URLa\_was\_0685\_always-on.docx looks OK.

I have reduced C1-200290 to 6.3.2.2 and updated it to state "If a QoS flow for URLLC is created in a PDU session and the SMF has not provided the Always-on PDU session indication IE with the value set to "Always-on PDU session required" in the UE-requested PDU session establishment procedure or a network-requested PDU session modification procedure for the PDU session, the SMF ....". See [1]

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iapa-was-C1-200290-v01.zip

**Decision:** The document was **revised to C1-200931**.

**C1-200931 Always-On PDU session and URLLC**

*Type: CR For: -  
 24.501 v16.3.0 CR-1878 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson / Ivo*

(Replaces C1-200290)

**Decision:** The document was **agreed**.

**C1-200685 Setting the Always-on PDU session indication IE in the PDU SESSION ESTABLISHMENT ACCEPT message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1987 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Ivo Sedlacek (Ericsson)

- C1-200685 contains similar changes as C1-200290. However, C1-200290 address an additional occurence. Would it be possible to merge C1-200685 into C1-200290?

**Decision:** The document was **revised to C1-200962**.

**C1-200962 Setting the Always-on PDU session indication IE in the PDU SESSION ESTABLISHMENT ACCEPT message**

*Type: CR For: Agreement  
 24.501 v16.3.0 CR-1987 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200685)

**Decision:** The document was **agreed**.

#### 16.2.20 SEAL

**C1-200449 Obtain list of users based on location**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Samsung / Sapan*

**Discussion:**

Xiaoguang Chen (Huawei):

1. In the client procedure, the identity of the querying client should be included;

2. In the server procedure, the SLM-S should first check if the client is authorized to query;

3. In order to query the list of users based on given geolocation area, the client shall send an HTTP POST request message

-

Sapan Shah (Samsung)

Thanks for your comments. I took all comments on board.

@Lena: The pCR has been revised to new tdoc C1-200808.

The draft revised pCR is also available at below location:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200808\_was\_0449\_SLM\_Obtain\_List\_of\_Users\_based\_on\_location\_draft\_v1.zip

Kindly review it and let me know if you have any further comments. I will upload final revision by tomorrow.

-

Chen (Huawei)

In order to keep aligned with other procedures of Location mgmt., I changed your p-CR, so please check below and see whether you are fine with this, thanks.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200808\_draftv1\_by\_Chen.doc

**Decision:** The document was **revised to C1-200808**.

**C1-200808 Obtain list of users based on location**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Samsung, Huawei, HiSilicon*

(Replaces C1-200449)

**Discussion:**

Sapan Shah (Samsung)

I agreed to almost all changes except one change - where you proposed to change "SEAL server" to "SGM-S". I would prefer to use "SEAL server" only as its generic and in future other SEAL server can also user location services.

I have made changes and uploaded draft version to below link:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200808\_was\_0449\_SLM\_Obtain\_List\_of\_Users\_based\_on\_location\_v2.zip

I hope you are fine with this change. Let me know if you have any further comments - I will be uploading final revision soon.

Chen (Hu)

Thanks for your reply. I’m fine with this change.

Huawei would like to cosign.

**Decision:** The document was **agreed**.

**C1-200450 Annex to describes the functionality expected from the HTTP entities**

*Type: pCR For: Agreement  
 24.547 v1.0.0  
 Source: Samsung, Intel / Sapan*

**Decision:** The document was **agreed**.

**C1-200523 Latest reference version of draft TS 24.545**

*Type: draft TS For: Information  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

Sapan Shah (Samsung): In clause 7.6 – Editor’s note needs to be removed as MIME type is already defined.

Christian Herrero (Huawei)

Thanks for the review of the latest version of the draft specification.

I agree with the comment. I will take that comment into account as rapporteur of TS 24.545 when producing the new version.

**Decision:** The document was **noted**.

**C1-200524 Latest reference version of draft TS 24.548**

*Type: draft TS For: Information  
 24.548 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

Sapan Shah (Samsung) made some editorial comments

Christian Herrero (Huawei)

Thanks for the review of the latest version of the draft specification.

I agree with the editorial comments. I will take those comments into account as rapporteur of TS 24.548 when producing the new version.

**Decision:** The document was **noted**.

**C1-200526 Off-network procedures for SEAL location management**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **agreed**.

**C1-200527 Off-network procedures for SEAL network resource management**

*Type: pCR For: Agreement  
 24.548 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **agreed**.

**C1-200552 Fetching location reporting configuration**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

**Discussion:**

Merged into C1-20774

**Decision:** The document was **merged**.

**C1-200553 Structure and data semantics for fetching location reporting configuration**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

**Discussion:**

Merged into C1-20774

**Decision:** The document was **merged**.

**C1-200554 On-demand location reporting procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

**Discussion:**

Sapan Shah (Samsung)

Here are few comments:

1) In clause 6.2.3.1 – change “subclause” to “clause”

2) In clause 6.2.3.1 – clause number is changed now. 6.2.2.2 should be change to 6.2.2.2.2.

3) In clause 6.2.3.1 – Need to remove step “ b) shall reset the minimum-report-interval timer if the location report is sent".

a. In step a), procedure of clause 6.2.2.2.2 will be followed which already takes care of resetting and restarting minimum-interval-report timer.

Xiaoguang Chen(Huawei)

Revision for C1-200554 is uploaded to draft folder:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200554\_draft\_v1.doc

Sapan Shah (Samsung): Thanks for agreeing all comments. I checked your revision and I am fine with all changes.

**Decision:** The document was **revised to C1-200877**.

**C1-200877 On-demand location reporting procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200554)

**Decision:** The document was **revised to C1-201018**.

**C1-201018 On-demand location reporting procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200877)

**Decision:** The document was **agreed**.

**C1-200555 Structure and data semantics for on-demand location reporting procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

**Decision:** The document was **agreed**.

**C1-200556 Location reporting event-triggered configuration cancel procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

**Decision:** The document was **agreed**.

**C1-200557 Location information subscription procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

**Discussion:**

Sapan Shah (Samsung) on C1-200557, C1-200559, C1-200562, C1-200563, C1-200638, C1-200639, C1-200647, C1-200648

Samsung and Huawei discussed about subscription and notification procedures which need to be defined in SEAL specifications. The summary of our discussion is as follows:

1) SEAL specifications need to support both SIP based and HTTP based procedures for subscription and notification mechanism as described by stage 2.

2) The Rel-16 SEAL specifications are targeted to be used by V2XAPP only. The V2X service as of now do not support SIP based REGISTER. So HTTP based procedures are necessary.

3) For SIP based procedures – below issues need to be discussed and work upon:

a. Usage of identity to be used in SIP messages

b. Description of new event package

c. Usage of ICSI values

d. Usage of access-token

4) Following is the list of contributions which will be revised in this meeting.

Original TDoc Title Source Comment

C1-200557

Location information subscription procedure Huawei, HiSilicon / Chen To add HTTP based procedure and notes for SIP based procedure

C1-200559

Event-triggered location information notification procedure Huawei, HiSilicon / Chen To add HTTP based procedure and notes for SIP based procedure

C1-200562

MBMS bearer announcement over MBMS bearer procedure Huawei, HiSilicon / Chen To add HTTP based procedure and notes for SIP based procedure

C1-200563

MBMS bearer quality detection procedure Huawei, HiSilicon / Chen To add HTTP based procedure and notes for SIP based procedure

C1-200638

Procedures for management of group events subscription Samsung / Sapan To add editor’s note to describe SIP based procedures

C1-200639

Procedures to notify group events Samsung / Sapan To add editor’s note to describe SIP based procedures

C1-200647

Management of configuration event subscription Samsung / Sapan To add editor’s note to describe SIP based procedures

C1-200648

Procedure to notify configuration management event Samsung / Sapan To add editor’s note to describe SIP based procedures

-

Sapan Shah (Samsung)

I reviewed "C1-200878\_was\_C1-200557-draft\_v1.doc" and I am fine with overall content of the contribution. Few editorial comments:

1) When you submit the final revision - kindly disable track changes in "Reason for change".

2) As of now - you have combined both (SIP and HTTP) procedures in to clause 6.2.6.1. My suggestion would be to break this clause into 2 clauses - one for SIP based and another for HTTP based.

Please check if comments are applicable to other draft revisions too.

**Decision:** The document was **revised to C1-200878**.

**C1-200878 Location information subscription procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200557)

**Decision:** The document was **agreed**.

**C1-200558 Structure and data semantics for location information subscription procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

**Decision:** The document was **agreed**.

**C1-200559 Event-triggered location information notification procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

**Decision:** The document was **revised to C1-200879**.

**C1-200879 Event-triggered location information notification procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200559)

**Decision:** The document was **agreed**.

**C1-200560 Structure and data semantics for Event-triggered location information notification procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

**Decision:** The document was **agreed**.

**C1-200561 On-demand usage of location information procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

**Discussion:**

Sapan Shah (Samsung)

Here are few comments:

1) In clause 6.2.8.1 – First paragraph should be of normal style.

2) clause 6.2.3.2 => should be numbered as 6.2.8.2.

3) In clause 6.2.3.2 (or new number 6.2.8.2) – steps starts from c). And auto-numbering is enabled. Kindly remove auto-numbering and provide proper step numbers.

4) Clause 6.2.8.1 – “may share the information” – seems incomplete. Kindly reword it to add details – to whom to share the information?

-

Xiaoguang Chen(Huawei)

Thanks for your comments.

The comments are all taken on board.

3) all the auto-numbering are replaced.

4) “may share the information to a group or to another VAL user or VAL UE” as described in TS23.434 clause 9.3.9.

Revision for C1-200561 is uploaded to draft folder:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-C1-200561-On-demand usage of location information procedure-v1.doc

-

Sapan Shah (Samsung)

Thanks for agreeing to comments. I check your draft revision and I am fine with changes.

**Decision:** The document was **revised to C1-200880**.

**C1-200880 On-demand usage of location information procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200561)

**Decision:** The document was **revised to C1-201019**.

**C1-201019 On-demand usage of location information procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200880)

**Decision:** The document was **agreed**.

**C1-200562 MBMS bearer announcement over MBMS bearer procedure**

*Type: pCR For: Agreement  
 24.548 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

**Decision:** The document was **revised to C1-200881**.

**C1-200881 MBMS bearer announcement over MBMS bearer procedure**

*Type: pCR For: Agreement  
 24.548 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200562)

**Decision:** The document was **agreed**.

**C1-200563 MBMS bearer quality detection procedure**

*Type: pCR For: Agreement  
 24.548 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

**Decision:** The document was **revised to C1-200882**.

**C1-200882 MBMS bearer quality detection procedure**

*Type: pCR For: Agreement  
 24.548 v0.2.0  
 Source: Huawei, HiSilicon / Chen*

(Replaces C1-200563)

**Decision:** The document was **agreed**.

**C1-200607 Latest draft version of TS 24.547 ver 1.0.0**

*Type: pCR For: Information  
 24.547 v1.0.0  
 Source: Intel / Vivek*

**Decision:** The document was **agreed**.

**C1-200608 Update to Event-triggered location reporting procedure**

*Type: pCR For: -  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

revised before the meeting

**Decision:** The document was **revised to C1-200774**.

**C1-200774 Update to Event-triggered location reporting procedure**

*Type: pCR For: -  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

(Replaces C1-200608)

**Discussion:**

Sapan Shah (Samsung):

#1) In clause 6.2.2.1, step a), reference to clause 6.2.2.2 needs to be modified to clause 6.2.2.2.2.

[CHV] Thanks for spotting this. It is going to be correcting by a revision.

#2) In clause 6.2.2.2.1,

b) shall set X-3GPP-Intended-Identity header to the VAL user identity requesting for location reporting configuration.

Should be changed to

b) shall include an Authorization header field with the "Bearer" authentication scheme set to an access token of the "bearer" token type as specified in IETF RFC 6750 [r6750].

[CHV] We kindly disagree. Please, note that the HTTP message cannot contain a MME body which provides an <identity> element, and therefore a “X-3GPP-Intended-Identity header” needs to be used instead.

Additionally, note TS 24.546, quote:

<--

6.2.3.1 Client procedure

Upon receiving a request from the VAL user to retrieve a VAL UE configuration data, the SCM-C shall send an HTTP GET request to the SCM-S according to procedures specified in IETF RFC 4825 [3] "Fetch a Document". In HTTP GET request, the SCM-C:

a) shall set the Request-URI to a XCAP URI identifying the XML document to be retrieved. In the Request-URI:

1) the "auid" is set to specific VAL service identity; and

2) the document selector is set to a document URI pointing to the VAL UE configuration document; and

b) shall set X-3GPP-Intended-Identity header to the VAL user identity.

6.2.4.1 Client procedure

Upon receiving a request from the VAL user to retrieve a VAL user profile data, the SCM-C shall send an HTTP GET request to the SCM-S according to procedures specified in IETF RFC 4825 [3] "Fetch a Document". In HTTP GET request, the SCM-C:

a) shall set the Request-URI to a XCAP URI identifying the XML document to be retrieved. In the Request-URI:

1) the "auid" is set to specific VAL service identity; and

2) the document selector is set to a document URI pointing to the VAL user profile document; and

b) shall set X-3GPP-Intended-Identity header to the VAL user identity.

-->

#3) In clause 6.2.2.3.1,

B) a <triggering-criteria> child element which indicate a specified location trigger criteria to send the location report; and

should be changed to

B) a <triggering-criteria> child element specifying the triggers for the SLM-C to request a location report as specified in clause 7; and

[CHV] Thanks for spotting this. It is going to be correcting by a revision.

#4) In clause 6.2.2.3.1, not able to understand below step - can you please reword it?

3) shall include the <trigger-id> attribute where defined for the sub-elements defining the trigger criterion; and

[CHV] We kindly disagree. Please note that this is already in MCPTT specs, quote of TS 24.379:

<--

13.2.2 Location reporting configuration

The participating MCPTT function may configure the location reporting in the MCPTT client by generating a SIP MESSAGE request in accordance with 3GPP TS 24.229 [4] and IETF RFC 3428 [33]. The participating MCPTT function:

1) shall include a Request-URI set to the URI corresponding to the identity of the MCPTT client;

2) shall include an Accept-Contact header field with the media feature tag g.3gpp.icsi-ref set to the value "urn:urn-7:3gpp-service.ims.icsi.mcptt" along with parameters "require" and "explicit" in accordance with IETF RFC 3841 [6];

3) shall include an application/vnd.3gpp.mcptt-info+xml MIME body with an <mcptt-request-uri> element containing the MCPTT ID of the MCPTT user to receive the configuration;

4) shall include an application/vnd.3gpp.mcptt-location-info+xml MIME body with the <Configuration> element contained in the <location-info> root element set to the desired configuration;

5) shall include the TriggerId attribute where defined for the sub-elements defining the trigger criterion ;

Based on the above specification text, each trigger has to/”shall” include a <trigger-id> element/attribute as described in the sematic of the <triggering-criteria>, quote:

<triggering-criteria>, a mandatory element specifying the triggers for the SLM-C to request a location report of a VAL user, a VAL client or a VAL group. The <triggering-criteria> element contains at least one of the following sub-elements:

1) <cell-change>, an optional element specifying what cell changes trigger the request for a location report. This element consists of the following sub-elements:

i) <any-cell-change>, an optional element. The presence of this element specifies that any cell change is a trigger. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

ii) <enter-specific-cell>, an optional element specifying an NCGI which when entered triggers a request for alocation report coded as specified in clause 19.6A in 3GPP TS 23.003 [2]. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string; and

iii) <exit-specific-cell>, an optional element specifying an NCGI which when exited triggers a request for a location report coded as specified in clause 19.6A in 3GPP TS 23.003 [2]. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

2) <tracking-area-change>, an optional element specifying what tracking area changes trigger a request for a location report. This element consists of the following sub-elements:

i) <any-tracking-area-change>, an optional element. The presence of this element specifies that any tracking area change is a trigger. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

ii) <enter-specific-tracking-area>, an optional element specifying a tracking area identity coded as specified in clause 19.4.2.3 in 3GPP TS 23.003 [2] which when entered triggers a request for a location report. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string; and

iii) <exit-specific-tracking-area>, an optional element specifying a tracking area identity coded as specified in clause 19.4.2.3 in 3GPP TS 23.003 [2] which when exited triggers a request for alocation report. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

3) <plmn-change>, an optional element specifying what PLMN changes trigger a request for a location report. This element consists of the following sub-elements:

i) <any-plmn-change>, an optional element. The presence of this element specifies that any PLMN change is a trigger. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string;

ii) <enter-specific-plmn>, an optional element specifying a PLMN id (MCC+MNC) coded as specified in 3GPP TS 23.003 [2] which when entered triggers a request for a location report. This element contains a mandatory <trigger-id> attribute that shall be set to a unique string; and

-->

--

Sapan Shah (Samsung):

Thanks for providing your reply. I have added few more comments inline [SS2].

#2) In clause 6.2.2.2.1,

b) shall set X-3GPP-Intended-Identity header to the VAL user identity requesting for location reporting configuration.

Should be changed to

b) shall include an Authorization header field with the "Bearer" authentication scheme set to an access token of the "bearer" token type as specified in IETF RFC 6750 [r6750].

[CHV] We kindly disagree. Please, note that the HTTP message cannot contain a MME body which provides an <identity> element, and therefore a “X-3GPP-Intended-Identity header” needs to be used instead.

[SS2] The VAL user's identity is already encoded within access-token (of type "Bearer") shared by Identity Management Server (SIL-S). The purpose for SIM-S to provide “Bearer” type access-token is that any SEAL client can share the access-token to SEAL server to request service. The SEAL server will validate the access-token present in Authorization header field with “Bearer” scheme type. Similar authentication mechanism is used in MCX specification too - for example: 3GPP TS 24.484 – clause A.2.1 – In step#1) CMC-1 adds Authorization header and in step#2) CMS authorized the user using access-token present in Authorization header. Here is the excerpt from 24.484

2) CMS-1 authenticates User1using the access token in the authorization header field

I have already provided contribution (C1-200650) to correct procedures of TS 24.546 (as you have already pointed out below).

Please also note that if HTTP client is part of SEAL UE – then SEAL UE needs to send access-token in HTTP Authorization header with “Bearer” authentication scheme, but if HTTP client is part of any network entity – then the HTTP client (in network entity) needs to use X-3GPP-Asserted-Identity header field to send its identity.

#4) In clause 6.2.2.3.1, not able to understand below step - can you please reword it?

3) shall include the <trigger-id> attribute where defined for the sub-elements defining the trigger criterion; and

[CHV] We kindly disagree. Please note that this is already in MCPTT specs, quote of TS 24.379:

[SS2] OK

--

Christian Herrero (Huawei)

I am glad to see that we concur in most issues now but #2. As for that one, we believe that we should follow the identity procedure as defined by TS 24.546 or? By the way, it seems that your p-CR in C1-200650 also follows the way we propose.

Sapan Shah (Samsung)

I am fine with all changes except usage of X-3GPP-Intended-Identity header. I still believe that as per user authentication and authorization framework defined in SA3 - the client needs to send access-token in Authorization header field with the "Bearer" authentication scheme. The similar discussion is already concluded in another email thread - (Subject: Re: (2) [16.2.20\_C1-200650]).

I would like to go ahead with your proposed revised draft for now. We can have offline discussions and based on that if changes are required to be made then we can take it up in next meeting.

-

Sapan Shah (Samsung)

I agree that its SA3's decision to provide user authentication and authorization framework.

I also agree to your proposed way forward of adding Editor's notes in both Huawei and Samsung's contributions. I checked your draft revision and I am fine with the changes now.

Please find below draft revisions with Editor's note included. Let me know if its fine with you.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-201004\_was\_0633\_SGM\_access\_token\_in\_proper\_header\_draft\_v1.zip

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-201005\_was\_0650\_SCM\_Corrections\_in\_procedrues\_draft\_v1.zip

@Lena: Following 2 contributions are revised. Draft revised documents are available at above mentioned path.

- C1-200633: Revised to C1-201004.

- C1-200650: Revised to C1-201005.

-

Christian Herrero (Huawei)

We both have raised good points about our different point of views on this controversial issue but we need to agree that it is up to SA3 to make a decision.

I am well aware of your discussion with Chen on your p-CR C1-200650 as Chen and myself do coordinate. To both of us you are questioning the usage of the X-3GPP-Intended-Identity header when it is in fact already in the SEAL TSs and to us still feasible while in your documents you argue that this is wrong and needs to be replaced. We have indicated that we are fine to accept your p-CRs proposal on this issue so we are fine to go as you propose, i.e., all different p-CRs are kept as proposed on the issue.

But please we should have a sort of consistent set of CT1 SEAL TSs as a result of this e-meeting, and therefore we should identify that this controversial issue exists in all proposals. Hence, I would propose to add a similar editor’s note in all TSs, i.e., the revision of Huawei’s C1-200774 but also Samsung’s C1-200633 and C1-200650. The editor’s note should capture in my specification the need to check the usage of the X-3GPP-Intended-Identity header based on security requirements (TS 33.434) and in your p-CRs the need to check the usage of access-token in Authorization header field with the "Bearer" authentication scheme based on also security requirements. Mainly, as the proposal you point out (in S3-200166) is not agreed yet (so not part of TS 33.434).

I believe that capturing the issue by editor’s note in the TSs helps in concluding in it in a consistent way in all SEAL CT1 TSs in future meeting, and ensuring that as soon as security requirements are sorted out, all TSs will be aligned.

-

**Decision:** The document was **revised to C1-200901**.

**C1-200901 Update to Event-triggered location reporting procedure**

*Type: pCR For: -  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

(Replaces C1-200774)

**Decision:** The document was **agreed**.

**C1-200609 Updates to Client User Authentication Procedure**

*Type: pCR For: Agreement  
 24.547 v1.0.0  
 Source: Intel / Vivek*

**Discussion:**

Xiaoguang Chen(Huawei)

- “.” before the parameters should be “:”;

- I haven’t found these parameters in TS 33.434 v0.1.0 as the p-CR states “The SIM-C shall include the following parameters as specified in 3GPP TS 33.434”, could you clarify further?

Similar comments to all the Tdocs 609, 611, 612 and 613

- I haven’t found these parameters in TS 33.434 v0.1.0 as the p-CRs all state “shall include the following parameters as specified in 3GPP TS 33.434”, could you clarify further?

- according to the REFERENCES “OpenID Connect Core 1.0 incorporating errata set 1” and “draft-ietf-oauth-token-exchange”, the parameters added in both the client and the server procedure are not very matched with those specified in the references, e.g., my comments to C1-200613 before.

-

Vivek Gupta (Intel)

Regarding,

>

>I haven’t found these parameters in TS 33.434 v0.1.0

>

SA3 meeting in January was cancelled.

However, for their upcoming SA3 #98e e-meeting, scheduled for next week, the following have been submitted. Please note the following:

S3-200166: Annex X: OpenID Connect

https://www.3gpp.org/ftp/tsg\_sa/WG3\_Security/TSGS3\_98e/Docs/S3-200166.zip

S3-200163: VAL Client authentication

https://www.3gpp.org/ftp/tsg\_sa/WG3\_Security/TSGS3\_98e/Docs/S3-200163.zip

These contributions provide the relevant updates to TS 33.434 and I have tried to make some progress on CT1 specs based on these and resolve some of the pending Editor notes, working offline in conjunction with the work-item rapporteur.

Please note: There is still another Editor note left at the beginning of each of the procedures in CT1 spec in TS 24.547 as follows:

Editor’s Note: This procedure may be updated once a more updated reference to 3GPP TS 33.434 is available

With the above Editor note in place once the SA3 spec is updated after their e-meeting, we can still take care of any updates to these procedures in CT1 specs based on outcome of SA3 e-meeting, if required in next cycle.

Given the situation we are in, this was the only plausible way to make some progress on CT1 work in this plenary cycle and resolve some of the pending Editor notes in TS 24.547 and get this towards completion.

I hope this clarifies.

-

Chen( Huawei)

I’m OK with the Editor’s note.

Then, please check and match the parameters to the REFERENCES (mandatory/optional).

-

Vivek Gupta (Intel)

Regarding,

>

> Then, please check and match the parameters to the REFERENCES (mandatory/optional).

>

There does seem to be some differences between the IETF draft and the submitted contribution to SA3.

As mentioned in other thread, I have taken the below submitted SA3 contribution as the basis for updates to CT1 specification.

S3-200166: Annex X: OpenID Connect

https://www.3gpp.org/ftp/tsg\_sa/WG3\_Security/TSGS3\_98e/Docs/S3-200166.zip

Any further updates and alignments can be done after SA3 meeting, once an updated version of TS 33.434 is available, and there is already an Editor’s note for that in every procedure.

Can we go forward with this arrangement for now for [C1-200609], [C1-200611] and [C1-200612]?

-

Vivek Gupta (Intel)

Regarding,

>

> Minor suggestion:

> “.” before the parameters should be “:”

>

This can be taken care of by the rapporteur when producing the next version of the specification.

**Decision:** The document was **agreed**.

**C1-200610 Update to structure and data semantics for event-triggered location reporting procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

revised before the meeting

**Decision:** The document was **revised to C1-200775**.

**C1-200775 Update to structure and data semantics for event-triggered location reporting procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

(Replaces C1-200610)

**Discussion:**

Sapan Shah (Samsung):

The structure in clause 7.3 and the data semantics in clause 7.5 are not matching. (note: shall vs optional element)

Christian Herrero (Huawei):

I believe that you misread current TS 24.545, and therefore C1-200775.

Please, note that current TS 24.545 already describes the same structure and semantics which is in fact correct and follows the MCPTT specification way of doing it. Hence, there is no conflict between 7.3 and 7.5 as both clauses are aligned, quote:

b) a <triggering-criteria> element shall include at least one of the following sub-elements:

1) a <cell-change> element shall include one of the following sub-elements:

i) an <any-cell-change> element shall include a <trigger-id> element;

ii) an <enter-specific-cell> element shall include a <trigger-id> element; and

iii) an <exit-specific-cell> element include a <trigger-id> element;

2) a <tracking-area-change> element shall include one of the following sub-elements:

i) an <any-tracking-area-change> element shall include a <trigger-id> element;

ii) an <enter-specific-tracking-area> element shall include a <trigger-id> element; and

iii) an <exit-specific-trackin-area> element shall include a <trigger-id> element;

3) a <plmn-change> element shall include one of the following sub-elements:

i) an <any-plmn-change> element shall include a <trigger-id> element;

ii) an <enter-specific-plmn>element shall include a <trigger-id> element; and

iii) an <exit-specific-plmn> element shall include a <trigger-id> element;

For example the <triggering-criteria> element “shall” include a <cell-change>, <tracking-area-change> or <plmn-change> element (one of them). Now, when a <cell-change> element is in fact included so the “shall include” means “if the element is included then” (i.e., optional element) one more element follows. In other words, the “shall include” above means the element may or not be included, so again it is optional.

**Decision:** The document was **revised to C1-200902**.

**C1-200902 Update to structure and data semantics for event-triggered location reporting procedure**

*Type: pCR For: Agreement  
 24.545 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

(Replaces C1-200775)

**Decision:** The document was **agreed**.

**C1-200611 Updates to Server User Authentication Procedure**

*Type: pCR For: Agreement  
 24.547 v1.0.0  
 Source: Intel / Vivek*

**Decision:** The document was **agreed**.

**C1-200612 Updates to Client Token Exchange Procedure**

*Type: pCR For: Agreement  
 24.547 v1.0.0  
 Source: Intel / Vivek*

**Decision:** The document was **agreed**.

**C1-200613 Updates to Server Token Exchange Procedure**

*Type: pCR For: Agreement  
 24.547 v1.0.0  
 Source: Intel / Vivek*

**Discussion:**

Xiaoguang Chen(Huawei)

I’m confused on the parameters according to draft-ietf-oauth-token-exchange[8]. draft-ietf-oauth-token-exchange clause 2.2.1 states successful response includes:

- access\_token(REQUIRED)

- issued\_token\_type(REQUIRED)

- token\_type(REQUIRED)

- expires\_in(RECOMMENDED)

- scope(OPTIONAL)

- refresh\_token(OPTIONAL)

but the p-CR propose 5 mandatory parameters:

- - access\_token;

- - token\_type;

- - expires\_in;

- - id\_token; and

- - refresh\_token.

-

Vivek Gupta (Intel)

You are correct.

I have removed the below two parameters and revised this as follows.

https://www.3gpp.org/ftp/tsg\_CT/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200819\_24547\_ServerToken\_v1.doc

Please lemme know if you have any further comments.

-.

Chen

- The issued\_token\_type(REQUIRED) should be added too.

- An editor’s note that based on SA3 requirements should be added as there are not these parameters in TS33.434 by now.

-

Vivek Gupta (Intel)

If you look at the below submitted SA3 contribution, which I have used as the basis for updates to CT1 specifications,

S3-200166: Annex X: OpenID Connect

https://www.3gpp.org/ftp/tsg\_sa/WG3\_Security/TSGS3\_98e/Docs/S3-200166.zip

…they have the following:

X.4.2.5 Access token response

If the access token request is valid and authorized, the SIM-S returns an ID token, access token and refresh token to the SIM-C in an access token response message; otherwise it will return an error.

The access token response standard parameters are shown in table X.4.2.5-1.

Table X.4.2.5-1: Access token response standard parameters

Parameter Values

access\_token REQUIRED. This is the issued access token.

token\_type REQUIRED. This field shall be “bearer”

expires\_in REQUIRED. The lifetime in seconds of the access token.

Id\_token OPTIONAL. This is the issued id token.

Refresh\_token OPTIONAL. This is the issued refresh token.

So basically, they don’t have issued\_token\_type as you mention below.

But the IETF draft does indeed mention issued\_token\_type in clause 2.2.1 of draft, as you have indicated.

I am not sure if it is prudent to debate that here in CT1.

So, I can add issued\_token\_type for now and we can align later based on how things develop in SA3.

As for Editor’s Note regarding alignment with SA3, there is already something at beginning of procedure to that effect and you seem to be ok with that, as you indicated in other thread.

So, will adding, issued\_token\_type as another parameter resolve your concern and can we go ahead with above arrangement for now?

Thanks for your understanding.

-

Chen:

I’m fine with the issued\_token\_type added as another parameter and please go ahead.

-

Vivek Gupta (Intel) Thanks for your understanding.

C1-200613 => revised to C1-200819 => revised to C1-201003 and uploaded.

**Decision:** The document was **revised to C1-200819**.

**C1-200819 Updates to Server Token Exchange Procedure**

*Type: pCR For: Agreement  
 24.547 v1.0.0  
 Source: Intel / Vivek*

(Replaces C1-200613)

**Decision:** The document was **revised to C1-201003**.

**C1-201003 Updates to Server Token Exchange Procedure**

*Type: pCR For: Agreement  
 24.547 v1.0.0  
 Source: Intel / Vivek*

(Replaces C1-200819)

**Decision:** The document was **agreed**.

**C1-200614 Off Network Procedures for Identity Management**

*Type: pCR For: Agreement  
 24.547 v1.0.0  
 Source: Intel / Vivek*

**Discussion:**

Sapan Shah (Samsung)

Can you please reword as “The off-network procedures are out of scope of the present document in this release of the specification.” ?

This is to align all SEAL specification text regarding off-network procedures (as specified in C1-200526 from Huawei).

@Lena: I will be revising my contributions C1-200643 and C1-200651 – to align text to above wordings.

Vivek Gupta (Intel)

The missing words added.

C1-200614 revised to C1-200818 accordingly and uploaded.

Sapan Shah (Samsung)

Thanks Vivek. I check the revision and I am fine with the changes.

@Lena: As I have mentioned in below email - I have revised my 2 contributions as follows:

- C1-200643: Revised to C1-200822. Uploaded and available.

- C1-200651: Revised to C1-200823. Uploaded and available.

**Decision:** The document was **revised to C1-200818**.

**C1-200818 Off Network Procedures for Identity Management**

*Type: pCR For: Agreement  
 24.547 v1.0.0  
 Source: Intel / Vivek*

(Replaces C1-200614)

**Decision:** The document was **agreed**.

**C1-200615 Resolution of editor's note under clause 6.2.2.2.1**

*Type: pCR For: Agreement  
 24.548 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **agreed**.

**C1-200616 Resolution of editor's note under 6.2.2.2.3**

*Type: pCR For: Agreement  
 24.548 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

**Decision:** The document was **agreed**.

**C1-200617 General on unicast resource management**

*Type: pCR For: Agreement  
 24.548 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

**Discussion:**

Sapan Shah (Samsung)

Few comments:

1) In clause 6.2.2.1 – points a), b) and c) are repeated again after second paragraph.

2) Second paragraph needs to be reworded:

The VAL client can request the VAL server to provide unicast resources (see clause 6.2.2), to modify or to release unicast resources (see clause 6.2.3) or to perform network resource adaptation (see clause 6.2.4).

3) Can you please recheck the clause number referenced? – In above line - Clause 6.2.3 is for multicast resource management, and there is no clause 6.2.4.

a. Did you mean to refer clause 6.2.2.2, 6.2.2.3 and 6.2.2.4 ?

4) Please provide stage#3 references instead of stage#2 reference (23.286). Also, reference number [7] is for RFC 3428 and not for TS 23.286.

5) Please provide stae#3 CT4 reference instead of stage#2 references (23.203 and 23.503). Also, reference numbers [18] and [19] doesn’t exists.

-

Christian Herrero (Huawei)

Thanks for the review and comments.

I have produced a revision which should take all your comments into account:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-revision-of-C1-200617-v1.doc

Please, let me know if the revision is fine by you.

**Decision:** The document was **revised to C1-200904**.

**C1-200904 General on unicast resource management**

*Type: pCR For: Agreement  
 24.548 v0.2.0  
 Source: Huawei, HiSilicon /Christian*

(Replaces C1-200617)

**Decision:** The document was **agreed**.

**C1-200633 Adding access token in proper header of HTTP request from client**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **revised to C1-201004**.

**C1-201004 Adding access token in proper header of HTTP request from client**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

(Replaces C1-200633)

**Decision:** The document was **agreed**.

**C1-200634 XML schema for SEAL group document and update coding**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **agreed**.

**C1-200635 Updating client side procedures based on XML schema**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **agreed**.

**C1-200636 Location based group creation procedure**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **agreed**.

**C1-200637 Parameters for group event subscription and notification**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **agreed**.

**C1-200638 Procedures for management of group events subscription**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **revised to C1-200887**.

**C1-200887 Procedures for management of group events subscription**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

(Replaces C1-200638)

**Decision:** The document was **agreed**.

**C1-200639 Procedures to notify group events**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **revised to C1-200888**.

**C1-200888 Procedures to notify group events**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

(Replaces C1-200639)

**Decision:** The document was **agreed**.

**C1-200640 Removal of clause for security parameter**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **agreed**.

**C1-200641 Group announcement and join procedure**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **revised to C1-200885**.

**C1-200885 Group announcement and join procedure**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

(Replaces C1-200641)

**Decision:** The document was **agreed**.

**C1-200642 Group member leave procedure**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **revised to C1-200884**.

**C1-200884 Group member leave procedure**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

(Replaces C1-200642)

**Decision:** The document was **agreed**.

**C1-200643 Removal of editor’s note for off-network**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **revised to C1-200822**.

**C1-200822 Removal of editor’s note for off-network**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

(Replaces C1-200643)

**Decision:** The document was **agreed**.

**C1-200644 Update references**

*Type: pCR For: Agreement  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **agreed**.

**C1-200645 XML schema for VAL user profile document and update of coding**

*Type: pCR For: Agreement  
 24.546 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **agreed**.

**C1-200646 XML schema and coding for VAL UE configuration document**

*Type: pCR For: Agreement  
 24.546 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **agreed**.

**C1-200647 Management of configuration event subscription**

*Type: pCR For: Agreement  
 24.546 v1.0.0  
 Source: Samsung / Sapan*

**Discussion:**

Chen (Huawei°

Wording:

- Before the word “HTTP” there should be an “an”/”the”, not missing or “a”

Please check C1-200642, C1-200641 and others too.

-

Sapan Shah (Samsung)

Thanks Chen for your comments. I took care of your comments and uploaded the draft revisions. Let me know if you have any further comments.

@Lena:

- C1-200647: Revised to C1-200873. - Draft revision available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200873\_was\_0647\_SCM\_Management\_of\_configuration\_event\_subscription\_draft\_v1.zip

- C1-200642: Revised to C1-200884. - Draft revision available at:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200884\_was\_0642\_SGM\_Group\_leave\_procedure\_draft\_v1.zip

- C1-200641: Revised to C1-200885.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200885\_was\_0641\_SGM\_Grooup\_announcement\_and\_join\_procedure\_draft\_v1.zip

**Decision:** The document was **revised to C1-200873**.

**C1-200873 Management of configuration event subscription**

*Type: pCR For: Agreement  
 24.546 v1.0.0  
 Source: Samsung / Sapan*

(Replaces C1-200647)

**Decision:** The document was **agreed**.

**C1-200648 Procedure to notify configuration management event**

*Type: pCR For: Agreement  
 24.546 v1.0.0  
 Source: Samsung / Sapan*

**Discussion:**

Chen (Huawei)

Comments on wording, please see the below:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200648\_draftv1\_by\_Chen.doc

**Decision:** The document was **revised to C1-200872**.

**C1-200872 Procedure to notify configuration management event**

*Type: pCR For: Agreement  
 24.546 v1.0.0  
 Source: Samsung / Sapan*

(Replaces C1-200648)

**Decision:** The document was **agreed**.

**C1-200649 Parameters for configuration event subscription and notification**

*Type: pCR For: Agreement  
 24.546 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **agreed**.

**C1-200650 Corrections in procedures**

*Type: pCR For: Agreement  
 24.546 v1.0.0  
 Source: Samsung / Sapan*

**Discussion:**

Chen (Huawei)

My suggestion is not to replace the X-3GPP-Intended-Identity with an Authorization header field with the "Bearer" authentication scheme. The reasons are as follows:

1. In my understanding, The VAL user's identity is NOT encoded within access-token (of type "Bearer") shared by Identity Management Server (SIL-S).

TS23.434 states:

7.1 User identity (User ID)

The VAL user presents the user identity to the identity management server during a user authentication transaction, to provide the identity management client a means for VAL service authentication.

7.2 VAL user identity (VAL user ID)

The VAL user ID is a unique identifier within the VAL service that represents the VAL user. For example, the VAL user ID may be a URI.

Therefore, it is the User ID encoded within access-token not the VAL user ID.

2. The VAL user ID is needed in the HTTP request message and the X-3GPP-Intended-Identity is simple and convenient enough to indicate the VAL user identity. Therefore, from my side, there’s no need to change this.

-

Sapan Shah (Samsung)

Thanks for your comment. We kindly disagree that we need to use X-3GPP-Intended-Identity header to share user's identity.

- The user authentication and authorization framework is generally defined by SA3 (TS 33.434). We need to follow the process defined in SA3.

- I may have used wrong word "encoded" - but as per SA3 group, access token conveys user's identity to server. The client shall send access-token to server so that server can validate access-token and determine user's identity from access-token.

- Here are some excerpt from SA3 contributions (S3-200166)

Access tokens of type "bearer" shall be communicated from the SIM-C to VAL resource servers by including the access token in the HTTP Authorization Header, per IETF RFC 6750 [4].

The access token is opaque to the SIM-C, meaning that the client does not have any knowledge of the access token itself.

- You may also want to check TS 33.180 - how the usage of access token is defined.

- As per SA3 defined framework - we need to use HTTP Authorization header with access-token of type "Bearer".

Let me know if you need any more clarifications or you are fine with the proposed changes.

--

Chen

Thanks for your feedback.

My confusion is:

1. Why cannot the X-3GPP-Intended-Identity header be used?

2. User identity is not VAL user identity. What if a VAL user has many VAL service?(i.e. a user identity with multi VAL user identities);

3. Identity management is different from other SEAL management procedures on authentication, because TS23.434 states:

7.1 User identity (User ID)

The VAL user presents the user identity to the identity management server during a user authentication transaction, to provide the identity management client a means for VAL service authentication.

Moreover,In your example in TS 24.484:

2) CMS-1 authenticates User1using the access token in the authorization header field

I checked and found that though an Authorization header field with the "Bearer" authentication scheme is included, the VAL user identity is also included in the MIME boby:

<MCPTTUserID>

<uri-entry>sip:user2@example.com</uri-entry>

<display-name xml:lang="en-GB">User 2</display-name>

<anyExt/>

</MCPTTUserID>

On the other hand, there’s no clear word on this issues (besides as you said The user authentication and authorization framework is generally defined by SA3 (TS 33.434)) in TS33.434, and S3-200166 has not been agreed by now. We therefore suggest to keep the current situation(i.e. X-3GPP-Intended-Identity header used in all SEAL specifications by now) and postpone this related issues to wait for SA3 to have some agreed text on security details.

--

Sapan Shah (Samsung)

1. Why cannot the X-3GPP-Intended-Identity header be used?

[SS] I am not security expert but as per my understanding we should not send VAL user's identity in plain form in X-3GPP-Intended-Identity header. And so, SIM-S includes VAL user's identity within access-token and make it opaque. When SEAL client sends access-token to SEAL server, the SEAL server can validate the access-token and determine the VAL user's identity.

2. User identity is not VAL user identity. What if a VAL user has many VAL service?(i.e. a user identity with multi VAL user identities);

[SS] I agree - User identity is not VAL user identity. The access-token contains VAL user's identity only.

3. Identity management is different from other SEAL management procedures on authentication, because TS23.434 states:

7.1 User identity (User ID)

The VAL user presents the user identity to the identity management server during a user authentication transaction, to provide the identity management client a means for VAL service authentication.

[SS] See answer 2.

Moreover,In your example in TS 24.484:

2) CMS-1 authenticates User1using the access token in the authorization header field

I checked and found that though an Authorization header field with the "Bearer" authentication scheme is included, the VAL user identity is also included in the MIME boby:

<MCPTTUserID>

<uri-entry>sip:user2@example.com</uri-entry>

<display-name xml:lang="en-GB">User 2</display-name>

<anyExt/>

</MCPTTUserID>

[SS] Here, The MCX user's identity is added in mcptt-info.xml - which is service specific XML. Adding VAL user's identity separately in XML - is VAL service specific decision. If in V2X specific XML is being defined, then we may agree to add user's identity. As you have already noticed, configuration management server (CMS) uses access-token only to authenticate client.

On the other hand, there’s no clear word on this issues (besides as you said The user authentication and authorization framework is generally defined by SA3 (TS 33.434)) in TS33.434, and S3-200166 has not been agreed by now. We therefore suggest to keep the current situation(i.e. X-3GPP-Intended-Identity header used in all SEAL specifications by now) and postpone this related issues to wait for SA3 to have some agreed text on security details.

[SS] The SA3 working group is responsible for security.

[SS] Based on the situation we are in currently, best way forward is to proceed with proposed changes. If any corrections are needed then we can take it up based on SA3 contribution agreement. I hope we can proceed with the contribution.

-

Chen (Huawei): Thanks for your feedback.

I’m fine now.

**Decision:** The document was **revised to C1-201005**.

**C1-201005 Corrections in procedures**

*Type: pCR For: Agreement  
 24.546 v1.0.0  
 Source: Samsung / Sapan*

(Replaces C1-200650)

**Decision:** The document was **agreed**.

**C1-200651 Removal of editor’s note for off-network**

*Type: pCR For: Agreement  
 24.546 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **revised to C1-200823**.

**C1-200823 Removal of editor’s note for off-network**

*Type: pCR For: Agreement  
 24.546 v1.0.0  
 Source: Samsung / Sapan*

(Replaces C1-200651)

**Decision:** The document was **agreed**.

**C1-200660 Latest draft version of TS 24.544 ver 1.0.0**

*Type: pCR For: Information  
 24.544 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **noted**.

**C1-200662 Latest draft version of TS 24.546 ver 1.0.0**

*Type: pCR For: Information  
 24.546 v1.0.0  
 Source: Samsung / Sapan*

**Decision:** The document was **noted**.

**C1-200676 Workplan for SEAL**

*Type: Work Plan For: (not specified)  
 Source: Samsung / Sapan*

**Decision:** The document was **noted**.

#### 16.2.21 Other Rel-16 non-IMS topics

**C1-200308 Removal of Duplicate Service Operation Details**

*Type: CR For: Approval  
 23.041 v16.2.0 CR-0207 Cat: F (Rel-16)  
  
 Source: Cisco Systems Belgium*

**Decision:** The document was **postponed**.

**C1-200606 Considerations for AML over SMS in roaming scenarios**

*Type: discussion For: Decision  
 Source: Apple*

**Abstract:**

This contribution highlights that AML over SMS is one the preferred and actively being deployed mechanisms in commercial networks and discusses potential solution of having a NAS signalling based solution to indicate to the UE about the SMS-C address for

**Decision:** The document was **postponed**.

### 16.3 WIs for IMS

#### 16.3.1 MCCI3

**C1-200366 Non-3GPP Message for Data interworking**

*Type: pCR For: Agreement  
 29.582 v1.0.1  
 Source: Sepura, Hytera Communications Corp.*

**Abstract:**

This pCR proposes text to add the non-3GPP security message as defined in TS 23.283, adopting the approach previously agreed for MCPTT

**Discussion:**

Jörgen Axell (Ericsson): A few comments:

The new annex Y is to a large extent a copy of 24.282 annex D. Why not just reference annex D and specify the extensions?

X.1.1 bullet 6): Is this going to MC service users? Or is it going to a user homed in the IWF?

Kit Kilgour (Sepura): Mike has also raised the first point. There is no change to the body text to the XML schema from 24.282 . The only change to the detail of the 24.282 annex D text is in the semantics & extension sections of the usage of AnyExt to carry the Interworking Security Data Message. I wasn’t sure from the Reno discussion as to whether this was do-able. Happy to simplify by referring to the existing 24.282 schema

A resulting question – do we actually need an IANA registration if we can refer to 24.282, re-use the XML schema and only change the semantics & extension description

X.1.1 bullet 6) – this is a message generated by the IWF towards MC service users. [In reality, IWF will be triggered to generate it by some unspecified Key Management activity on the LMR side]

-

Kit

In line with the comments suggesting working by describing any differences from existing 24.282 , a revision number C1-200912 has been taken and draft-C1-200912\_was\_0366… is now in Inbox/drafts at

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft\_C1-200912\_was\_0366\_pCR-non\_3GPP\_message.zip

The changes are

a) Text alignment in X.1.1 3) to remove duplicate ‘IWF’ so that it now starts ‘shall’ rather than ‘the IWF shall’

b) Annex Y.1.2 is simplified to reference the (unchanged) XML schema already defined for MCData in 24.282

c) Annex Y.1.3 is simplified to reference the associated semantics already defined for the mcdatainfo in 24.282 and identify with the modification

d) Annex X (IANA forms) is removed because advice is that as the existing XML schema is unchanged, no new IANA mime type is needed.

**Decision:** The document was **revised to C1-200912**.

**C1-200912 Non-3GPP Message for Data interworking**

*Type: pCR For: Agreement  
 29.582 v1.0.1  
 Source: Sepura, Hytera Communications Corp.*

(Replaces C1-200366)

**Decision:** The document was **agreed**.

**C1-200367 SDS media plane message handling by IWF**

*Type: pCR For: Agreement  
 29.582 v1.0.1  
 Source: Sepura, Hytera Communications Corp.*

**Abstract:**

This pCR outlines handling of SDS media plane messages received by the IWF

**Discussion:**

Jörgen Axell (Ericsson): In 9.2.3 it is stated that SDS over media plane is not supported. So what do we need clause 16 for? If we need it, isn't it better to just state "no media plane procedures specified"?

Kit Kilgour: That would be OK. As François, I think, pointed out in Reno, there will be an eventual need to support it for the reasons given in the introduction, so I believe that leaving clause 16 in as a placeholder is useful.

Clause 16 could just become "no media plane procedures specified in the present document.", with no 16.1 etc.

Kit:

Following the comment, I have revised C1-200367 to a draft\_C1-200913 and it can be found in Inbox/Drafts as draft\_C1-200913\_was\_0367\_pCR-SDS\_media\_plane\_message\_handling ... at

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft\_C1-200913\_was\_0367\_pCR-SDS\_media\_plane\_message\_handling.zip

The change is to remove the addition of clause 16.1 and just have simplified text under the main clause

Mike Dolan (Firstnet)

0913 – OK

**Decision:** The document was **revised to C1-200913**.

**C1-200913 SDS media plane message handling by IWF**

*Type: pCR For: Agreement  
 29.582 v1.0.1  
 Source: Sepura, Hytera Communications Corp.*

(Replaces C1-200367)

**Decision:** The document was **agreed**.

**C1-200369 Remove editor's note – clause 4.1**

*Type: pCR For: Agreement  
 29.582 v1.0.1  
 Source: FirstNet / Mike*

**Decision:** The document was **agreed**.

**C1-200370 Remove editor's note – clause 4.2.2**

*Type: pCR For: Agreement  
 29.582 v1.0.1  
 Source: FirstNet / Mike*

**Decision:** The document was **agreed**.

**C1-200371 Remove editor's note – clause 6.3.2.1**

*Type: pCR For: Agreement  
 29.582 v1.0.1  
 Source: FirstNet / Mike*

**Decision:** The document was **agreed**.

**C1-200372 Remove editor's note – clause 6.6.2**

*Type: pCR For: Agreement  
 29.582 v1.0.1  
 Source: FirstNet / Mike*

**Discussion:**

Jörgen Axell (Ericsson) Why not remove "in the present document"? I think it only confuses the reader, as we don't talk about the document but about the IWF.

Mike Dolan (Firstnet): Good comment. I will remove those words in a revision.

I have a revision of 0372 in the Drafts folder. Please let me know if there are any problems.

I plan to get a Tdoc number and upload the evening of 2/26.

**Decision:** The document was **revised to C1-200946**.

**C1-200946 Remove editor's note – clause 6.6.2**

*Type: pCR For: Agreement  
 29.582 v1.0.1  
 Source: FirstNet / Mike*

(Replaces C1-200372)

**Decision:** The document was **agreed**.

**C1-200373 Remove editor's note – clause 8.3.2.8**

*Type: pCR For: Agreement  
 29.582 v1.0.1  
 Source: FirstNet / Mike*

**Discussion:**

Jörgen Axell (Ericsson): "Not supported" is not a response code I know about, which response code is intended?

Mike Dolan (Firstnet) The simplest solution is just deletion of the EN and not include a new NOTE.

Would that be acceptable?

I have a revision of 0373 in the Drafts folder. Please let me know if there are any problems.

I plan to get a Tdoc number and upload the evening of 2/26.

**Decision:** The document was **revised to C1-200948**.

**C1-200948 Remove editor's note – clause 8.3.2.8**

*Type: pCR For: Agreement  
 29.582 v1.0.1  
 Source: FirstNet / Mike*

(Replaces C1-200373)

**Decision:** The document was **agreed**.

#### 16.3.2 MCProtoc16

**C1-200357 Correcting SIP related terminology**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0543 Cat: F (Rel-16)  
  
 Source: Ericsson / Nevenka*

**Decision:** The document was **agreed**.

**C1-200358 Correcting SIP related terminology**

*Type: CR For: Agreement  
 24.281 v16.2.0 CR-0089 Cat: F (Rel-16)  
  
 Source: Ericsson / Nevenka*

**Decision:** The document was **agreed**.

**C1-200359 Correcting SIP related terminology**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0099 Cat: F (Rel-16)  
  
 Source: Ericsson / Nevenka*

**Decision:** The document was **agreed**.

**C1-200709 FEC encoding by the BM-SC**

*Type: CR For: Agreement  
 24.581 v16.3.0 CR-0068 Cat: C (Rel-16)  
  
 Source: ENENSYS*

**Abstract:**

3GPP TS 23.280 proposes 2 options to apply FEC when using MBMS :

• One locates the FEC encoding within the MCVideo server (subclause 10.7.3.11.3)

• One locates the FEC encoding within the BM-SC (subclause 10.7.3.11.2)

The second option requires an MB2 ex

**Discussion:**

Sapan Shah (Samsung):

In TS 24.581 - clause 4.2.3.3.1 already contains the similar text which has been proposed in this contribution.

Text from clause 4.2.3.3.1:

The participating MCVideo function can apply forward error correction to the media packets before transmitting them over MBMS, or it can ask the BM-SC to apply forward error correction application as described in 3GPP TS 23.280 [12].

Not able to understand why we need to mention similar text again in clause 10.4.1?

-

Mike Dolan (Firstnet):I agree with Sapan. Based on his comment below, perhaps a revision of this CR could simply delete the note.

-

Christophe Burdinat (Enensys)

Thanks Sapan, Mike for pointing that out.

I will submit the suggested revision (just delete the note) if there is no additional comments.

-

C1-200709 is revised into C1-200838.

The revision has been uploaded: http://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs/C1-200838.zip

**Decision:** The document was **revised to C1-200838**.

**C1-200838 FEC encoding by the BM-SC**

*Type: CR For: Agreement  
 24.581 v16.3.0 CR-0068 rev 1 Cat: C (Rel-16)  
  
 Source: ENENSYS*

(Replaces C1-200709)

**Decision:** The document was **agreed**.

#### 16.3.3 MuD

**C1-200360 Update of OMA references**

*Type: pCR For: Approval  
 24.174 v1.2.1  
 Source: Ericsson / Nevenka*

**Decision:** The document was **agreed**.

**C1-200361 Adding interactions with "Multi-Device" and "Multi-Identity" services**

*Type: CR For: Agreement  
 24.604 v15.1.0 CR-0188 Cat: B (Rel-16)  
  
 Source: Ericsson / Nevenka*

**Discussion:**

Bill (Huawei)

As described in 24.174:

federated UEs: a group of UEs which are configured to use the same public user identity.

If User B and User C are federated UEs.

1)

If there is an active CFU service for the public user identity used by these federated UEs.

IMO, the CFU service should be invoked when receiving an incoming call.

i.e. CFU service takes high priority than MuD service.

2) And,

If there is an active CFB service and an active CFNR service for the public user identity used by these federated UEs.

If Used B is idle and User C is busy, if none of them answers the call, the CFNR service should be invoked.

i.e. which CFx service should be invoked is based on the last call failure cause.

Could we add some descriptions for these scenarios.

-

Nevenka Biondic (Ericsson)

As described in 24.174:

federated UEs: a group of UEs which are configured to use the same public user identity.

If User B and User C are federated UEs.

Nevenka: I assume you wanted to indicate different UEs of the same user, so UE1 and UE2.

1)

If there is an active CFU service for the public user identity used by these federated UEs.

IMO, the CFU service should be invoked when receiving an incoming call.

i.e. CFU service takes high priority than MuD service.

Nevenka: I agree. This is already specified in TS 24.174, clause 4.6.11:

At the AS serving the user holding the terminating external alternative or virtual identity, the CFU (communication forwarding unconditional) take precedence over execution of MiD and MuD services.

2) And,

If there is an active CFB service and an active CFNR service for the public user identity used by these federated UEs.

If Used B is idle and User C is busy, if none of them answers the call, the CFNR service should be invoked.

i.e. which CFx service should be invoked is based on the last call failure cause.

Nevenka: If UE1 which is idle does not answer the call then I assume INVITE will be responded with 480 Temporarily unavailable (or 408 Request Timeout), and if UE2 which is busy does not answer the call then 486 Busy Here response. Thus could be invocation of CFB or CFNR. TS 24.174, clause 4.6.11 specifies:

At the terminating side, it is implementation specific to select CDIV service when different CDIV services apply to different federated UEs.

Could we add some descriptions for these scenarios.

Nevenka: If you believe that additional clarification is needed then we should update TS 24.174 which specifies MuD service.

-

Nevenka Biondic (Ericsson)

Thanks a lot for your detailed response.

We are fine with the CR.

Maybe, we will bring CR to make further clarification in the next meeting.

**Decision:** The document was **agreed**.

**C1-200362 Adding interactions with "Multi-Device" and "Multi-Identity" services**

*Type: CR For: Agreement  
 24.605 v15.0.0 CR-0028 Cat: B (Rel-16)  
  
 Source: Ericsson / Nevenka*

**Decision:** The document was **agreed**.

**C1-200363 Adding interactions with "Multi-Device" and "Multi-Identity" services**

*Type: CR For: Agreement  
 24.615 v15.0.0 CR-0075 Cat: B (Rel-16)  
  
 Source: Ericsson / Nevenka*

**Discussion:**

Mariusz Skrocki (ORANGE): Since a term of user B is needed without defining it here, a reference to 24.174 is needed to be added.

Nevenka Biondic (Ericsson): I would like to clarify that this CR refers to user B as defined in TS 24.615, clause 3.1:

User B: User B is the user who reacts to the communication waiting at subscriber B. User B is the served user for the communication waiting service.

And not to user B as defined in 24.174.

-

Mariusz Skrocki (ORANGE)

You’re right, I didn’t noticed that. Then I’m ok with this CR.

Upendra:

The cover page should select the proposed change affects for UE also as it is terminal based call waiting using UDUB. If there is a revision please do the changes.

-

Wei Haitao (Huawei)

As described in 24.174:

federated UEs: a group of UEs which are configured to use the same public user identity.

If User B and User C are federated UEs. And, there is an active CW service for the public user identity used by these federated UEs.

My question is, when receiving an incoming call to these federated UEs:

1) if User B is idle and User C is busy, so whether the User C can apply the CW service (i.e. User C will hear some voice alert for the incoming call )? Does the caller hear normal ring back tone (i.e. there is no CW alert to the caller )? If User B answers the call, the voice alert to User C should be stopped.

2) if both User B and User C are busy, so whether both the User B and User C can apply the CW service (i.e. User B and User C will hear some voice alert for the incoming call )? If one of these federated UEs answers the incoming call, the another one of these federated UEs should stop hearing the voice alert for the incoming call.

IMO, we should clarify these scenarios in the contribution.

-

Nevenka Biondic (Ericsson)

If User B and User C are federated UEs. And, there is an active CW service for the public user identity used by these federated UEs.

Nevenka: I assume same as in 0361, you wanted to indicate different UEs of the same user, so UE1 and UE2.

My question is, when receiving an incoming call to these federated UEs:

1) if User B is idle and User C is busy, so whether the User C can apply the CW service (i.e. User C will hear some voice alert for the incoming call )? Does the caller hear normal ring back tone (i.e. there is no CW alert to the caller )? If User B answers the call, the voice alert to User C should be stopped.

Nevenka: Here we can have different cases. If I have 2 UEs and I am involved in call on UE1 then I would prefer to have CW applied since I am nice person and will not answer call on UE2. However if we as a family have one identity with federated UEs, then my husband can answer new call on UE 2 while I am involved in call on UE1.

Such decisions are related to the MuD service, not to CW. TS 24.174 specifies in clause 4.6.5:

For MuD, if there are ongoing communications, it is a service option whether to send an incoming initial INVITE to all federated UEs or only those UEs with ongoing communications.

2) if both User B and User C are busy, so whether both the User B and User C can apply the CW service (i.e. User B and User C will hear some voice alert for the incoming call )? If one of these federated UEs answers the incoming call, the another one of these federated UEs should stop hearing the voice alert for the incoming call.

Nevenka: If UE1 and UE2 are busy and receive an INVITE, they will apply terminal based CW (as indicated in C1-200363).

If one of them answers the AS will CANCEL the outstanding request. This is also a responsibility of the forking entity, i.e. the MuD service.

IMO, we should clarify these scenarios in the contribution.

Nevenka: If you believe that additional clarification is needed then we should update TS 24.174 which specifies MuD service.

**Decision:** The document was **revised to C1-200810**.

**C1-200810 Adding interactions with "Multi-Device" and "Multi-Identity" services**

*Type: CR For: Agreement  
 24.615 v15.0.0 CR-0075 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson / Nevenka*

(Replaces C1-200363)

**Decision:** The document was **agreed**.

**C1-200364 Adding interactions with "Multi-Device" and "Multi-Identity" services**

*Type: CR For: Agreement  
 24.629 v15.0.0 CR-0039 Cat: B (Rel-16)  
  
 Source: Ericsson / Nevenka*

**Decision:** The document was **agreed**.

**C1-200653 Clarifications of identity definitions and activation procedures**

*Type: pCR For: (not specified)  
 24.174 v1.2.1  
 Source: Ericsson /Jörgen*

**Discussion:**

Mariusz Skrocki (ORANGE): It seems a bit not clear to have it like this, that “Identity C can be an external alternative identity, a virtual identity or a non-native identity.”.

Whereas in definition of non-native identity we have “The non-native identity may be an alternative identity, external alternative identity or a virtual identity.”.

One thing is that identities C and D can be as well alternative identity.

The definitions of identities C and D are in fact similar to the definition of non-native identity, and to me identities C and D are the subset of non-native identities of users A and B, with the differentiator that these are not registered by user.

An alternative proposal could be to just say that:

identity C: identity C is a non-native identity that can be used by user A and is not registered by user A

and respectively for identity D?

Moreover, 2nd change of pCR to clause 4.5.2 is not indicated in cover page.

A proposal for extending the text as follows:

The user of MiD service decides which of its identities are active and can be used for incoming and outgoing calls by changing the "Activated" attribute in the <Shared-identity> or <Delagated-user> elements in the service configuration data.

Jörgen Axell (Ericsson)

I agree it is a bit unclear. I need to think about a use case where the alternative identity is identity C or D. So maybe the correct change is to remove the non-native identity here.

I will also add the change to 4.5.2 to the cover page and I am happy to use your wording.

-

Mariusz Skrocki (ORANGE) provided detailed comments

**Decision:** The document was **revised to C1-200959**.

**C1-200959 Clarifications of identity definitions and activation procedures**

*Type: pCR For: -  
 24.174 v1.2.1  
 Source: Ericsson /Jörgen*

(Replaces C1-200653)

**Decision:** The document was **revised to C1-201046**.

**C1-201046 Clarifications of identity definitions and activation procedures**

*Type: pCR For: -  
 24.174 v1.2.1  
 Source: Ericsson /Jörgen*

(Replaces C1-200959)

**Decision:** The document was **agreed**.

**C1-200654 Call log handling, Additional-Identity**

*Type: pCR For: (not specified)  
 24.174 v1.2.1  
 Source: Ericsson /Jörgen*

**Discussion:**

Mariusz Skrocki (ORANGE)

In 4.5.3.1 for user A and in 4.5.3.6 for user B respectively, we see this sentences proposed to be added:

If the served user in the "From/To" field is an identity not registered by the UE, the UE shall deduce that the call was originated using the Additional-Identity header field.

So a question for clarification, if my understanding of the intention of this pCR is correct:

- There are two devices of users A1 and A1 in multi-device case sharing the registered identity A,

- So there is a call log for this identity A, and both A1 and A2 are subscribed to this call log.

- If any of them (let’s say A1) is allowed to use identity C for a call (so in Additional-Identity header field), the AS-A will add the entry in the call log of identity A, but in which it will put in the “From” filed the identity C instead of A.

- After, the call log for identity A is synchronized among A1 and A2

- Respectively in the user B side…

So by the end, on both A1 and A2, it will be possible to see the call log entry for an outgoing call made with identity C (even if again the identity C is not being registered. Is this understanding correct and following the intention leading to the proposed changes in this pCR?

Jörgen Axell (Ericsson)

I think you got it right. In this way it will be possible to detect that the user has used or being reached by the identity C or D. The alternative would have been to ask OMA to introduce support for the Additional-Identity header field.

**Decision:** The document was **agreed**.

**C1-200656 Conf indication completion**

*Type: pCR For: (not specified)  
 24.174 v1.2.1  
 Source: Ericsson /Jörgen*

**Decision:** The document was **agreed**.

**C1-200657 Management object correction, MuD**

*Type: pCR For: (not specified)  
 24.175 v1.0.1  
 Source: Ericsson /Jörgen*

**Discussion:**

Jörgen Axell (Ericsson): This pCR clashes with Orange C1-200664. It is also incomplete as clause 5 needs to be included to reflect the changes in the figure.

Mariusz Skrocki (ORANGE)

Indeed, C1-200657 and C1-200664 touch the same things and we’ll have to find the way forward.

I will appreciate your opinion first about the proposal I’ve included in the draft revision of C1-200664.

Anyway, regarding the C1-200657 itself, I believe that “?” are not needed in both leafs “SharedIdentity” and “DelegatedIdentity”.

The occurrence “One” should be enough in these cases, because there is “\*” in the nodes “<X> \*”, meaning “ZeroOrMore”. So if any of these is not needed, the node at the <X> level will simply not exist.

Then indeed, the changes in clause 5 should be reflected.

And also it seems that there are some corrections in Annex A needed, since In both “<X>\*” nodes

- the Description and DFTitle should be aligned (parameters vs. settings consequently)

- Occurrence should be “ZeroOrMore” not “OneOrMore”

**Decision:** The document was **revised to C1-200961**.

**C1-200961 Management object correction, MuD**

*Type: pCR For: -  
 24.175 v1.0.1  
 Source: Ericsson /Jörgen*

(Replaces C1-200657)

**Discussion:**

Merged into C1-201011

**Decision:** The document was **merged**.

**C1-200664 MO for MuD and MiD correction**

*Type: pCR For: Agreement  
 24.175 v1.0.1  
 Source: Orange / Mariusz*

**Discussion:**

Jörgen Axell (Ericsson): As stated in previous mail, this pCR collides with 0657. My comments on this one:

I don't think "Activated" should be part of an MO. This parameter is something the user is able to change, and there is no way to do that using the MO. So I prefer keeping this object to inform the UE that there are identities it can use.

I am not convinced that Call log URI can be used for the shared identity without a change in the call log for authenticating and authorizing the user. It will require changes to the call log function to enable it to be reached from someone else than the native identity it is serving. My view is that you can only access the call log using your native identity, but you receive information related to the identities use, clarified in C1-100654.

Jörgen Axell (Ericsson) As stated in previous mail, this pCR collides with 0657. My comments on this one:

I don't think "Activated" should be part of an MO. This parameter is something the user is able to change, and there is no way to do that using the MO. So I prefer keeping this object to inform the UE that there are identities it can use.

I am not convinced that Call log URI can be used for the shared identity without a change in the call log for authenticating and authorizing the user. It will require changes to the call log function to enable it to be reached from someone else than the native identity it is serving. My view is that you can only access the call log using your native identity, but you receive information related to the identities use, clarified in C1-100654.

Jörgen Axell (Ericsson): I thought that we at some point concluded that the UE does not keep two different registrations? At least we removed them from the now removed annex. I wanted to keep multi-device and multi-identity trees somewhat separated in case there are different extensions in the future.

I will do updates of my contribution and then we can discuss further. I suspect that it is not easy to use different identities than the native identity to reach the call log. So the outstanding question there is if anything is needed to be able to access a call log from another identity.

**Decision:** The document was **revised to C1-201011**.

**C1-201011 MO for MuD and MiD correction**

*Type: pCR For: Agreement  
 24.175 v1.0.1  
 Source: Orange / Mariusz*

(Replaces C1-200664)

**Decision:** The document was **revised to C1-201030**.

**C1-201030 MO for MuD and MiD correction**

*Type: pCR For: Agreement  
 24.175 v1.0.1  
 Source: Orange / Mariusz*

(Replaces C1-201011)

**Decision:** The document was **agreed**.

**C1-200665 MuD MiD and CAT interactions**

*Type: pCR For: Agreement  
 24.174 v1.2.1  
 Source: Orange / Mariusz*

**Discussion:**

Jörgen Axell (Ericsson): This follows the general principle that the services are handled by the AS serving the borrowed identity, but is this reasonable in this case? At least for the originating network, I think that user A owns its user interface. So if user A has a setting that its own CAT overrides the CAT of the terminating side then this will override any CAT. For CDIV it is an operator option to select which to play. So essentially I think that for user B there is no impact.

So for originating side no impact is better to state.

In any case the MiD/MuD does not need to do anything for CAT to work, so I think "no impact" is correct.

**Decision:** The document was **revised to C1-200947**.

**C1-200947 MuD MiD and CAT interactions**

*Type: pCR For: Agreement  
 24.174 v1.2.1  
 Source: Orange / Mariusz*

(Replaces C1-200665)

**Decision:** The document was **agreed**.

**C1-200667 MuD MiD and CRS interactions**

*Type: pCR For: Agreement  
 24.174 v1.2.1  
 Source: Orange / Mariusz*

**Discussion:**

Jörgen Axell (Ericsson); Similar comments as for CAT. I think user B owns it interface and then the easiest is that the same settings as for CDIV apply, see 24.183 4.6.7.1 (which I suspect has an error "also not"-->"also").

So my preference is to state in 24.174 that there is no impact, and in 24.183 have similar text as for CDIV.

**Decision:** The document was **revised to C1-200950**.

**C1-200950 MuD MiD and CRS interactions**

*Type: pCR For: Agreement  
 24.174 v1.2.1  
 Source: Orange / Mariusz*

(Replaces C1-200667)

**Decision:** The document was **agreed**.

**C1-200668 CAT interactsions with MuD and MiD**

*Type: CR For: Agreement  
 24.182 v16.1.0 CR-0118 Cat: B (Rel-16)  
  
 Source: Orange / Mariusz*

**Decision:** The document was **revised to C1-200951**.

**C1-200951 CAT interactsions with MuD and MiD**

*Type: CR For: Agreement  
 24.182 v16.1.0 CR-0118 rev 1 Cat: B (Rel-16)  
  
 Source: Orange / Mariusz*

(Replaces C1-200668)

**Decision:** The document was **agreed**.

**C1-200670 CRS interactsions with MuD and MiD**

*Type: CR For: Agreement  
 24.183 v16.2.0 CR-0061 Cat: B (Rel-16)  
  
 Source: Orange / Mariusz*

**Decision:** The document was **revised to C1-200953**.

**C1-200953 CRS interactsions with MuD and MiD**

*Type: CR For: Agreement  
 24.183 v16.2.0 CR-0061 rev 1 Cat: B (Rel-16)  
  
 Source: Orange / Mariusz*

(Replaces C1-200670)

**Decision:** The document was **agreed**.

#### 16.3.4 IMSProtoc16

**C1-200625 Location information; mid-call access change**

*Type: CR For: (not specified)  
 24.229 v16.4.0 CR-6411 Cat: B (Rel-16)  
  
 Source: Ericsson, Deutsche Telekom /Jörgen*

**Discussion:**

Sung Hwan Won (Nokia):

1) Is there a related stage 2 requirement?

2) On the procedure, would the MESSAGE be sent only to one AS or to multiple ASes?

3) Our understanding is that VPLMN change would not be reported via Rx. So, is the use case related to S8HR mentioned in the cover sheet valid?

4) What do you think about including PVNI header field in the MESSAGE request?

5) On the frequency of the MESSAGE transmission, can this flood the network?

6) Would change to WLAN be covered?

Mariusz Skrocki (ORANGE): In addition:

1) What exactly should be understood “determines that the UE has changed location”? It seems not fully clear based on what P-CSCF determines that.

2) Why not to refer exactly to the new clause 5.2.x in the sentence added in clause 4.1;

3) Second dot not needed in 7.9A.X:

Examples of typical use: A network entity indicating support for mid-call updates. A downstream network entity performs the update..

--

Hiroshi

- May I ask clarification on the use case, is it intended to provide different retails charging depending on each access and per RAT type?

 As Mariusz pointed out in his first bullet, determination based on location change as described clause 5.2.x could be misleading.

- Just to understand the condition of the support, if retail charging is influenced based on this new indicator, is it the assumption that operators have to upgrade all P-CSCF, or unexpected charging may occur?

-

Jörgen Axell (Ericsson)

Yue's questions:

1. Is the latest location information contained in the PANI header field of the MESSAGE request?

Yes. That is the intention. The whole process is triggered by a location update over Rx.

2. If there is another AS (acting as B2BUA) triggered before the AS expected to receive the MESSAGE, then the P-CSCF and the concerned AS may see different ICID, in that case how does the AS correlate the MESSAGE and the ongoing session?

ICID is not changed by a B2BUA to my knowledge. A B2BUA change dialog data.

Sung questions:

1) Is there a related stage 2 requirement?

I think we miss the access change as a trigger in 32.260.

2) On the procedure, would the MESSAGE be sent only to one AS or to multiple ASes?

MESSAGE would go to the AS requesting the information in the INVITE or 200 (OK) using the Feature Capability indicator

3) Our understanding is that VPLMN change would not be reported via Rx. So, is the use case related to S8HR mentioned in the cover sheet valid?

I need to check what is coming when the UE moves from one cell in a network of one country to a cell in another country (provided the operator(s) have provisioned for the IP addresses and other necessary configurations.

4) What do you think about including PVNI header field in the MESSAGE request?

It is there: " f) if the UE is roaming, a P-Visited-Network-ID header field; and "

5) On the frequency of the MESSAGE transmission, can this flood the network?

I don't expect it to happen that often. There is some hysteresis when changing cells.

6) Would change to WLAN be covered?

We have for long had the requirement that the UE reregister when changing to/from WLAN, so then there is a REGISTER request to attach the information to.

Mariusz questions:

1) What exactly should be understood “determines that the UE has changed location”? It seems not fully clear based on what P-CSCF determines that.

The P-CSCF can subscribe to changes over Rx. Nothing we want to go into details on.

2) Why not to refer exactly to the new clause 5.2.x in the sentence added in clause 4.1;

That sounds like a good idea.

3) Second dot not needed in 7.9A.X:

Examples of typical use: A network entity indicating support for mid-call updates. A downstream network entity performs the update..

Double dots is possibly not the biggest problem, but I will remove.

Hiroshi:

I don't think this affects retail charging. It is intended to report changes in access in CDRs. So a change from 5GS to LTE will be reported. But it is as much about having correct information for KPIs if something goes wrong in the network.

I will update per Mariusz comments, and we can have further discussion.

**Decision:** The document was **revised to C1-200963**.

**C1-200963 Location information; mid-call access change**

*Type: CR For: -  
 24.229 v16.4.0 CR-6411 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson, Deutsche Telekom /Jörgen*

(Replaces C1-200625)

**Discussion:**

Sung Hwan Won (Nokia)

We would like to ask for a timeout on this one.

**Decision:** The document was **postponed**.

**C1-200659 Correction of P-Associated-URI handling**

*Type: CR For: (not specified)  
 24.229 v16.4.0 CR-6412 Cat: F (Rel-16)  
  
 Source: Ericsson /Jörgen*

**Decision:** The document was **agreed**.

**C1-200684 UAC for MO-IMS registration related signalling EN resolution**

*Type: CR For: (not specified)  
 24.229 v16.4.0 CR-6413 Cat: F (Rel-16)  
  
 Source: NTT DOCOMO INC.*

**Discussion:**

Jörgen Axell (Ericsson)

This CR removes an editor's note that was introduced under the WI 5GProtoc16, so the removal of the EN needs to be handled under 5GProtoc16. This cannot be done in this meeting and a resubmission of the CR is needed to CT1#123.

Maoki Hikosaka (NTT DOCOMO)

OK, it’s fine for us to postpone the CR until next meeting.

**Decision:** The document was **postponed**.

**C1-200772 Correction in IMS\_Registration\_handling policy about how UE should deregister**

*Type: CR For: (not specified)  
 24.229 v16.4.0 CR-6404 rev 5 Cat: - (Rel-16)  
  
 Source: Mediatek Inc.*

**Decision:** The document was **noted**.

#### 16.3.5 MCSMI\_CT

#### 16.3.6 eMCData2

**C1-200447 Key download procedrue for MCData**

*Type: CR For: Approval  
 24.282 v16.2.0 CR-0102 Cat: B (Rel-16)  
  
 Source: Samsung / Sapan*

**Discussion:**

Mike Dolan (Firstnet): typo in bullet 1 of 7.3.7

Val Oprescu (AT&T)

1) Of the 3 references to RFC 4567 in section 7.2.5, two have the reference id [45] and one has the wrong ref id [47].

2) RFC 3428 and RFC 3481 have the same reference id [6]. At least one of them must be wrong/

To fix in contribution and also in 24.379:

3) An occurrence of "an SIP", should be "a SIP"

4) There is a somewhat awkward mention of "a third-party SIP REGISTER". It is unclear if it is the SIP REGISTER received for service authorization and mentioned earlier. (what if the SIP PUBLISH is received instead?).

--

Jörgen Axell (Ericsson)

In addition to Val's editorials:

4.7: 24.379 uses "end-to-end" with hyphen. No capital letters is needed. At least I use this kind of string for searching, so I hope we can keep them consistent.

7.3.7: "and" missing (don't copy errors from 24.379).

7.2.5: "and" missing between bullets i) and ii), and between bullets 1) and 2).

I agree that the "a third-party SIP REGISTER" sounds strange. Maybe "the third-party SIP REGISTER" is better.

--

Sapan Shah (Samsung)

@Mike, Val, Jörgen

Thanks for all your comments. I took all comments on board.

@Jörgen: A new revision has been taken (new tdoc number: C1-200798).

The draft revised document (after taking care of all comments) is also available in below link:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200798\_was\_0447\_MCData\_Key\_Download\_draft\_v1.zip

Kindly let me know if you have any further comments. I will make final revision by tomorrow.

Note: To fix similar issues in 24.379 - we will need new contribution. It can be taken care in next meeting.

**Decision:** The document was **revised to C1-200798**.

**C1-200798 Key download procedrue for MCData**

*Type: CR For: Approval  
 24.282 v16.2.0 CR-0102 rev 1 Cat: B (Rel-16)  
  
 Source: Samsung / Sapan*

(Replaces C1-200447)

**Decision:** The document was **agreed**.

**C1-200448 Retrieval of stored object**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0103 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

**Discussion:**

revised before the meeting

**Decision:** The document was **revised to C1-200544**.

**C1-200473 Search for Objects in MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0104 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

**Discussion:**

revised before the meeting

**Decision:** The document was **revised to C1-200548**.

**C1-200474 Update Object(s) in MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0105 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

**Discussion:**

revised before the meeting

**Decision:** The document was **revised to C1-200550**.

**C1-200475 Delete Stored Object(s) in MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0106 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

**Discussion:**

Mike Dolan (Firstnet):

I believe that the set of CRs on the Message Store procedures in Agenda Item 16.3.6 need some work before acceptance.

I have privately sent a previous version of this list of concerns to the authors before the start of this e-meeting.

I hope that all of us who are concerned with MCData can assist in either determining that these concerns are not valid, or find ways to improve the CRs in this agenda item to resolve them.

- There are no checks to make sure that the source files/folders are permitted to the MCData client.

- There are no checks to make sure that the destination folder is permitted to the MCData client.

- The stage 2 indicates that the MCData server can also place content into the Message Store. There will be a need to carry the MCData ID on the PUT request to the Message Store Function – that is not currently evident.

o As a corollary, if the Message Store Function needs to return an error to the MCData server, the MCData server procedures must be able to handle those errors.

- Based on the above, there is also a question of the destination of any content inserted into the Message Store by the MCData server – it would seem that a default location(s) should be specified. If the MCData server attempts to use a different location, permission for storing into that location should be checked relative to the MCData ID.

- It can be foreseen that the MCData server could be storing content into the Message Store that is both “sent to” and “sent by” the MCData user. This would imply the need to require that content sent by a different MCData user appear in only a specified “inbox” type of folder, with a record of the MCData user that sent it and a timestamp.

o This implies further that the MCData server must be able to indicate the MCData ID of the sender, as well as the MCData ID of the MCData user that will “own” that content once it is stored.

o It would also seem reasonable that an SDS message that the user sends and indicates a copy should be saved would be stored by the MCData server in a “sent” type of folder as a default.

In addition, there are a number of editorial issues that we can sort out, once these more important questions are answered.

I also may not have caught all of the technical issues (or may have some misunderstandings of some of these). Your technical review of these CRs is needed – and once we have reached conclusions on changes to be made, we need to be ready to assist the authors, so that appropriate revisions of these CRs can be agreed by the end of this e-meeting.

--

Sharam Mohajeri (AT&T)

By the way, for some reason I haven’t received your privately sent email (with the listed concerns).

Looking at your list below, I wonder if your listed concerns are mainly around the interactions between MCData Server and MCData Store (MCDATA-8) whereas all the uploaded CRs (e.g. C1-200544) are about interactions between a message store client and the MCData Store (MCDATA-7).

Please see TS 23.282, Subclause 7.13 “Operations on MCData message store” for the operations which the uploaded CRs are trying to cover. For example: C1-200544 is addressing TS 23.282 operations “MCData retrieve a stored object request” & response as specified in Subclauses 7.13.3.1.1 & 7.13.3.1.2 respectively.

Regarding authorization concern – In order to allow the message store client access the end-user’s message store area (e.g. source or destination folders/files), the message store client would need to obtain in advance, the end-user’s consent which would then need to be present as an OAuth access token in the authorization header of the HTTP request (as stated in Note 1 in the CRs).

Regarding MCData ID- The end-user’s identity (MCData ID) is also included in the OAuth access token and also the end-user’s identity (i.e. called {boxId} in OMA NMS) is part of the HTTP RequestURI in referenced OMA NMS spec. So, every RESTful operation invoked by the message store client onto a user’s message store area (over MCDATA-7), contains the identity of the end-user and the consent of the end-user (owning the given message store area).

I hope the above clarification is of help in crossing out some (hopefully most) of your listed concerns.

By the way, please ignore CRs: C1-200448, C1-200473 and C1-200474 which had some editorial issues and had previously been revised to: C1-200544, C1-200548 & C1-200550 respectively.

Lastly, in future meetings we intend to bring in CRs which will address the MCData Server to the MCData Store (MCDATA-8) interactions.

--

Mike Dolan (Firstnet): It is my hope that the MCData-7 (client to message store function) and MCData-8 (MCData server to MSF) interfaces are the same protocol. The same HTTP PUT/GET/POST/DELETE/… will be seen by the MSF. When the HTTP message arrives from the MCData server, the MSF should know that it is communicating with the MCData server and will retrieve some information about who the actual client is, the client whose message store is the target for the PUT.

If you believe that the MCData-7 and MCData-8 interfaces are different, then it means that Short Data Service (SDS) messages cannot be stored in Rel-16 by the MCData server. The client will have to receive them and then send them to the MSF on its own – a waste of network resources as each such message traverses the radio an extra time. It also means that SDS messages that arrive while the user is unregistered to the MCData server will have to be queued in some other location than the MSF.

My comments assume a common protocol that can be used by both the client and the MCData server to communicate – in a client role – with the MSF. If you believe in that model, then my comments and concerns apply. If you believe in some other model, please let me know what it is.

--

Shahram (AT&T)

MCData-8 & MCData-7 interfaces reuse the same OMA RESTful API. However, the Operations over MCData-8 would be limited to “POST ../objects” for depositing objects into MCData store vs all sorts of objects/folder operations supported over MCData-7.

Operations over MCData-8 i/f would be authorized by OAuth “client-credential” flow which ensures that MCData server is authenticated/identified and has the authority to make message deposits into the MCData message store for any end-user (i.e. OAuth access token used by MCData server has a scope value allowing access to the entire MCData message store). On the other hand, the end-user is identified to the MCData message store through the requestURI’s {boxId} parameter which is sent by the MCData server over “POST ../objects” operation towards the MCData message store. See example below where {boxId}= tel:+19585550100 (i.e. MCData ID) identifying a particular user’s message box for depositing a message.

POST /exampleAPI/nms/v1/MCDataStore/tel%3A%2B19585550100/objects

-

Jörgen Axell (Ericsson)

I have a few editorials that can be considered in a future revision:

General comment: At least some statements that the message store client uses HTTP over TLS don't need to be repeated, so I think some information can go into a general section for message store. Maybe some text could be added to 0531 and removed from all other contributions?

Good to mark the Editor's Notes with WI and CR#.

Looks like the sentence after the first EN is incorrectly formatted, should be "Normal" style.

"a HTTP" appears twice.

Curly quotes should be changed to straight quotes.

I think "as describe" should be "as described".

Shahram: Good idea to put the repeated statements from the CRs into the general section of TDoc 0531 only once. The CR revisions will take care of your comments.

**Decision:** The document was **revised to C1-200856**.

**C1-200856 Delete Stored Object(s) in MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0106 rev 1 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200475)

**Decision:** The document was **agreed**.

**C1-200531 Add Message Store Client subclause**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0107 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

**Discussion:**

Val Oprescu (AT&T):For each of 0531, 0539-0544, 0548, 0550, 0705, 0711, 0714:

1) For back tracebility to Stage 2, on the front page, under either Reason for Change or Summary of Change, please indicate the sections in 23.282 (e.g. 7.13.3.1.x or 7.5.2.1.x) which represents the Stage 2 for each of the CRs

2) Search each CR for "clarification;" and if found, replace with "clarifications:" where appropriate (i.e. add a "s" and change the semicolon to colon).

In 0540, search for "is be" and replace with "is to be"

In 0711, there are list items 1), 2) and 4). What happened to 3) ?

In 0714, there are at least 4 occurrences of "MCPTT". Should they be "MCData"?

-

Val Oprescu (AT&T):

Change title "X.X General" to "X.1 General" and add an Editor's node stating that text will be added in that section.

Change title "X.X MCData message store functions and client procedures" to "X.2 MCData message store functions and client procedures"

**Decision:** The document was **revised to C1-200848**.

**C1-200848 Add Message Store Client subclause**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0107 rev 1 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200531)

**Decision:** The document was **agreed**.

**C1-200539 Copy stored object(s) and-or folder(s)**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0108 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

**Discussion:**

Francois Piroard (Airbus): I have the following additional comments on this CR, and most apply similarly to all similar CRs:

• The first paragraph and NOTE for both the Client and the Server clauses are generic for all procedures and should be put in a General clause rather than being repeated in the exact same way in each clause (all message store procedures CRs).

• Second paragraph is missing some words after “using” (To copy object(s) and/or folder(s) to a destination folder in message store using, the message store client…)

• NOTE 2 should be in active form rather than passive form. And why is it in a NOTE and not part of the previous paragraph that states what shall be done by the client when the response is received ? Is that part optional ?

• Also in NOTE 2, reference to 5.2.3.13 of the OMA spec (which the type definition for TargetSourceRef if I am not mistaken) does not seem to be needed, it may be implied by 5.4.4 clause of the OMA spec but not on its own. Also 5.4.4 just gives the high level view of the procedure, and I don’t see what other processing it implies, that the client, or the server should follow. If it is a better refenrece than 6.18.x, then why not use this one (5.4.4)

**Decision:** The document was **revised to C1-200863**.

**C1-200863 Copy stored object(s) and-or folder(s)**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0108 rev 1 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200539)

**Decision:** The document was **agreed**.

**C1-200540 Creating new folder**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0109 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

**Decision:** The document was **revised to C1-200864**.

**C1-200864 Creating new folder**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0109 rev 1 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200540)

**Decision:** The document was **agreed**.

**C1-200541 Delete folder**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0110 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

**Decision:** The document was **revised to C1-200866**.

**C1-200866 Delete folder**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0110 rev 1 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200541)

**Decision:** The document was **agreed**.

**C1-200542 Move object(s) and folder(s)**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0111 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

**Decision:** The document was **revised to C1-200867**.

**C1-200867 Move object(s) and folder(s)**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0111 rev 1 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200542)

**Decision:** The document was **agreed**.

**C1-200543 Search for Folders in MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0112 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

**Decision:** The document was **revised to C1-200869**.

**C1-200869 Search for Folders in MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0112 rev 1 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200543)

**Decision:** The document was **agreed**.

**C1-200544 Retrieval of stored object**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0103 rev 1 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200448)

**Decision:** The document was **revised to C1-200846**.

**C1-200846 Retrieval of stored object**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0103 rev 2 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200544)

**Discussion:**

Mike Dolan (Firstnet) on the set:

0846 – OK

0848 – There are some small revision marked text items on the coversheet that should be accepted. Otherwise, OK

0856 – OK

0858 – OK

0860 – There is an extra blank line between bullets b) and c) in X.2.2.1 that should be removed. Otherwise, OK

0863 – In X.2.6.2, “per section X.2.6.1” should be changed to “per subclause X.2.6.1” or use the same wording as in other CRs “per X.2.6.1”. – Otherwise, OK

0864 – OK

0866 – In X.2.7.2, “per section X.2.7.1” should be changed to “per subclause X.2.7.1” or use the same wording as in other CRs “per X.2.7.1”. – Otherwise, OK

0867 – In X.2.10.2, “per section X.2.10.1” should be changed to “per subclause X.2.10.1” or use the same wording as in other CRs “per X.2.10.1”. – Otherwise, OK

0869 – OK

--

Val Oprescu (AT&T)

Comments on your draft CRs.

General comment: On my email of Monday Feb 24, I wrote:

“For back tracebility to Stage 2, on the front page, under either Reason for Change or Summary of Change, please indicate the sections in 23.282 (e.g. 7.13.3.1.x or 7.5.2.1.x) which represents the Stage 2 for each of the CRs”

For example, in 0846, at the end of the Reason for Change on the cover sheet add “as described in Stage 2 23.282 sections 7.13.3.1.1 and 7.13.3.1.2.”

Do this for \*\*\* ALL \*\*\* the CRs.

CR specific comments:

0846:

- Extraneous “and” at end of 1a)

- Changes on changes on line 1c (the preceding deleted “b”)

- extraneous white space lines under the X.2.1.2 title

0848:

- An EN is not just a NOTE using red font. It needs to be in the style Editor’s Note, not NOTE

0856:

- Colon : at end of 1) should be revision marked as new text

- Extraneous “and” at end of 1a)

- Change on change (deleted white space) in 1) in X.2.4.2

- Missing semicolon at end of 2) in X.2.4.2

0858:

- Extraneous “and” at end of 1a)

- extraneous white space lines before 1c)

- in last paragraph of X.2.3.1, text mentions “bulk delete”. Shouldn’t it be “bulk update” ?

- Change on change (deleted white space) in 1) in X.2.3.2

- Missing semicolon at end of 2) in X.2.3.2

0860:

- Colon : at end of 1) should be revision marked as new text

- Extraneous “and” at end of 1a)

- extraneous white space lines before 1c)

0863:

- Extraneous “and” at end of 1a)

- Change on change (deleted white space) in 1) in X.2.6.2

- White space in 2) immediately after [xx] should be revision marked as new text

- Extraneous white space between semicolon and “and” at end of 2)

0864:

- Colon : at end of 1) should be revision marked as new text

- Extraneous “and” at end of 1a)

- White space in X.2.8.2 2) immediately after [xx] should be revision marked as new text; and remove immediately following semicolon and extra blank

0866:

- Colon : at end of 1) should be revision marked as new text

- Extraneous “and” at end of 1a)

- extraneous white space lines before 1c)

- in X.2.7.2, there are two list item designated as 2); the second one should be 3)

0867:

- Extraneous “and” at end of 1a)

- White space in 2) immediately after second comma should be revision marked as new text

0869:

- Colon : at end of 1) should be revision marked as new text

- Extraneous “and” at end of 1a)

- Change on change (deleted white space) in 1) in X.2.11.2

- Colon : used instead of semicolon ; in 2) of X.2.11.2

- White space in 2) immediately after colon : should be revision marked as new text

- Two white spaces in lieu of one in 3) between “Selection Criteria,” and “towards”

-

**Decision:** The document was **agreed**.

**C1-200548 Search for Objects in MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0104 rev 1 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200473)

**Decision:** The document was **revised to C1-200860**.

**C1-200860 Search for Objects in MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0104 rev 2 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200548)

**Decision:** The document was **agreed**.

**C1-200550 Update Object(s) in MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0105 rev 1 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200474)

**Decision:** The document was **revised to C1-200857**.

**C1-200857 Update Object(s) in MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0105 rev 2 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200550)

**Decision:** The document was **withdrawn**.

**C1-200858 Update Object(s) in MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0105 rev 3 Cat: B (Rel-16)  
  
 Source: AT&T, Samsung*

(Replaces C1-200857)

**Decision:** The document was **agreed**.

**C1-200705 Move the stored object to destination folder**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0113 Cat: B (Rel-16)  
  
 Source: Samsung Electronics Co., Ltd*

**Decision:** The document was **revised to C1-200800**.

**C1-200800 Move the stored object to destination folder**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0113 rev 1 Cat: B (Rel-16)  
  
 Source: Samsung Electronics, AT&T*

(Replaces C1-200705)

**Decision:** The document was **agreed**.

**C1-200711 Upload the objects to the MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0114 Cat: B (Rel-16)  
  
 Source: Samsung, AT&T*

**Decision:** The document was **revised to C1-200804**.

**C1-200804 Upload the objects to the MCData message store**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0114 rev 1 Cat: B (Rel-16)  
  
 Source: Samsung, AT&T*

(Replaces C1-200711)

**Decision:** The document was **agreed**.

**C1-200712 Included absolute URI associated with the media storage function of MCData content server**

*Type: CR For: Agreement  
 24.483 v16.2.0 CR-0066 Cat: C (Rel-16)  
  
 Source: Samsung*

**Discussion:**

Kiran: I have taken the revision to update the cover page. The draft revised document is available in below link (tdoc: C1-200801).

Kindly please let me know if you have any further comments. I shall upload the document tomorrow if no further comments are received from you or group.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200801\_was\_C1-200712\_e\_CR\_Rel-16\_TS24.483\_Included%20absolute%20URI%20associated%20with%20the%20media%20storage%20function%20of%20MCData%20content%20server.zip

-

Mike Dolan (Firstnet)

The only changes I would make in your draft 0801 are editorial.

Below the table in 10.2.97A:

This leaf node indicates the absolute URI associated with the media storage function of the MCData content server

**Decision:** The document was **revised to C1-200801**.

**C1-200801 Included absolute URI associated with the media storage function of MCData content server**

*Type: CR For: Agreement  
 24.483 v16.2.0 CR-0066 rev 1 Cat: C (Rel-16)  
  
 Source: Samsung*

(Replaces C1-200712)

**Decision:** The document was **agreed**.

**C1-200713 Included absolute URI associated with the media storage function of MCData content server**

*Type: CR For: Agreement  
 24.484 v16.4.0 CR-0135 Cat: C (Rel-16)  
  
 Source: Samsung*

**Discussion:**

Jörgen Axell (Ericsson) An editorial: First change, move the "and" from g)iii) to h).

This schema change seems not backwards compatible as the new element will not be understood by old equipment. Further, the schema is not aligned with the coding as the new element does not contain an <entry> element. I think both comments can be resolved by using the anyExt element.

Kiran:

Thanks for the review comments.

Agreed and happy to include in the revision.

The draft revised document is available in below link (tdoc: C1-200802).

Kindly please let me know if you have any further comments. I shall upload the document tomorrow if no further comments are received from you or group.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200802\_was\_C1-200713\_e\_CR\_Rel-16\_TS24.484\_Included%20absolute%20URI%20associated%20with%20the%20media%20storage%20function%20of%20MCData%20content%20server.zip

-

Jörgen Axell (Ericsson)

But on the document: Is the change in 10.3.2.1 still needed? Says <MCDataContentServerURI> element containing an <entry> element, but then the element is said to be xs:anyURI in next change.

An alternative that we did in 24.379 at some point is to declare the element as a global element in the schema. Then people have a formal definition. But we have not been consistent in this.

**Decision:** The document was **revised to C1-200802**.

**C1-200802 Included absolute URI associated with the media storage function of MCData content server**

*Type: CR For: Agreement  
 24.484 v16.4.0 CR-0135 rev 1 Cat: C (Rel-16)  
  
 Source: Samsung*

(Replaces C1-200713)

**Decision:** The document was **agreed**.

**C1-200714 Accessing the absolute URI associated with the media storage function**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0115 Cat: C (Rel-16)  
  
 Source: Samsung*

**Discussion:**

Jörgen Axell (Ericsson)A question on this CR. If a release-16 UE is in a rel-15 network, will it then be configured with the Content Server URI? If not, doesn't it need to be able to support the discovery process? So a condition would be needed that the discover function is used if it cannot find the MO.

Kiran Kapale (Samsung):

As per our understanding, In any deployments the server should be able to serve the clients which are less than or equivalent to the server version. Below mentioned deployment scenario is not expected to happen.

Mike Dolan (Firstnet)

A small editorial (twice) in 0714:

The text “MCDataContentServerURI> element, of the MCPTT user profile document” should not have a comma after “element”.

It appears twice.

-

Mike Dolan (Firstnet):

If a Rel-15 client expects to find the content server as part of the MCData server, then an MCData server that it serving both Rel-15 and Rel-16 clients would need to be configured with the content server as somehow an integral part of the MCData server – otherwise, I don’t see how a Rel-15 client could manage to find the content server. And if the content server is truly external to the MCData server (and it needs to be possible), then there is no guarantee that the MCData server will know where the content server for a particular client is.

Specifically, consider a mutual aid case where the MCData client is coming from another domain and is attached to a group that is in the visited domain. That visited MCData server cannot be expected to know where the user’s content server is. Moreover, there is no guarantee that the visited MCData server will be capable of handling both Rel-15 and Rel-16 clients.

So, whatever mechanism is used, it needs to be backward compatible.

-

Kiran;

Agree on all the comments and I shall incorporate the changes in new revision (tdoc: C1-200803).

The MCData server shall be backward compatible, means it supports both the discovery procedure and pre-configuration.

The Rel-16 onwards client shall use the pre-configuration, as the discovery of the content server will yield the same address always and which is known to the client via pre-configuration upfront.

The Rel-15 and below clients follows the discovery procedure to determine the content server. As the pre-configuration is applicable from Rel-16 onwards.

The content server is always known to the MCData server for the serving users and the content server is local to the users.

Could you please provide more insight on below comment.

“Specifically, consider a mutual aid case where the MCData client is coming from another domain and is attached to a group that is in the visited domain. That visited MCData server cannot be expected to know where the user’s content server is. Moreover, there is no guarantee that the visited MCData server will be capable of handling both Rel-15 and Rel-16 clients.”

-

Kiran: The draft revised document is available in below link (tdoc: C1-200803).

Discussion is going on for other comments and once concluded I shall upload the final document.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200803\_was\_C1-200714\_e\_CR\_Rel-16\_TS24.282\_Accessing%20the%20absolute%20URI%20associated%20with%20the%20media%20storage%20function.zip

**Decision:** The document was **revised to C1-200803**.

**C1-200803 Accessing the absolute URI associated with the media storage function**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0115 rev 1 Cat: C (Rel-16)  
  
 Source: Samsung*

(Replaces C1-200714)

**Decision:** The document was **agreed**.

**C1-200715 Corrections to TDC2 and TDC3 timer handling**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0116 Cat: F (Rel-16)  
  
 Source: Samsung*

**Discussion:**

Jörgen Axell (Ericsson)

Is this CR related to eMCData2, or should do you need to change to MCProtoc16?

Kiran:

Thanks for the review comments. No issues, we can change to MCProtoc16.

Please note that - I took the new revision (tDoc no: C1-200805) with change in WI code from eMCData2 to MCProtoc16. I will upload the revision by tomorrow.

The draft revised document is available in below link (tdoc: C1-200805).

Kindly please let me know if you have any further comments. I shall upload the document tomorrow if no further comments are received from you or group.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200805\_was\_C1-200715\_e\_CR\_Rel-16\_TS24.282\_Corrections%20to%20TDC2%20and%20TDC3%20timer%20handling.zip

Mike Dolan (Firstnet): no objections

Jörgen Axell (Ericsson)

I am fine with this.

**Decision:** The document was **revised to C1-200805**.

**C1-200805 Corrections to TDC2 and TDC3 timer handling**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0116 rev 1 Cat: F (Rel-16)  
  
 Source: Samsung*

(Replaces C1-200715)

**Decision:** The document was **agreed**.

**C1-200716 The pre-establshed session modification for MCData**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0117 Cat: B (Rel-16)  
  
 Source: Samsung*

**Discussion:**

Jörgen Axell (Ericsson): The summary of change indicates editor's notes are removed. I don't see any removed ENs. Please either remove the statement or introduce the subclauses containing the ENs in the contribution. Since you need a revision the word "implementation" has a strange spelling on cover page.

The heading levels are incorrect (you use the levels from 24.379). and the first heading is 8.3.4, not 18.3.4.

Kiran: Please note that - I took the new revision (tDoc no: C1-200806) with review changes incorporated

-

Kiran: The draft revised document is available in below link (tdoc: C1-200806).

Kindly please let me know if you have any further comments. I shall upload the document tomorrow if no further comments are received from you or group.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200806\_was\_C1-200716\_e\_CR\_Rel-16\_TS24.282\_pre-establshed%20session%20modification.zip

**Decision:** The document was **revised to C1-200806**.

**C1-200806 The pre-establshed session modification for MCData**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0117 rev 1 Cat: B (Rel-16)  
  
 Source: Samsung*

(Replaces C1-200716)

**Decision:** The document was **agreed**.

**C1-200766 File distribution over MBMS - signalling control**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0093 rev 2 Cat: B (Rel-16)  
  
 Source: ENENSYS*

(Replaces C1-198542)

**Abstract:**

CR to allow the use of MBMS for file distribution, following CR #0150 of TS 23.282

**Decision:** The document was **postponed**.

#### 16.3.7 E2E\_DELAY (CT4)

#### 16.3.8 VBCLTE (CT3 lead)

#### 16.3.9 ISAT-MO-WITHDRAW

#### 16.3.10 MONASTERY2

**C1-200408 Automatic group affiliation and deaffiliation based on location or functional alias**

*Type: CR For: Agreement  
 24.484 v16.4.0 CR-0132 rev 3 Cat: B (Rel-16)  
  
 Source: Kontron Transportation, Nokia, Nokia Shanghai Bell*

(Replaces C1-198846)

**Discussion:**

Jörgen Axell (Ericsson) Mix of editorial and other comments:

8.3.2.1: "and" needed to connect e)i) and e)ii) and to connect f) and g) (the "and" you deleted but not reintroduced.

Please remove the space before ">" in new elements. I am happy if you also fix the existing such errors.

The XML schema is not valid (not even well formed), some end tags for complexType and sequence don't match.

Hard spaces missing after subclause and in references.

The Data Semantics change does not match the XML schema. For example, the <ListOfLocationCriteria> name is different from <xs:element name="LocationCriteriaList", and Speed is not part of EnterSpecificArea, but has to be under an anyExt. Please check.

-

Peter Beicht

thanks for your comments, I have included all of them, and uploaded a draft draft-C1-20xxxx-was-200408.zip in the draft folder.

**Decision:** The document was **revised to C1-200886**.

**C1-200886 Automatic group affiliation and deaffiliation based on location or functional alias**

*Type: CR For: Agreement  
 24.484 v16.4.0 CR-0132 rev 4 Cat: B (Rel-16)  
  
 Source: Kontron Transportation, Nokia, Nokia Shanghai Bell*

(Replaces C1-200408)

**Decision:** The document was **agreed**.

**C1-200409 Automatic group affiliation and deaffiliation based on location or functional alias**

*Type: CR For: Agreement  
 24.483 v16.2.0 CR-0064 rev 3 Cat: B (Rel-16)  
  
 Source: Kontron Transportation, Nokia, Nokia Shanghai Bell*

(Replaces C1-198847)

**Discussion:**

Jörgen Axell (Ericsson): Can you just explain what are the criteria for setting the status parameter to "optional" or "required"?

Peter Beicht (Kontron)

Thanks for reviewing this contribution. I was mostly following the functional criteria and the dependencies of the new entries.

That means:

RulesForAffiliation are optional (you could only have RulesForDeaffiliation)

RulesForAffiliation/ListOfLocationCriteria/<x> set to optional

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry I also set to optional, but looking at the rest of 24.483 this might be not correct and should likely be required

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea are optional (you could only have ExitSpecificArea)

RulesForAffiliation/ ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/PolygonArea optional, as you can have EllipsoidArcArea instead

RulesForAffiliation/ ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/PolygonArea/Corner I set to required, because if a PolygonArea is present corners have to be there as well

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/PolygonArea/Corner/PointCoordinateType set to required, If corner is present, coordinates have to be provides with type

Entry/RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/PolygonArea/Corner/PointCoordinateType/Longitude set to required, If corner is present, coordinates have to be provides with Longitude

Entry/RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/PolygonArea/Corner/PointCoordinateType/Latitude set to required, If corner is present, coordinates have to be provides with Latitude

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/EllipsoidArcArea optional, as you can have PolygonArea instead

RulesForAffiliation/ ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/EllipsoidArcArea/Center required, if EllipsoidArcArea, center has to be provided

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/EllipsoidArcArea/Center/PointCoordinateType required, if center is present, then PointCoordinateType is required

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/EllipsoidArcArea/Center/PointCoordinateType/Longitude set to required, If center is present, coordinates have to be provides with Longitude

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/EllipsoidArcArea/Center/PointCoordinateType/Latitude set to required, If center is present, coordinates have to be provides with Latitude

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/EllipsoidArcArea/Radius set to required

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/EllipsoidArcArea/OffsetAngle set to required

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/EllipsoidArcArea/IncludedAngle set to required

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/Speed optional, because not required

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/Speed/Minimum optional, because not required

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/Speed/Maximum optional, because not required

RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/Heading optional, because not required

/RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/Heading/Minimum optional, because not required

/RulesForAffiliation/ListOfLocationCriteria/<x>/Entry/EnterSpecificArea/Heading/Maximum optional, because not required

RulesForAffiliation/ListOfActiveFunctionalaliases, optional as not required, could have LocationCriteria only

RulesForAffiliation/ListOfActiveFunctionalaliases/<x> set to optional

RulesForAffiliation/ListOfActiveFunctionalaliases/<x>/Entry also set to optional, but looking at the rest of 24.483 this might be not correct and should likely be required

RulesForAffiliation/ListOfActiveFunctionalaliases/<x>/Entry/FunctionalAlias Required

ManualDeAffiliationNotAllowedIfRulesAreMet Set to optional in line with 5.2.48W6C

Same values should be in for ExitSpecificArea

And for RulesForAffiliation

Any comments/feedback is appreciated if any values semms incorrect.

--

Jörgen Axell (Ericsson): I was wondering whether we can have any guiding rules. I think that there is conditionality so that we can have a parent node for a function that is optional, and then the child nodes are required if the child node is mandatory for the parent node. I think your list is close to that. If Speed is optional, does it make sense to have Speed/Maximum and Speed/Minimum required as the Speed makes no sense without these?

I am looking in OMA-TS-DM\_TND-V1\_3-20160524-A for guidance, where we have in 10.4.2.1:

• The node status is defined by a XML Comment as next sibling to the node “NodeName”; if the value is “Required” then the DM Client MUST support the node (if the parent node is supported); if the value is “Optional”, then the node is not unconditional mandatory to support in the implementation.

Peter Beicht:

Looking at OMA-TS-DM\_TND-V1\_3-20160524-A I think there is one more sentence in 10.4.2.1that covers my case:

If an interior node <x> is Optional and its child ChildA is Required, then DM Client MUST support ChildA only if <x> is supported.

In my case, Speed is an optional interior node. So the DM client only has to support Speed/Maximum and Speed/Minimum only if Speed is supported.

But, if you think I should rather set Speed/Maximum and Speed/Minimum to Optional, I’m also ok with that.

Jörgen Axell (Ericsson):

I am fine having Speed/Maximum required and Speed optional.

**Decision:** The document was **agreed**.

**C1-200410 Automatic group affiliation and deaffiliation based on location or functional alias**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0541 rev 3 Cat: B (Rel-16)  
  
 Source: Kontron TransportationS, Nokia, Nokia Shanghai Bell*

(Replaces C1-198803)

**Decision:** The document was **agreed**.

**C1-200412 IP Connectivity**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0101 Cat: B (Rel-16)  
  
 Source: Kontron Transportation*

**Discussion:**

Francois Piroard (Airbus): I have the following comments on the CR introducing IP connectivity procedures :

• In 2.1.1 - I think resources shall be allocated (non GBR resources, but with its own priority and parameters so that it does not interfere with SIP signalling on the default bearer) = > Port shall not be zero

• Media plane procedures shall be added, which are essentially forwarding after whatever check is needed (size, time,…) so in 20.3.1 / processing the 200 OK step 9, the routing or transmission control are needed => SHALL interact (and 20.3.2 step 8, 20.4.1 step 1 and 20.4.2 step 9)

• An editor’s note shall also be added in 24.582 to indicate that media plane procedures for IP connectivity shall be added and are FFS.

I think that without its own bearer parameters and without the hop by hop routing and control procedures, the feature does not deliver what it is aimed for

--

Jörgen Axell (Ericsson)

In addition a number of comments from me:

4.1: Why IP Data, not just only Data?

a IP->an IP.

hard space after clause

Please do not use capital letters for Participateing and Controlling in text.

20.1.1: "wants to" is stranged for a client. decides to?

Please do not use "it" in normative statements, better to state explicitly which entity is required to perform the action..

offer/anser is somewhat unclear. Better to state offer or answer as applicable.

The note is missing "It" in the beginning?

20.1.2: To me this is hard to read. Isn't it better to separate the participating function actions and the controlling function actions? It has to be clear which function performs the action.

20.2.1: First sentence lacks a subject. Possibly "the MCData client" is missing before the shall.

Why is 480 used? The text "transmission failed" is not consistent with the cause "480". Failure-Cause in 24.229 has a media bearer lost indication.

20.2.2: Some formatting issues, a B2 that should be B1<TAB>at end of 1) and a B1 that should be Normal after bullet 10).

-

Tiago Nunes Pedro (Kontron)

after waiting for more comments, a new draft CR is uploaded (https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-r1-C1-200412-CR0101-24282%20IP%20Connectivity.docx) hopefully to address your main concerns:

- Separation between participating and controlling in the sdp answer/offer

- Revision of the Reason Code in the SIP BYE

- Making (future) reference to the media procedures in TS 24.582 (FFS)

- Formatting/text issues.

Regarding the allocation of resources, I think this is addressed based on the policy NOTE, whether the MCData client could/should request a new PDN connection with a new IP address, not competing with the default bearer. The main point was the INVITE itself is not targeted to allocate a dedicated bearer, as the IP Connectivity session would be agnostic in terms of media (TCP, UDP …).

Francois:

I still think that it shall be possible to allocate a different bearer to the IP connectivity session, so I would like that option to be considered and enabled in the SDP clauses.

Otherwise I am fine with the other changes.

-

Tiago

A new draft version is uploaded (https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/draft-r2-C1-200412-CR0101-24282%20IP%20Connectivity.docx) that tries to address the point raised. So now we could have both options based on policy, either to have a specific port to be used on a tcp/udp tunnel on a dedicated bearer or leave it open as it was initially foreseen.

**Decision:** The document was **revised to C1-201022**.

**C1-201022 IP Connectivity**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0101 rev 1 Cat: B (Rel-16)  
  
 Source: Kontron Transportation*

(Replaces C1-200412)

**Decision:** The document was **agreed**.

**C1-200749 Work plan for the CT1 part of MONASTERY2**

*Type: discussion For: (not specified)  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **noted**.

**C1-200750 Analysis of options for FA resolution**

*Type: discussion For: (not specified)  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Francois Piroard (Airbus): I have the following comment on the discussion paper about Functional Alias resolution for call routing:

I believe that It can only be resolved on demand. How would a server know it will need information for a given alias ? Even if once it has received the information, it is cached locally, the on demand resolution is needed in first place. And then it is enough. Caching the information locally would just require processing for storing and updating the information, with possibly any future use of that information (nothing guaranties that the same FA will ever be used again in the future).

Moreover, FA resolution is needed for first to answer call which is not time critical (because there is no risk to loose the beginning of the conversation as it is the case for a chat group call set up for instance), so taking few ms to resolve the FA is not an issue. If needed implementation can improve the process

beyond the standard (with appropriate IT set up)

So I suggest that a solution that fetches the FA data when needed (SUBSCRIBE with Expires=0) is the best thing to do.

Lazaros Gkatzikis (Nokia)

In Nokia, as indicated in our discussion paper, we have the very same understanding as Francois’.

The delay impact should be negligible since we are talking about the communication of 2 MCPTT servers, i.e., no client is involved in the FA resolution phase.

We have added an editor’s note on the corresponding CR (see link), but it is good that we are already having a discussion on it.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200pom\_was\_751%2024379%20FA%20in%20First-to-answer%20call%20Sol9.docx

Peter B: I am also in favor of the “on demand” solution preferred by Francois and Lazaros.

**Decision:** The document was **noted**.

**C1-200751 Support of functional alias in first-to-answer calls**

*Type: CR For: (not specified)  
 24.379 v16.3.0 CR-0551 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Francois Piroard :

I have the following comments on the procedure for First to Answer call using FA addressing :

• In 11.1.1.2.1.1 in step 10, how can IDs and FAs be distinguished should be indicated here. It is only described in step 15 so the reader here wonders how ID and FA are distinguished. A NOTE can be added for instance, not to modify the steps ordering.

• The word “calling” in <calling functional alias> is ambiguous, as usually it refers to the calling party, not to the called party (even if here it is the action of calling, not the state of being the caller) Better wording would help (e.g. something like <FA addressing> ?)

• In 11.1.1.4.1 – Step 3a applies only to First to answer call. And in that case there shall be one INVITE for each MCPTT ID who has activated the called functional alias. The proposed wording is misleading as it looks like an expand/copy of the list of all targeted MCPTT ID in one outgoing INVITE, and not in individual INVITEs. To be consistent with Step 4, the proposed step 3a should rather be a Step 4a, that copies each MCPTT ID associated with the FA to the request-uri of on SIP INVITE (multiple outgoing INVITEs)

• In 11.1.1.4.1, the NOTE 2 after Step 3a (-> 4a) ?) should rather be an Editor’s Note. The procedure will not work without that being specified.

• In F.1.3. SEMANTIC, the <calling functional alias> is only compatible with First to answer call and default value is “false”.. Add a paragraph to indicate that if omitted, it means that IDs are used (like the statements about broadcast, emergency-ind, etc…)

-

Francois:

I am fine with the changes except for clause 11.1.1.4.1 step 4.

The problem is that the procedure has been designed to generate one SIP INVITE. So it does not read well when you try to generate multiple INVITEs in one of its steps.

- So it might be much easier to do the resolution of the functional alias in the terminating procedure (11.1.1.4.2) just before step 12

12) shall invite the MCPTT user(s) listed in the MIME resource-lists body of received SIP INVITE request as specified in subclause 11.1.1.4.1.

eventually replacing the functional alias of resource list of the incoming by the list of MCPTT Ids which have activated the received functional alias ? So the originating procedure is the same whether a functional alias or a list of users is used for the first to answer call.

- I don’t like too much the wording in 4)a) “shall identify the MCPTT IDs related to the received functional alias”. To be precise, it is rather “shall determine the list of MCPTT Ids which have activated the received functional alias”.

- I think some rewording would still be needed in the originating procedure 11.1.1.4.1 in step 4) to indicate that if there are several users listed in the resource list (i.e. it is a First to answer call), the procedure shall copy “the next one” in the MCPTT-request-URI of the outgoing INVITE. This is not well specified in the current version of 24.379 either… Unfortunately I don’t have a magic wording to propose without a deep restructuring of those 2 Controlling procedures .

If everybody believe it is clear enough to leave the text as it was (i.e. no change in that CR on the originating procedure, just the change in the terminating procedure as proposed above), I will not object, but maybe a NOTE or editor’s note indicating that several INVITEs are generated, one for each ID listed in the resource list could be added.

-

Lazaros Gkatzikis (Nokia)

Thanks for helping improving the quality of the CR.

Indeed it seems that this part of existing specs is unclear.

After some further reading of the specs, I think that the terminating part is capturing the handling of MIME resource list which may include multiple users, whereas the originating part focuses on each user individually.

So I moved everything to the terminating side as per your suggestion.

I suggest that for now we do not make any changes on the originating side, since this part is not within the scope of the new draft of the CR.

If we find out that changes are needed we will need to bring a CR fixing it and capturing all the cases, only the ones that utilize FAs.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200982\_was\_751%2024379%20FA%20in%20First-to-answer%20call%20Sol9%20v2.docx

**Decision:** The document was **revised to C1-200982**.

**C1-200982 Support of functional alias in first-to-answer calls**

*Type: CR For: -  
 24.379 v16.3.0 CR-0551 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200751)

**Decision:** The document was **agreed**.

**C1-200752 Update service configuration to support limiting the number of authorized clients per MCPTT user**

*Type: CR For: (not specified)  
 24.484 v16.4.0 CR-0136 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Jörgen Axell (Ericsson)I believe that the new bullet 41 needs to state that the new element is part of an anyExt. It is not part of the <on-network> as the text implies. So the path needs to be specified clearer.

Mike Dolan (Firstnet)

In addition to Jörgen’s comment, the period at the end of item 40) needs to be changed to “; and”.

The “ and” at the end of item 39) needs to be deleted.

Jörgen Axell (Ericsson): The document was provided late and is hence postponed. I expect the author to take these comments into account at the next meeting.

**Decision:** The document was **postponed**.

**C1-200753 Update service authorization procedures to support limiting the number of authorized clients per MCPTT user**

*Type: CR For: (not specified)  
 24.379 v16.3.0 CR-0552 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Jörgen Axell (Ericsson): I think the text in bullet 2a is strange. You start with checking if the number of simultaneous authorizations is equal to and element, and then "has been reached" is coming which looks strange to me.

Lazaros Gkatzikis (Nokia)

Thanks for the comments Jorgen.

The revised version can be found in the following link

The main change is that we have also clarified that in case of SIP register no response to client is provided as per Figure 5.1.3.2.2-1: MCX User Service Authorization using SIP REGISTER message of TS33.180 .

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200abc\_was\_753.docx

Lazaros Gkatzikis (Nokia)

C1-201056 is the revision of C1-200983 (revision of C1-200753) and has been uploaded

The only change was fixing the CR number on cover page.

**Decision:** The document was **revised to C1-200983**.

**C1-200983 Update service authorization procedures to support limiting the number of authorized clients per MCPTT user**

*Type: CR For: -  
 24.379 v16.3.0 CR-0552 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200753)

**Decision:** The document was **revised to C1-201056**.

**C1-201056 Update service authorization procedures to support limiting the number of authorized clients per MCPTT user**

*Type: CR For: -  
 24.379 v16.3.0 CR-0552 rev 2 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200983)

**Decision:** The document was **agreed**.

#### 16.3.11 eIMS5G\_SBA

**C1-200353 No impact from SBA on main body**

*Type: CR For: Agreement  
 24.229 v16.4.0 CR-6408 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, Ericsson*

**Discussion:**

Yue Song (China Mobile): some update to the main body of 24.229 needed.

Peter Leis (Nokia): On comment 1:

this is likely one of those cases where 24.229 went too much into DIAMETER details and now we are stuck. IMHO, the following text in the annex covers what is needed

“While the main body of the present document only describes usage of Diameter Rx and Cx and Sh reference points, the usage of the equivalent SBA services is a valid option.”

On comment2:

this is about the values that are provided to P-CSCF from Rx, defined in 29.274 subclause 8.103. It is actually to indicate errors that happened on the access network protocol. IIRC, then DIAMETER is used in some WLAN case. I would assume that N5 supports the same values as Rx, and assume that there is no impact on P-CSCF, N5 would report DIAMETER for the same use cases as if there is Rx. I am not aware that we need HTTP.

--

Yue Song (China Mobile)

“While the main body of the present document only describes usage of Diameter Rx and Cx and Sh reference points, the usage of the equivalent SBA services is a valid option.”

[Yue] This text does not provide detailed enough information. There is description on N70 is equivalent to Cx interface, however I still don't know what is the equivalent HTTP error (maybe plus application error) to DIAMETER\_UNABLE\_TO\_COMPLY in this specific case.

Peter: let me check the progress of the N70 and see whether I can address your concern.

On comment2:

this is about the values that are provided to P-CSCF from Rx, defined in 29.274 subclause 8.103. It is actually to indicate errors that happened on the access network protocol. IIRC, then DIAMETER is used in some WLAN case. I would assume that N5 supports the same values as Rx, and assume that there is no impact on P-CSCF, N5 would report DIAMETER for the same use cases as if there is Rx. I am not aware that we need HTTP.

[Yue] Well, I may need education. I am not aware that N5 interface can report DIAMETER casue code, could you please indicate me where it is specified?

Peter: the DIAMETER cause code is used for some trusted wlan /TWAN case. In case this use case is supported by 5GC, then N5 needs to support reporting it, if the use case is not supported, then there is no need for it.

**Decision:** The document was **postponed**.

#### 16.3.12 enh2MCPTT-CT

**C1-200374 Affiliation in a regroup**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0544 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

**Discussion:**

Francois Piroard (Airbus)

I have the following comments on the CR on affiliation to a constituent group :

• Clause 16.2.4.3 should be referenced from the controlling procedure that manages affiliation to the group (9.x.x). In that procedure 9.x.x procedure, it should be checked if the group is regrouped from the dynamic data associated to the group (to be added as per comment to C1-200378).

• + Step 1 : why a “separate” list ?

• Clause 16.3.2.4 Step 3, there should be at least a NOTE to indicate that if the user has already been notified (as per the data stored in step 4), then the notification can be omitted, to avoid a quadratic effect when multiple users are affiliating one by one to a group that has been regrouped (n individual affiliations would imply n(n+1)/2 notifications – could lead to very large number)

• De-affiliation should also be considered ?

-

Jörgen Axell (Ericsson)

I have the following comments/questions for clarifications:

First change, hard space needed after clause, and this is 24.379 so clausesubclause.. Should 4) state group regroup both times? I don't find the procedures referenced in 4). Which 9.2 procedures are referenced. Need to be more specific. I don't think the note is needed, but the procedure that the stored parameters are used need to be specified. As it stands it seems optional to store the paraemters but then optional to use that information.

There are spaces between NOTE and ":" which should be removed.

16.2.4.3: text says "preconfigured regroup", while heading says "preconfigured group". Heading in 16.2.2.4 says "regroup",, while 16.2.4.3 says "group regroup".

Bullet 7): Remove "for this participating MCPTT function as".

Bullet 8): Create how? Which element does it take?

16.3.2.4: Undelete "and" after 3)g). Same comment as above on 9.2 procedures.

-

Mike Dolan (Firstnet):

@ François:

Since referencing 16.2.4.3 from the controlling procedure would not, as far as I can see, affect the outcome of the procedure, I believe that we can leave the addition of that reference to a later meeting.

Regarding the use of “separate” – I have deleted that word in the revision I am preparing.

Regarding the PF using stored information to avoid notification to a client that is already aware of the user regroup, I have modified step 3 to:

3) for each MCPTT ID contained in the <users-for-regroup> element of the application/vnd.3gpp.mcptt-regroup+xml MIME body, if the terminating participating MCPTT function is aware from stored information that the MCPTT client has not previously been notified of the creation of the user regroup:

@ Jörgen:

Have removed the phrase “, per the procedures of subclause 9.2,”. This also resolves your comments about the hard space and “subclause”.

Removal is more correct, since how the MCPTT server chooses to store information is an implementation detail.

The NOTE is deleted.

Changed “preconfigured regroup” to “preconfigured group” in the first paragraph of 16.2.4.3.

Regarding your comment:

“Heading in 16.2.2.4 says "regroup",, while 16.2.4.3 says "group regroup".”

16.2.2.4 is meant to be applicable to both user and group regroups. 16.2.4.3 is specific to a group regroup.

Removed “for this participating MCPTT function” from step 7 as requested.

Changed step 8 of 16.2.4.3 to:

8) shall copy the P-Asserted-Identity header field included in the received SIP MESSAGE request into the outgoing SIP MESSAGE request; and

Changed step 4 in 16.3.2.4 to:

4) shall store the existence of the user regroup and the users that are members of the user regroup until the regroup is removed.

and removed the NOTE.

I have uploaded this file to the Drafts folder: C1-20xxxx (was 0374) Affiliation in a regroup (24.379 CR 0544 rev 1) rev 1.docx

Would you please check to make sure that I have made all requested changes noted above?

-

Jörgen Axell (Ericsson):

I think you missed ' Undelete "and" after 3)g)', keeping the a-h list together.

for the storing of the list I think it is OK now although it is almost implementation to have bullets 1) and 7) in the same procedure. But as I understand it the list is again used in 16.3.2.4 bullet 3). Then it is fine.

-

Mike Dolan (Firstnet): Thanks. ' Undelete "and" after 3)g)' is now done for the revision

-

Mike Dolan (Firstnet)

I have a revision of 0374 in the Drafts folder. Please let me know if there are any problems.

I plan to get a Tdoc number and upload the evening of 2/26

**Decision:** The document was **revised to C1-200949**.

**C1-200949 Affiliation in a regroup**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0544 rev 1 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

(Replaces C1-200374)

**Decision:** The document was **agreed**.

**C1-200375 Ambiguity of location information in 6.3.2.1.4**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0545 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

**Discussion:**

Jörgen Axell (Ericsson):

related to 375, 376, 377, 379, 381, 382

Personally I don't think the new note is needed, I think it is clear from the context.

But my main comment on this CR is that I fail to see why it is submitted under this WI instead of MCProtoc16.

I think the WI should be changed to MCProtoc16 also for 376, 377, 379, 381 and 382.

I am not sure 376 is not essential. At least the consequences if not approved indicates it is severe. If essential it needs to be postponed and a set of CRs need to be submitted to CT1#123.

Detailed comments are sent per document.

**Decision:** The document was **withdrawn**.

**C1-200376 Calling party location**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0546 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

**Discussion:**

Jörgen Axell (Ericsson)

Why is bullet 14) deleted? I didn't see this in the reasons for change. Should there be a condition instead in the bullet? Otherwise the reason for change or summary of changes can say somthing.

In the bullet 15) where new text is added. Isn't the new text a new separate bullet?

**Decision:** The document was **withdrawn**.

**C1-200377 Check for controlling function identity in 10.1.1.3.1.1**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0547 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

**Discussion:**

Review:

- Please keep the below text as is and append the proposed text by you.

"shall determine the public service identity of the controlling MCPTT function associated with the group identity in the SIP INVITE request."

Please extend the inclusion to

- subclause 10.1.2.3.1 On-demand chat group call

MIKE: Agreed – and included subclause 10.1.2.3.1.1 with the identical change in a revision.

[Kiran] Good to go.

Mike Dolan (Firstnet)

I have a revision of 0377 in the Drafts folder.

C1-20xxxx (was 0377) Check for controlling function identity in 10.1.1.3.1.1 (24.379 CR 0547 rev 1).zip

Please let me know if there are any problems.

I plan to get a Tdoc number and upload the evening of 2/26.

**Decision:** The document was **revised to C1-200952**.

**C1-200952 Check for controlling function identity in 10.1.1.3.1.1**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0547 rev 1 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

(Replaces C1-200377)

**Decision:** The document was **agreed**.

**C1-200378 Check for groups that are already regrouped**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0548 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

**Discussion:**

Francois Piroard: I have the following comments on the CR adding the check whether a group has already been regrouped :

• Step 2 indicates that the NCF shall determine if the constituent group has already been regrouped. Stage 2 has identified that “regrouped” is a dynamic data of the group. Should steps be added in the regrouping procedure at (non-)controling server to store that information ?

• If a group has been regrouped, then it does not only affect this procedure, but also the call set up procedures (at CF) to prevent a call set up on a (constituent) group that has been regrouped, as per stage 2 procedures. And if it is a chat group, does it mean that the session shall be torn down ?

Mike Dolan (Firstnet)I have a revision of 0378 in the Drafts folder.

C1-20xxxx (was 0378) Check for groups that are already regrouped (24.379 CR 0548 rev 1) r2.zip

Please let me know if there are any problems.

I plan to get a Tdoc number and upload the evening of 2/26.

**Decision:** The document was **revised to C1-200956**.

**C1-200956 Check for groups that are already regrouped**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0548 rev 1 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

(Replaces C1-200378)

**Decision:** The document was **agreed**.

**C1-200379 Correct clause reference in 11.1.1.3.1.2**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0549 Cat: D (Rel-16)  
  
 Source: FirstNet / Mike*

**Discussion:**

Jörgen Axell (Ericsson)

Aside from the previously mentioned WI issue, I think even for this kind of changes F is better than D as Cat.

Mike Dolan (Firstnet): Agree – cat F used.

WID changed to MCProtoc16 per other correspondence.

I have a revision of 0379 in the Drafts folder.

C1-20xxxx (was 0379) Correct clause reference in 11.1.1.3.1.2 (24.379 CR 0549 rev 1).zip

Please let me know if there are any problems.

I plan to get a Tdoc number and upload the evening of 2/26.

**Decision:** The document was **revised to C1-200954**.

**C1-200954 Correct clause reference in 11.1.1.3.1.2**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0549 rev 1 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

(Replaces C1-200379)

**Decision:** The document was **agreed**.

**C1-200380 Missing client procedures for preconfigured regroup**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0550 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

**Discussion:**

Francois Piroard (Airbus): I use this contribution as a reference to express comments related to the regrouping procedures in general, as I think some some pieces of puzzle are missing to deliver a fully actionable specification :

• What if the regrouped group is a chat group ? When is the join done, and which entity triggers the session set up ?

• How are users aware of the template group ? Are template groups (identified as such by a parameter in the group document as per stage 2) defined with a list of users, that would trigger the mechanism for distributing the information (group would be listed in the user profiles and client would get the group document of the template at each users’ UE) ? That group document is needed at the Clients to get the key to be used by the regrouped group (this was the reason for changing the procedure)

• Or are those groups declared without any member, and then what is the mechanism for making potential users aware of that template group (and of the group key…) ?

• As per current procedures, the CF is checking the group document of the target group at call set up. But for the Regroup there is no group document created. Should that step be added in the procedures 16.2.3.1 ? What members are declared for that regroup? New document should be a copy of the template document + some special parameters ? Or shall the test be reworded to say that it does not apply to a regroup (but how does the CF knows that it is a regroup if there is no group document ?)

• Even if it is stated that uniqueness of the (temporary) regroup ID is done at the originating client, it could be good to have a test in the servers that there is no conflict (e.g. at the controlling server when creating the group document if so)

• Media plane procedures shall be added to reject a PTT request on a constituent group and send back a notification (as per stage 2, where the group call request is a PTT request if the group is a chat group)

Maybe we should add editor’s notes in different places of 24.379 and 24.380 not to let people believe that the feature is fully available.

This is something that could be done as CRs to the Plenary if needed.

Sorry for bringing those considerations late in the process, but better late than never, in order to have good quality specifications.

Mike Dolan (Firstnet): These are all good questions. We probably need to begin working toward an understanding and CRs for the April CT1 meeting.

If any of your comments affect directly the CRs in this e-meeting, could you please point them out and offer suggested changes?

-

Francois:

No there is no direct impact to the CRs proposed for this e-meeting;

Proposed changes are OK for me, I just wanted to express my opinion that more changes are needed and that the specification as it will be after this e-meeting does not work.

If we think this is something that should be shown in the specification, then we will need additional CRS to include editor’s note in several places, what could be done as a contribution for the plenary.

Jörgen Axell (Ericsson)

If you want editor's notes in the contributions, it is better to add them now rather than providing company contributions to plenary. If I understand the process correctly they need a f2f meeting to approve any changes to the time plan, but the next plenary is also electronic. So adding EN then can be challenged.

--

François:

Mike will address at least one the below comment in a revision of another CR (the absence of group document for a Regroup).

Thinking twice, a NOTE in this terminating client procedure, and in the originating client procedure, indicating what is the expected client behavior (considering itself as affiliated with the regroup, replace call to the constituent group by call to the regroup, join now if the regroup is a chat group) could simply resolve the question about the regroup being a chat group.

For the others (e.g. how template groups are managed) we will need more discussion (I myself need to build my opinion on how it could work) and eventually liaison with SA6, so it might be better to work that for the next f2f CT1 meeting.

Sorry for bringing my thoughts one by one, I had very little time to look at all this before the meeting 

--

Mike Dolan (Firstnet)

• How are users aware of the template group ? Are template groups (identified as such by a parameter in the group document as per stage 2) defined with a list of users, that would trigger the mechanism for distributing the information (group would be listed in the user profiles and client would get the group document of the template at each users’ UE) ? That group document is needed at the Clients to get the key to be used by the regrouped group (this was the reason for changing the procedure)

MIKE: The identity of the template groups will be provisioned in the UEs, though any existing permanent group can be a template group. It is administrative to ensure that all UEs that need to know about that template group (have that group document) are getting a copy.

• Or are those groups declared without any member, and then what is the mechanism for making potential users aware of that template group (and of the group key…) ?

MIKE: The template groups can be declared without any member, or can have members. It is an operational item to make sure that users are aware of the template groups and how to initiate a regroup based on them.

• As per current procedures, the CF is checking the group document of the target group at call set up. But for the Regroup there is no group document created. Should that step be added in the procedures 16.2.3.1 ? What members are declared for that regroup? New document should be a copy of the template document + some special parameters ? Or shall the test be reworded to say that it does not apply to a regroup (but how does the CF knows that it is a regroup if there is no group document ?)

MIKE: There is no group document created. Members (either groups or users) are declared on the INVITE that is used to request creation of the regroup.

• Even if it is stated that uniqueness of the (temporary) regroup ID is done at the originating client, it could be good to have a test in the servers that there is no conflict (e.g. at the controlling server when creating the group document if so)

MIKE: There will be no group document. So uniqueness can be guaranteed in several ways that are all operational. The simplest is to use the MCPTT ID of the creating user as part of the name of the regroup, and then add some unique value (monotonically increasing number?).

• Media plane procedures shall be added to reject a PTT request on a constituent group and send back a notification (as per stage 2, where the group call request is a PTT request if the group is a chat group)

MIKE: How is the media plane managed right now when there is a PTT request on a constituent group when the group has a temporary group document in GMS? I don’t think that there would be any difference in handling between the two types of regroup. If that issue has not been handled for the older style of regroup, then it needs to be done for both.

Maybe we should add editor’s notes in different places of 24.379 and 24.380 not to let people believe that the feature is fully available.

MIKE: before we begin to add notes saying that something is not available, I would ask that the list of deficiencies be given – not just a general statement. And we would need to consider that perhaps in April.

--

Francois:

• How are users aware of the template group ? Are template groups (identified as such by a parameter in the group document as per stage 2) defined with a list of users, that would trigger the mechanism for distributing the information (group would be listed in the user profiles and client would get the group document of the template at each users’ UE) ? That group document is needed at the Clients to get the key to be used by the regrouped group (this was the reason for changing the procedure)

MIKE: The identity of the template groups will be provisioned in the UEs, though any existing permanent group can be a template group. It is administrative to ensure that all UEs that need to know about that template group (have that group document) are getting a copy.

[Piroard, Francois] There is a new parameter defined in stage 2 to indicate that a group is a template group and cannot be used directly (and of course any “normal” group can also be used as a template). Should we add that parameter and do we believe it is useless ?

[Piroard, Francois] The mechanism for a Client to be aware of an existing group, and therefore being able to get the associated group document (needed to get the group key at least), is to have the group ID listed in the user profile. I don’t think we have any other mechanism to make a client aware of a group. But in 24.484, it is said that such MCPTTGroupInfo entry “indicates an MCPTT group ID of an MCPTT group that the MCPTT user is authorised to affiliate with during on-network operation “. This should be modified to also include the case of template group, or do you think of another mechanism ?

• Or are those groups declared without any member, and then what is the mechanism for making potential users aware of that template group (and of the group key…) ?

MIKE: The template groups can be declared without any member, or can have members. It is an operational item to make sure that users are aware of the template groups and how to initiate a regroup based on them.

[Piroard, Francois] I was thinking initially that the mechanism for have the group listed in the user profile was to have that user member of the group, but I agree this can be left to implementation.

• As per current procedures, the CF is checking the group document of the target group at call set up. But for the Regroup there is no group document created. Should that step be added in the procedures 16.2.3.1 ? What members are declared for that regroup? New document should be a copy of the template document + some special parameters ? Or shall the test be reworded to say that it does not apply to a regroup (but how does the CF knows that it is a regroup if there is no group document ?)

MIKE: There is no group document created. Members (either groups or users) are declared on the INVITE that is used to request creation of the regroup.

[Piroard, Francois] You are addressing the absence of group document in your other regroup related contribution. No problem.

• Even if it is stated that uniqueness of the (temporary) regroup ID is done at the originating client, it could be good to have a test in the servers that there is no conflict (e.g. at the controlling server when creating the group document if so)

MIKE: There will be no group document. So uniqueness can be guaranteed in several ways that are all operational. The simplest is to use the MCPTT ID of the creating user as part of the name of the regroup, and then add some unique value (monotonically increasing number?).

[Piroard, Francois] My point was not how a potentially unique ID can be selected by the initiator, but if we need to add steps in the PF and/or CF procedures to reject a request where the requested ID appears to be already used. Tis question is still valid, unless we trust that all clients will select the temporary group ID correctly.

• Media plane procedures shall be added to reject a PTT request on a constituent group and send back a notification (as per stage 2, where the group call request is a PTT request if the group is a chat group)

MIKE: How is the media plane managed right now when there is a PTT request on a constituent group when the group has a temporary group document in GMS? I don’t think that there would be any difference in handling between the two types of regroup. If that issue has not been handled for the older style of regroup, then it needs to be done for both.

[Piroard, Francois] For the “old style” regroup, there was procedure in stage 2 to reject a PTT request on a constituent group. This has been added for the new style (and in fact all the controls on call set up of a constituent group were missing in stage 2 and stage 3). So there shall be a Deny sent back by the CF to a request coming from a client on a constituent group, in 24.380 either in 6.3.4.3.3 or in 6.3.5.3.4.

--

Mike Dolan (Firstnet)

I have a revision of 0380 in the Drafts folder.

C1-20xxxx (was 0380) Missing client procedures for preconfigured regroup (24.379 CR 0550 rev 1).zip

Please let me know if there are any problems.

I plan to get a Tdoc number and upload the evening of 2/26.

**Decision:** The document was **revised to C1-200957**.

**C1-200957 Missing client procedures for preconfigured regroup**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0550 rev 1 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

(Replaces C1-200380)

**Decision:** The document was **revised to C1-200977**.

**C1-200977 Missing client procedures for preconfigured regroup**

*Type: CR For: Agreement  
 24.379 v16.3.0 CR-0550 rev 2 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

(Replaces C1-200957)

**Decision:** The document was **agreed**.

**C1-200381 Correct reference in 8.3.2.6**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0100 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

**Discussion:**

Dmike Dolan (Firstnet)I have a revision of 0381 in the Drafts folder.

C1-20xxxx (was 0381) Correct reference in 8.3.2.6 (24.282 CR 0100 rev 1).zip

Please let me know if there are any problems.

I plan to get a Tdoc number and upload the evening of 2/26.

**Decision:** The document was **revised to C1-200955**.

**C1-200955 Correct reference in 8.3.2.6**

*Type: CR For: Agreement  
 24.282 v16.2.0 CR-0100 rev 1 Cat: F (Rel-16)  
  
 Source: FirstNet / Mike*

(Replaces C1-200381)

**Decision:** The document was **agreed**.

**C1-200382 Update on Plugtest Reported Issues**

*Type: discussion For: Discussion  
 Source: FirstNet / Mike*

**Decision:** The document was **revised to C1-201006**.

**C1-201006 Update on Plugtest Reported Issues**

*Type: discussion For: Discussion  
 Source: FirstNet / Mike*

(Replaces C1-200382)

**Decision:** The document was **noted**.

#### 16.3.13 eIMSVideo

**C1-200482 Use precondition only for CAT when network disables precondition**

*Type: CR For: Approval  
 24.182 v16.1.0 CR-0114 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

**Discussion:**

Jörgen Axell (Ericsson) : The header field needs to be defined in 24.229, provided that we go that way. Also the profile tables need to be updated. Somewhere the inclusion of the header field needs to be specified. 24.229 I believe, but it depends on where this is to be performed.

[Hongxia]: Yeah, it’s better to define the header in 24.229. I will do this when we can make sure this header is needed

We have not in 3GPP specified anywhere how the network disables the use of preconditions, but it seems assumed that this is performed by the P-CSCF or S-CSCF, is this correct? This is somewhat problematic as it means that the P/S-CSCF needs not remove precondition option tag in subsequent requests and responses. So then these nodes need to understand part of the service logic. It may be better to modify the Supported header and the SDP in an AS. I think this point requires further discussion.

[Hongxia]:

In GSMA IR.65, it specified: “As stated in GSMA PRD IR.92 [28], the network has the option of disabling SIP preconditions. This means that any network involved in the interconnection or roaming path has that option. In that case, the considered network shall disable SIP preconditions by removing both the precondition option-tag from the SIP Supported header and the related SDP media attributes.” No doubt “any network” includes “P-CSCF”, and in practical , we really identified some networks disable the precondition by P-CSCF. And considering the relative position of P-CSCF in IMS, P-CSCF is the most possible entity which can disable precondition. So I took the P-CSCF for example in the signalling flow part, you know , the call flow is informative. More , because I do not want to make the call flow too complex, so I put P-CSCF and S-CSCF together on the call flow.

If the P-CSCF allows precondition for CAT, it may identify the CAT related request or response by only detecting whether the SDP includes “g.3gpp.cat” , its complexity is similar with detecting the “precondition” in the Supported header.

And it’s not possible to use precondition for CAT if we only modify the Supported header and the SDP in an AS. If the network disabled precondition totally , the AS has no way to use precondition for CAT

By removing the SDP and replacing that with a header field you break in principle the information chain that the preconditions mechanism relies on, i.e. the AS cannot know the status of the UE.

[Hongxia]: Sorry, I do not understand “removing the SDP” you mentioned, I did not say removing the SDP. I just mean the network removes “precondition” option-tag from the SDP (as specified in GSMA IR.65), and insert a new header field. As specified in my new NOTE, the network element insert the new header when it removes the “precondition” option-tag from Supported header. It imply that the network insert the new header only when the originating UE supports precondition. The changed INVITE request will be sent from the network element to AS. So that the AS can know that the originating UE supports precondition and the network allows precondition only for CAT, when the AS detecting there is the new header in the INVITE request.

To me it seems to be a simpler solution to just configure the AS to include the precondition option tag and SDP parameters when it adds the video media line. If the UE understands preconditions it will use it. If the UE does not it will be ignored.

[Hongxia]: As mentioned above, if the network disabled precondition totally , the AS has no way to use precondition for CAT, because the “precondition” option-tag in any request/response will be removed by network

A question for the UE vendors: Is the UE able to use preconditions in the UPDATE if the network did not respond with preconditions in the reliable 183? If so I still don't think the header field is needed.

Hongxia]: Sorry, I want to give the information I have. We identified some UEs support. But I think whether the header field is needed, when the network disables precondition, is not decided by the precondition capability of UE. The bottleneck is the network.

--

Hiroshi (NTT DOCOMO)

May I comment/ask for some more clarification, on top of what Jorgen has already asked?

Regarding the new “Precondition-Enable header” that needs to be supported/included by P-CSCF, S-CSCF, (or any other?), I think it is better to avoid specifying only the AS behavior (in TS 24.182) where we are not clear on how the header will be provided, so I would appreciate if both are considered together.

So would the CR to TS 24.229 be part of this meeting’s CR?

--

Hiroshi (NTT DOCOMO):

Yes, if it is going to be P-CSCF that takes care of inserting the new header, then I would prefer that we define it as such in the spec.

I do not prefer to leave the ambiguity of which entity can insert the header, even if multiple entities can potentially delete the support of (general) precondition.

If any changes that we make here regarding this precondition handling needs to be informed to GSMA for them to possibly consider any IR.65 changes, we can send an LS, but I do not think we should use the current IR.65 as an excuse for leaving this vague.

So far with your explanation, it seems you have P-CSCF as the assumption, is this the best entity or are there any other that suits better?

--

Hongxia:

Thanks for your suggestion!

Yeah, I think P-CSCF is the most possible entity, until now, we Huawei only found P-CSCF disables precondition in some operators’ network.

If we can make sure only P-CSCF can disables precondition or we 3GPP only allow P-CSCF to disable precondition, I would like to replace “the network element” with “P-CSCF”.

It’s good if GSMA IR.65 can specify clearly which entity can disables precondition. Now, there are “network may disable precondition” in GSMA IR.92/94/65 and potential NG114. They all do not clear point out which network entity disables.

-

Yoshihiro (NTT)

I think the CSCFs does not remove the option-tag. 3GPP TS 24.229 clause 5.1.5A specifies "Precondition disabling policy". IMS networks use the Precondition\_disabling\_policy MO (specified in 3GPP TS 24.167, 3GPP TS 31.102, 3GPP TS 31.103) to disabling precondition mechanism. So my understanding is that, if the IMS network disables precondition mechanism, the UE turns off the capability. Then, I think if the AS sets precondition related parameters into the SIP message in the dialog, these parameters do not work at all. Because the UE cannot distinguish the precondition related information is inserted by the IMS network or the terminating UE.

-

Hongxia

Thanks for sharing your understanding of the precondition\_disabling\_policy.

But based on my understanding of 24.229/24.267/IR.92, I think the precondition\_disabling\_policy is only used for the UE to disable precondition. However whether the UE disables precondition is not the scenario we discussed. And I cannot find the network entity may use precondition\_disabling\_policy to disable precondition.

In practical, the scenario "P-CSCF disables precondition by removing precondition option tag" and "UE support and does not disable preconditon" really exist.

Also , IR 65 says the :"As stated in GSMA PRD IR.92 [28], the network has the option of disabling SIP preconditions. This means that any network involved in the interconnection or roaming path has that option. In that case, the considered network shall disable SIP preconditions by removing both the “precondition” option-tag from the SIP Supported header and the related SDP media attributes." How do you understand the "network" in IR65?

--

Jörgen Axell (Ericsson)

This will be hard to summarize in the agenda, but I will try to clarify my comments as an Ericsson delegate and respond to the discussions:

GSMA IR.65 focuses on network and interconnect. To avoid ambiguity they specified that both the precondition tag in the supported header and the SDP parameters related to precondition. They cannot specify how this is done or in which node without support from 3GPP. So either we do it as part of the protocol or it goes to SA2 if we think this is architecture.

IR.92 has a statement that how to disable preconditions in the network is out of scope. They have a configuration option to configure the UEs. That is an alternative to have a node remove these parameters. But that relies on UE support and you only configure your own subscribers.

The P-CSCF is service agnostic and hence we have not specified any service specific actions. In particular P-CSCF actions are out of scope for any of the service specifications. So all P-CSCF changes go into 24.229. So P-CSCF subclauses are out of scope of 24.182.

From Ericsson's perspective, the P-CSCF is not the best place to disable preconditions. There are too many service specific actions for the general precondition handling. We prefer having all that logic in an AS. And in your solution I am not happy that the P-CSCF does not remove parameters because of specific services.

For the preconditions handling, I don't see a need to inform the AS what the network supports. The AS is part of the network and the AS can have configuration parameters to know if the network supports preconditions for a particular service. For the node disabling the preconditions there is no real difference. That node will need to allow these precondition messages irrespective if a header was introduced or not. So this means that the AS can based on configuration use preconditions for these video lines.

--

Hongxia

Thanks for clarifying your comments. I want to share more of my opinion.

Now that you think the P-CSCF is not the best place to disable preconditions. May I ask: do you think which is the best network element to disable precondition?

Even if the AS can be configured to know the other network element all support precondition(Though I think it's not possible). The AS cannot know whether the UE supports precondition because "precondition" tag in the initial INVITE request is always removed by the network which disables precondition. The AS cannot make sure the request using precondition is reasonable, it's inefficient and dangerous for the AS to send unsuitable request regardless the UE's capability. Also, the "try" method will influence the call latency.

If the network element which disables precondition does not support removing parameters for CAT, any request using precondition for CAT will be not successful, whatever configuration will be meaningless.

-

Hiroshi

Excuse me for asking some fundamental question, but can you help me understand why there is a need to allow precondition only for specific communication service?

I understand this scope is covered in the WID thus there must be a consensus, but I am still not clearly understanding the necessity.

My current understanding is that there is a demand by an operator as below, with two contradicting demand for precondition and a new solution is being proposed:

1) Prefer to disable precondition for "faster" setup, even if media clipping can be an issue

2) The Video CAT is very sensitive to media clipping to other services, thus criteria for "faster" setup is not seen as the highest priority for this case

I am wondering though, if an operator decides to provide Video CAT and places media clipping as high priority item to be considered for better user experience, why is it not possible for them to use precondition for all other IMS communication services?

If precondition can be supported for all other IMS communication, then no other intermediary IMS entities need to be aware of the IMS service on top, and the solution would become much simpler. Therefore, I would appreciate for any further clarification on why this is needed.

--

Hongxia: Thanks for discussing the initial need on this issue.

Firstly, if precondition is open to all IMS communication services , it will bring much more latency to the call. Considering call latency, many operators cannot accept to open precondition to all communication services.

If precondition is only open to one specific service (e.g. CAT or CRS), it means only one group of UPDATE-200OK is added, it will not bring obvious latency to the call. Operators can ensure the call is fast and the video CAT experience is good.

Wish my response make some sense.

-

Hiroshi

Thank you for your explanation.

I am not really sure precondition brings a critical setup latency such that operators cannot accept even for normal call, considering there are deployments using precondition.

However, assuming that an operator considers the latency as a very important criteria and disables precondition, why would this same operator assume that for Video CAT latency is no longer important consideration?

At least in my view, this kind of operation is not consistent, and operators should consider either to prioritize setup latency or media clipping for all communications, but not per media, etc.

Excuse me for asking the fundamental point, in any case I hope such clarification can help us find an agreeable solution.

-

Hongxia

Thanks a lot for considering an agreeable solution. More is as below:

If precondition is used E2E in the call, take A5.8 in TS24.182 for example, there will be step17-24, maybe more, but if only use precondition for CAT, step 17-24 will not exist. It will make the call faster without 17-24. Operators cannot accept preconditions be used everywhere, no necessary trigger to let operators open preconditions for all services. but they may accept to use it in only a small place for an interesting service. It's time to upgrade Ring tone from audio to video. It will be a good service in 5G.

And as my knowledge, In Europe, many operators does not open precondition for normal call. One of the reason is they think precondition will influence much on the call latency, the other reason is their devices(including some AS) do not support precondition. They use P-CSCF to disable precondition, as my knowledge, P-CSCF has a capability that it can apply network resource according to precondition parameters in SDP, if the P-CSCF disables precondition, it needn't apply these resources, there will be no waste on resources. So the best network element to disable the precondition is the P-CSCF which is the IMS entrance.

-

Yoshihiro:

I think followings are one of the key point to understand the problem and find out the solution.

- How does the CAT AS provide video CAT media to the UE, if the UE does not support precondition mechanism in the current specification? What is the problem in this case?

- How does the CAT AS provide video CAT media to the UE, if the UE indicates support of precondition mechanism and the SDP attributes for resource reservation of video in the current specification? What is the problem in this case?

- How does the CAT AS provide video CAT media to the UE, if the UE indicates support of precondition mechanism but not include SDP attributes for resource reservation of video in the current specification? What is the problem in this case?

The AS is able to send UPDATE request with "Supported: precondition" and "SDP attributes of resource status" to the UE, regardless whether the UE indicated support of precondition mechanism or not. If the UE supports precondition mechanism, resource reservation can be applied. In this case, the IMS network can distinguish "the UPDATE request is for CAT" from the CAT specific SDP attribute. There is no difference between the above procedure and the procedure you proposed, as a view point of latency.

-

Hongxia

I already use the "only change on AS" method, I think the comment of this "long text" has been taken, right? Welcome to check the revision document.

**Decision:** The document was **revised to C1-200787**.

**C1-200787 Use precondition only for CAT when network disables precondition**

*Type: CR For: Approval  
 24.182 v16.1.0 CR-0114 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

(Replaces C1-200482)

**Discussion:**

Hiroshi on 787 788

Thank you for providing the revisions.

One small comment on the wording, while I can ask English experts for more clarification, the new proposed wording does not seem to fit.

(in C1-200787)

When "precondition" option-tag is not included in the value of Supported header field in the received initial INVITE request, based on local configuration, if precondition mechanism is allowed to use, the AS may send an UPDATE request, as specified in RFC 3311 [13] and RFC 3312 [xx], to use precondition mechanism for CAT media. The AS shall include "a=content" media-level attribute with a "g.3gpp.cat" value in the SDP offer of the UPDATE request.

(in C1-200788)

When "precondition" is not included in the Supported and Require header field of the received 18x response to the initial INVITE request, based on local configuration, if precondition mechanism is allowed to use, the AS may use send the above UPDATE request, as specified in RFC 3311 [12] and RFC 3312 [xx], to use precondition mechanism for CRS media.

- “is allowed to use” highlighted above does not somehow fit

- Is it appropriate to have comma between “based on local configuration” and “if precondition mechanism….”?

- Would it be better to say “if precondition mechanism is allowed to be used based on local configuration” instead for the underlined text?

Hongxia: Yeah, it’s better, will take these comments in next revision, thanks!

I uploaded the revision draft of 200787 and 200788 , could you please have a quick look?

Files name are:

C1- draft (was 200787 was 200482) Use precondition only for CAT when network disables precondition

C1- draft (was 200788 was 200484) Use precondition for CRS when network disables precondition

Hiroshi: Thanks for the update and the ping, and the CR looks fine from my side.

Yoshihiro:

Thank you for your hard work and providing the revision.

A question.

Can we agree with this CR without agreeing that "the removal of option-tag in an IMS network is compliant with 3GPP IMS specification"?

Could you find my comments bellow?

[comment to draft(was C1-200787...)]

I think following description is better to eliminate possible inconsistency with TS 24.229 and RFCs.

CAT and CRS related SIP signals often sent to other IMS network. It shall consider the operator agreement, then I added the note to indicate this.

=========

When "precondition" option-tag is not included in the Supported header field in the received initial INVITE request, based on the operator policy, AS may send an UPDATE request in the dialog to the originating UE as specified in RFC 3311 [13], RFC 3312 [new], and UE procedure related to precondition mechanism as described in TS 24.229 [4] to indicate the use precondition mechanism for providing CAT media. The AS shall include "a=content" media-level attribute with a "g.3gpp.cat" value in the UPDATE request.

NOTE: Use of precondition mechanism between operators are depends on agreements between the operators.

=========

[Comment to draft(was C1-200787...)]

From same point of view, I propose the following text.

I think "a=content" media-level attribute with a "g.3gpp.crs" value is need to be added.

=========

When "precondition" option-tag is not included in the Supported header field in the received initial INVITE request, based on the operator policy, AS may send an UPDATE request in the dialog to the originating UE as specified in RFC 3311 [13], RFC 3312 [new], and UE procedure related to precondition mechanism as described in TS 24.229 [4] to indicate the use precondition mechanism for providing CAT media. The AS shall include "a=content" media-level attribute with a "g.3gpp.crs" value in the UPDATE request.

NOTE: Use of precondition mechanism between operators are depends on operator agreements.

=========

-

Hongxia:

See the new text of 200787 below, as you suggested, add the operator's policy, 24.229 and the NOTE, is it ok ? And you know Jorgen suggested we use local configuration for precondition, I think it's necessary, so I didn't remove it.

For 24.229, what you write is hard to read, so I did some wording work on it.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*

When "precondition" option-tag is not included in the value of Supported header field in the received initial INVITE request, if precondition mechanism is allowed to be used based on local configuration and operator’s policy, the AS may send an UPDATE request in a dialog to the originating UE, as specified in RFC 3311 [13] and RFC 3312 [xx], to use precondition mechanism for CAT media. The AS shall include "a=content" media-level attribute with a "g.3gpp.cat" value in the SDP offer of the UPDATE request. The UE procedure related with the UPDATE request shall follow the precondition mechanism as described in 3GPP TS 24.229 [4].

NOTE: Use of precondition mechanism between operators are depends on agreements between the operators.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

See the new text of For 200788 below, as you suggested, add the operator's policy, 24.229 and the NOTE also. For "g.3gpp.crs", I'm not sure whether you noticed I used " the above UPDATE request ", not "an UPDATE request", there is only one UPDATE before this paragraph in this subclause. You can find in that paragraph, there is already "g.3gpp.crs", so to avoid duplicate words, I cannot add this again. Anyhow, thanks for your comments!

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

When "precondition" option-tag is not included in the Supported and Require header field of the received 18x response to the initial INVITE request, if precondition mechanism is allowed to be used based on local configuration and operator’s policy, the AS may use send the above UPDATE request, as specified in RFC 3311 [12] and RFC 3312 [xx], to use precondition mechanism for CRS media. The UE procedure related with the UPDATE request shall follow the precondition mechanism as described in 3GPP TS 24.229 [3].

NOTE: Use of precondition mechanism between operators are depends on operator agreements.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Jörgen Axell (Ericsson)

This sentence is quite long, and thus hard to read. I have some own contributions to fix and upload now. It is difficult to parse which requirement is referring to which part.

**Decision:** The document was **postponed**.

**C1-200483 Use precondition for CAT when originating UE and network both support precondtion**

*Type: CR For: Approval  
 24.182 v16.1.0 CR-0115 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

**Discussion:**

Hongxia: If my understanding is right , I think you prefer that I define the actions of both P-CSCF and AS , so that the things around the new header is more clear. I think it’s a good idea. @Jorgen, may I add the sub clause 4.5.5.x for actions of P-CSCF or other IMS entities in 24.182?

For 24.229, at least, a new CR needs to be added to this meeting for add the header definition 7.2.x in 24.229 when we have a conclusion that this header is necessary as suggested by Jorgen.

About the clarification of the P-CSCF and new header, there are more words, wish they can make things more clear:

In GMSA and 3GPP, as I mentioned in last email , we cannot make sure which entity disables precondition. So I can only make sure that this header need to be inserted by the entity which disable SIP preconditions by removing both the precondition option-tag from the SIP Supported header and the related SDP media attributes as specified in GSMA IR 65. P-CSCF is the most possible entity. But according to IR 65, it’s also reasonable that other IMS entity disables precondition, so I didn’t say only P-CSCF inserts the new header.

Take P-CSCF for example, if P-CSCF is set that it can supports precondition only for CAT, after it receives the initial INVITE request, the actions of P-CSCF and other entity include:

1. P-CSCF will removes “precondition” option-tag from the Supported header as IR.65, and it needs to insert the new header , then it forwards the INVITE request towards CAT AS.

2. The other entities between the P-CSCF and the AS need not do anything to the new header.

3. The AS send an UPDATE request using precondition towards originating UE , “g.3gpp.cat” is included in the SDP offer.

4. The other entities between the P-CSCF and the AS forwards the UPDATE request towards the P-CSCF.

5. P-CSCF receives the UPDATE request, and it founds there is “g.3gpp.cat” in the SDP offer, so it will not removes the precondition related parameters in the UPDATE request.

You can see the above highlighted actions need to be supported by P-CSCF or other potential entity if they support preconditions only for CAT but not for general communication.

-

Jörgen Axell (Ericsson)

The use case is easy as the AS can do almost whatever. I don't think we need a call flow as the other call flow for adding video is very similar. Basically the UPDATE offer works regardless of what is used on the base call. But for preconditions I think the Require header is needed. Would be good to say something about what the SDP parameters should contain.

I think that the precondition should be mentioned in the context of adding the video media line. The exact text might be dependent on how we handle the non-supported case.

I don't think that you need to mention the SDP content parameter in the context of preconditions. That should already be there in the description of adding the video stream.

--

Hongxia:

Thank you for your comments on this CR.

Ok, I can remove the call flow from this CR.

Did you suggest the AS includes Require:precondition in the UPDATE request? I don’t think Require shall be added, use Supported:precondition is enough.

And you suggested to specify that the SDP parameters should contain…… . what information do you suggest to add ?

You also suggested that the precondition should be mentioned in the context of adding the video media line, and you say “g.3gpp.cat” needn’t be added because it already there in the description of adding video stream, but I can’t find “the context of adding the video media line” or “the description of adding video stream” you mentioned in current spec. Could you help me find it? Thanks! I think all existed “g.3gpp.cat” is not duplicate with this CR.

**Decision:** The document was **revised to C1-200908**.

**C1-200908 Use precondition for CAT when originating UE and network both support precondtion**

*Type: CR For: Approval  
 24.182 v16.1.0 CR-0115 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

(Replaces C1-200483)

**Decision:** The document was **revised to C1-201045**.

**C1-201045 Use precondition for CAT when originating UE and network both support precondtion**

*Type: CR For: Approval  
 24.182 v16.1.0 CR-0115 rev 2 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

(Replaces C1-200908)

**Discussion:**

Hongxia: Same with 201047, Sorry that I found one problem exists in this CR. The “only” in the text is too strict, I request to postpone this CR to next meeting , thanks!

Jörgen Axell (Ericsson)

I am trying to understand the subclause as a whole. It is not easy. I have some problems with "if the originating UE requires the use of the precondition mechanism" that occurs often. The new text does not use that but instead specifies that the precondition option tag has been received.

There is already a description of sending an UPDATE with SDP for CAT after the bullets a) and b). It is conditioned by the above "if the originating UE requires...". I think we should rather extend that part than adding a new independent paragraph that might cause confusion. The changes needed are probably to be stricter in conditions of what the terminating side did.

So in my view the text you provide is mostly there, but it is not well written.

**Decision:** The document was **postponed**.

**C1-200484 Use precondition for CRS when network disables precondition**

*Type: CR For: Approval  
 24.183 v16.2.0 CR-0057 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

**Discussion:**

Hiroshi:

I have similar comment/question that I expressed for C1-200482 (one for CAT) on this CR as well, i.e. the clarification on the condition of which IMS entity and on the condition of the new header needs to be included.

I would appreciate for the clarification.

Jörgen Axell (Ericsson): If the UE receives a request without precondition in the Supported header field it is no point for the UE to indicate that this is supported in the response, so I think that point has a UE impact. In responses the server part uses Require to indicate it wants to use preconditions. So I don't think the network will see any Supported: preconditions.

As for the CAT, I don't think we need the header field. The CRS AS can be configured to use preconditions for adding a media line. The network needs to allow that, as for the case with the header field. If the UE does not support preconditions it will ignore this information.

Hongxia:

Thanks you for the comments on this CR.

For the Supported header you commented, in 24.229, there is no description that the UE cannot reply a 18x response with “Supported:precondition” when the INIVTE request does not use precondition. So I think it’s possible and not disallowed by 24.229 .

Yeah, the AS may add a media line at any time, but if the AS always send an request which cannot be supported by the network or UE, it will be a treat to the stability of the call procedure, and many ineffective request will be exist, so the solution without the new header is not an safety and efficiency solution. It’s best that the AS use precondition to send the UPDATE request when the AS can make sure the network and the UE both support precondition. You know the new header has two meanings: one is tell the AS that the network supports precondition, the other is to tell the AS that the UE supports precondition.

Upendra:

As mentioned in my comments for C1-200485- In step-4, if MT UE receives INVITE without preconditions, the MT UE will disbale preconditions. At step-20, UPDATE procedure is modifying the preconditions after 18x message, MT UE behvaior is to reject or per UE implementation.

Theis behavior should be defined in 24.229 similar to section 5.1.4.A2 for session modification request, after 2xx, UE will reject the UPDATE with 420 (Bad Extension)

5.1.4A.2 Receiving session modification request

Upon receiving a reINVITE request, an UPDATE request, or a PRACK request that indicates support for the precondition mechanism by using the Supported header field or requires use of the precondition mechanism by using the Require header field, the UE shall:

a) if the precondition mechanism was used during the session establishment, as described in subclause 5.1.3.1 or 5.1.4.1, use the precondition mechanism for the session modification; and

b) if the precondition mechanism was not used during the session establishment, and:

1) if the use of the precondition mechanism is required using the Require header field, reject the request by sending a 420 (Bad Extension) response; and

2) if the support of the precondition mechanism is indicated using the Supported header field, not use the precondition mechanism for the session modification.

If the precondition mechanism is used for the session modification, the UE shall indicate support for the preconditions mechanism, using the Require header field, in responses that include an SDP body, to the session modification request.

Hongxia:

The AS try to use precondition to negotiate media with the originating UE. The description you gave is “UE reject when the AS require precondition”. The AS may use Supported:precondition, not use Require:precondition, Supported is enough.

When the AS use Supported:precondition to negotiate CAT media, if the UE do not support it , the UE can reply an SDP answer with inactive video line.

In the implementation , usually, the CAT/CRS AS do not require precondition.

Welcome to check the revision document of this CR, if you still have comments ,please comment on the revision document. Thanks !

Upendra

I am referring to the MT UE -> after 183 message (step 4), UE cant handle UPDATE with preconditions enabled (step 20). Require the corresponding 24.229 CR if such processing is required.

**Decision:** The document was **revised to C1-200788**.

**C1-200788 Use precondition for CRS when network disables precondition**

*Type: CR For: Approval  
 24.183 v16.2.0 CR-0057 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

(Replaces C1-200484)

**Decision:** The document was **postponed**.

**C1-200485 Use precondition for CRS when terminating UE supports or requires precondition**

*Type: CR For: Approval  
 24.183 v16.2.0 CR-0058 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

**Discussion:**

Jörgen Axell (Ericsson): Is this CR needed? If the UE uses precondition it works as normal. As before, I don't think a UE responds with preconditions in the Supported header field if the UE does not receive such header field. And then the response would be in the Require header field. Small update to some of the many existing call flows could be possible.

And gateway model does not exist for CRS. There can only be one dialog on the receiving side so the wording "gateway model" should not be in 24.183.

Hongxia:

Thank you for your comments on this CR.

Same response with 200484: For the Supported header you commented, in 24.229, there is no description that the UE cannot reply a 18x response with “Supported:precondition” when the INIVTE request does not use precondition. So I think it’s possible and not disallowed by 24.229 .

About the call flow, you know no call flow exists for the CRS using gateway model. So we has nowhere to do small update you mentioned.

Sorry, I don’t understand why you say “gateway model does not exist for CRS, There can only be one dialog on the receiving side so the wording "gateway model" should not be in 24.183.”, there is already “UE Actions for gateway model” and “AS Actions for Gateway model” for CRS in 24.183. I will appreciate if you say on this comment more clearly.

-

Upendra

>> For the Supported header you commented, in 24.229, there is no description that the UE cannot reply a 18x response with “Supported:precondition” when the INIVTE request does not use precondition. So I think it’s possible and not disallowed by 24.229 .

24.229 specifies UE not to use preconditions i.e. UE will not include supported:precondition in response.

5.1.4 Call initiation - UE-terminating case

….

b) the received INVITE request includes the "precondition" option-tag in the Supported header field, and the precondition mechanism is disabled as specified in subclause 5.1.5A, the terminating UE shall not use the precondition mechanism:

….

d) the received INVITE request does not include the "precondition" option-tag in the Supported header field or Require header field, the terminating UE shall not use the precondition mechanism.

AS shall add precondition tag before forwarding initial INVITE to MT UE.

-

Hongxia

I think “shall not use the precondition” is different from “include the “precondition” tag in the Supported header”, this tag only has the meaning that UE supports precondition. The UE may show its capability but not use it.

Thanks!

-

Upendra

24.229 section 5.1.3.1 have the conditions where MT UE don’t include precondition option-tag in the Require or Supported header field. The solution you are proposing is based on an assumption that UE will include. Can you please check with other UE vendors.

- in responses with an SDP body to subsequent requests with an SDP body but without "precondition" option-tag in the Require or Supported header field, the originating UE shall not include a Require or Supported header field with "precondition" option-tag in the same dialog; and

- in responses with an SDP body to subsequent requests with an SDP body and with "precondition" option-tag in the Require or Supported header field, the originating UE shall include a Require header field with "precondition" option-tag in the same dialog.

-

Hongxia

The description of 24.229 you gave is not complete, I think we need see the whole paragraph, see below, the black words I copy from 24.229.

Highlighted words in blue is the 18x response we said.

Highlighted words in green is the request from originating UE after receiving 18x response.

Highlighted words in yellow is the response to “the request from originating UE after receiving 18x response”.

What I said in the CR is the UE indicates it supports precondition in 18x response. So the yellow words is not fit for this CR.

I know that many UE does not do it like this, but we cannot make sure the UE will not , anyhow, it’s not disallowed by 24.229.

During the session initiation, if the originating UE indicated the support for the precondition mechanism in the initial INVITE request and:

a) the received response with an SDP body includes a Require header field with "precondition" option-tag, the originating UE shall include a Require header field with the "precondition" option-tag:

- in subsequent requests that include an SDP body, that the originating UE sends in the same dialog as the response is received from; and

- in responses with an SDP body to subsequent requests that include an SDP body and include "precondition" option-tag in Supported header field or Require header field received in-dialog; or

b) the received response with an SDP body does not include the "precondition" option-tag in the Require header field,

- in subsequent requests that include an SDP body, the originating UE shall not include a Require or Supported header field with "precondition" option-tag in the same dialog;

- in responses with an SDP body to subsequent requests with an SDP body but without "precondition" option-tag in the Require or Supported header field, the originating UE shall not include a Require or Supported header field with "precondition" option-tag in the same dialog; and

- in responses with an SDP body to subsequent requests with an SDP body and with "precondition" option-tag in the Require or Supported header field, the originating UE shall include a Require header field with "precondition" option-tag in the same dialog.

-

Upendra

Agree, that why I mentioned in few conditions. My comment is for AS to add precondition tag before forwarding initial INVITE to MT UE. If MT UE don’t include "precondition" option-tag is included in the Require or Supported header field then the proposed solution wont work.

-

Hongxia

Yeah, the CR make sense when "precondition" option-tag is included in the Require or Supported header field. The other case is not included.

If my understanding is right, you suggest the AS add precondition tag before forwarding initial INVITE to MT UE? Sorry, I don’t think it’s a good idea. The CAT AS can only add precondition tag in the request for CAT.

Anyhow, thanks a lot for your comments

-

Jörgen Axell (Ericsson)

The proposed text says:

" The AS may send an UPDATE request, as specified in RFC 3311 [12] and RFC 3312 [xx], to use precondition mechanism to the terminating UE for CRS media if "precondition" option-tag is included in the Require or Supported header field of the received 18x response to the initial INVITE request."

which is in wrong order. You don't send the UPDATE request to use precondition, you send the update request to provide CRS media, and then you can use preconditions in this update request. Something like:

"If the AS sends un UPDATE request to offer CRS media the AS may use the precondition mechanism if the precondition option tag was received in a Supported or Require header field in the 18x response to the initial INVITE request."

Hongxia: Thanks, I will take this comment, thanks!

**Decision:** The document was **revised to C1-200911**.

**C1-200911 Use precondition for CRS when terminating UE supports or requires precondition**

*Type: CR For: Approval  
 24.183 v16.2.0 CR-0058 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

(Replaces C1-200485)

**Decision:** The document was **revised to C1-201047**.

**C1-201047 Use precondition for CRS when terminating UE supports or requires precondition**

*Type: CR For: Approval  
 24.183 v16.2.0 CR-0058 rev 2 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

(Replaces C1-200911)

**Discussion:**

Upendra:

As we agreed the CR make sense when "precondition" option-tag is included in the Require or Supported header field. The other case is not included, I am fine with the changes.

I would recommend to propose a CR to 24.299 in next CT1 meeting for terminating UE to include the "precondition" option-tag in the Require or Supported header field and define the procedure for MT UE to accept UPDATE with preconditions enabled after 183.

Hongxia:

Thanks for your confirmation on this CR.

I will consider you suggestion for next meeting, thanks a lot!

Sorry that I found one problem exists in this CR. The “only” in the text is too strict, I request to postpone this CR to next meeting , thanks!

**Decision:** The document was **postponed**.

**C1-200486 Providing video announcement at the same time with audio conversation**

*Type: CR For: Approval  
 24.628 v16.0.0 CR-0072 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

**Discussion:**

Jörgen Axell (Ericsson)

This somehow redefines the term announcement, a totally parallel media stream is not really an announcement. I expect announcement to be something short and specific. Maybe we can find a better term?

4.2.3: I guess the intention is to add a media stream during session set-up? "at the same time" is very unclear to me. But the text possibly needs something more to say that this new stream is using a different media type.

4.7.2.9.1: This is subclause is about announcement during an established connection, and that means after 200 (OK), so this function should be somewhere else. And I think this needs to be formulated differently. I think it could be sufficient to state that the AS can add a media stream with a type different than any existing media types following the offer/answer mechansim.

A.2: The call flows should not be added. Second call flow is wrong as re-INVITE cannot be sent before the INVITE transaction is finished. There is a difference in user experience between UPDATE and re-INVITE and that is that if re-INVITE is used the user is usually given a chance to reject the offer. If UPDATE is used there is no such chance.

-

Hongxia replies:

This somehow redefines the term announcement, a totally parallel media stream is not really an announcement. I expect announcement to be something short and specific. Maybe we can find a better term?

[Hongxia]:Why the announcement cannot be played parallel with the conversation? Why you doubt it’s not really an announcement only by when it is used?

I do not think it's a good idea to give the announcement more business level limitation. How short and specific the announcement is business level things.

And I did not mean the announcement must be played to all over the conversation. I also did not mean only a long announcement can be played parallel with the conversation.

4.2.3: I guess the intention is to add a media stream during session set-up? "at the same time" is very unclear to me. But the text possibly needs something more to say that this new stream is using a different media type.

[Hongxia]: Not only different media type. You know from audio conversation to video conversation , it’s a case of different media type.

But Here, the audio conversation media is between UEs, but the added video announcement media is from the AS/MRF to the UE.

Anyhow, I will think how to change this part to avoid using “at the same time” .

4.7.2.9.1: This is subclause is about announcement during an established connection, and that means after 200 (OK), so this function should be somewhere else. And I think this needs to be formulated differently. I think it could be sufficient to state that the AS can add a media stream with a type different than any existing media types following the offer/answer mechansim.

[Hongxia]: ”announcement during an established connection” means announcement is played during announcement during an established connection. It does not say we cannot prepare to play before the connection is established. As my proposal , announcement is also played during an established connection and is not played before the connection is established. “AS can add a media stream with a type different than any existing media types” is not enough. If current CR text is right, I think there is no need to change to another saying. It’s better to check which place is not right or reasonable.

A.2: The call flows should not be added. Second call flow is wrong as re-INVITE cannot be sent before the INVITE transaction is finished. There is a difference in user experience between UPDATE and re-INVITE and that is that if re-INVITE is used the user is usually given a chance to reject the offer. If UPDATE is used there is no such chance.

[Hongxia] Thanks for point out the error in the second call flow and the explanation on re-INVITE and UPDATE. But I cannot understand why do you object any call flow? What’s rule of adding call flows? If I did not give call flow here, I guess maybe you think the text is not clear. Although the call flow is not necessary, I think the call flow is helpful for understanding the normative text accurately. At least, I think the first call flow is needed

-

Upendra

In figure A.a, & A.b step 24

• what should be the UE behavior if one of the parallel streams like setting up video fails or

• audio bearer is established first and UE responds with 200 OK with audio only and after UE setup video bearer, sends an UPDATE.

-

Hongxia

Thanks for your comments on this CR. Maybe you have seen my new email , this CR has revised to 200910, I have upload the draft of 200910, please check.

If setting up video fails, the AS cannot provide video, as normal , UE can reply with a SDP only including audio, it’s the general capability of the UE.

I do not quite understand the other issue you mentioned, sorry, could you please explain more?

-

Upendra

The requirement from UE is to establish the call as soon as possible. UE will not wait for both audio and video bearers to be established to send 200 OK. If there are any delays in establishing video bearers and audio bearer is established, UE will send the 200 OK with audio SDP and call is connected. UE will send an UPDATE after video bearer is established. I think in this scenario, AS will not play the video announcement and audio call continues.

-

Hongxia

To be honest , I am not sure about this scenario. But I think it’s similar with video call/conversation.

Anyhow, AS can only play video announcement without interrupting the audio conversation and when video bearer is established.

Welcome to check the revision document 200910.

-

Jörgen Axell (Ericsson)Just a quick thought on Upendra's scenario. The AS cannot send the CAT video, but I think that the intention has been to be able to continue to play video during the call as per C1-200546.

-

Hongxia

Response to your scenario again after I discussed this with some experts in IMS:

This scenario is very strange, in step24-25, video line and audio line are both included in SDP of UPDATE, in step 26-27 , is it possible that UE send the indication of audio bearer and the indication of video bear at different time when delay occurs? If precondition is used, the UE will indicate together these two bearer is established, If precondition is not used, the UE will not wait both. More, actually before the callee answers the call, audio bearer has already been established, there is no need for UE to send the indication for only audio bearer again. So “for any delays in establishing video bearers and audio bearer, the UE send 200(ok) for only indicating the audio bear is established” seems very strange in my side.

Anyhow, If this scenario really exists, it’s related with the deployment, the AS may not send video announcement after the video bear is establishment, even the AS play, the UE may not display, but I think these are the deployment detail, seems there is no need to change CR for this scenario. Do you think so?

-

Upendra

Agree, if preconditions are enabled for video also then the response will be sent only when both audio and video bearers are established.

**Decision:** The document was **revised to C1-200910**.

**C1-200910 Providing video announcement at the same time with audio conversation**

*Type: CR For: Approval  
 24.628 v16.0.0 CR-0072 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

(Replaces C1-200486)

**Decision:** The document was **revised to C1-201048**.

**C1-201048 Providing video announcement at the same time with audio conversation**

*Type: CR For: Approval  
 24.628 v16.0.0 CR-0072 rev 2 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

(Replaces C1-200910)

**Decision:** The document was **agreed**.

**C1-200488 Use precondition only for CAT when network disables precondition**

*Type: CR For: Approval  
 24.182 v16.1.0 CR-0116 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

**Decision:** The document was **withdrawn**.

**C1-200489 Use precondition for CAT when originating UE and network both support precondtion**

*Type: CR For: Approval  
 24.182 v16.1.0 CR-0117 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

**Decision:** The document was **withdrawn**.

**C1-200490 Use precondition for CRS when network disables precondition**

*Type: CR For: Approval  
 24.183 v16.2.0 CR-0059 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

**Decision:** The document was **withdrawn**.

**C1-200491 Use precondition for CRS when terminating UE supports or requires precondition**

*Type: CR For: Approval  
 24.183 v16.2.0 CR-0060 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

**Decision:** The document was **withdrawn**.

**C1-200492 Providing video announcement at the same time with audio conversation**

*Type: CR For: Approval  
 24.628 v16.0.0 CR-0073 Cat: B (Rel-16)  
  
 Source: Huawei,China Telecom,China Unicom,HiSilicon /Hongxia*

**Decision:** The document was **withdrawn**.

**C1-200546 Condition of providing video announcement**

*Type: CR For: Approval  
 24.628 v16.0.0 CR-0074 Cat: C (Rel-16)  
  
 Source: China Telecom,Huawei, China Unicom, HiSilicon*

**Discussion:**

Jörgen Axell (Ericsson):

And now some comments:

I don't think we should state negative requirements like this. So better to say something that "the AS shall only provide video announcement (or some better term) if...

As the first sentence in 4.7.2.9 state that procedures apply to both originating and terminating UE only one paragraph is needed. Then I think you can use the term "served UE". I assume the conditions are that SDP is not in the negotiated SDP and there is a video media feature tag present.

Unrelated to what you do, it would be good if you add a heading 4.7.2.9.0 General. You don't need to, but the current text is a hanging paragraph.

--

Michelle Li (China Telecom)

Jorgen

Based on your comments, we made some revision.

References:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/ C1-20dddd(revision of 200546) Condition of providing video announcement....zip

--

Michelle:

Here are our feedback:

And now some comments:

I don't think we should state negative requirements like this. So better to say something that "the AS shall only provide video announcement (or some better term) if...

OK.

As the first sentence in 4.7.2.9 state that procedures apply to both originating and terminating UE only one paragraph is needed. Then I think you can use the term "served UE". I assume the conditions are that SDP is not in the negotiated SDP and there is a video media feature tag present.

Though the “served UE” can cover the originating UE and the terminating UE, but the related request or response is different for different UE side. It’s hard to merge them to one paragraph, I think keeping them in two paragraph is more clear.

Unrelated to what you do, it would be good if you add a heading 4.7.2.9.0 General. You don't need to, but the current text is a hanging paragraph.

Ok, I agree to remove the change to new sub clause “4.7.2.9.x general”.

References:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/ C1-20dddd(revision of 200546) Condition of providing video announcement....zip

-

Jörgen Axell (Ericsson)

Thank you for the revision. It makes the requirement clearer. I was not clear on the heading structure. I was asking for just adding a heading. I have included that in a document I send you separately, and I gave it a try to only use one paragraph.

But I have a question on the new text. Do you really mean that if there is not video media feature tag but a video SDP then you can provide the video media? I thought it was the other way around, that you only provide this video media if there is no video in the negotiated SDP.

-

Michelle

We appreciate your revision, and we have some questions about that:

My thought alternative:

The AS shall provide video announcement to the UE only if the video media feature tag is included in the Contact header field of the served user in the initial INVITE request, or there is a video description in the initial SDP offer or answer.

1) Missing the scene about the terminating UE response to the initial INVITE request

Alt 2:

The AS shall only provide additional video media to the served UE if the video media feture tag is included in the Contact header field of the served user, or if the ongoing communication contains a video media line.

2) We feel confused about the word ”ongoing” ?

3) The description of” the video media feature tag” is nor so complete ,it should be included in some message

-

Upendra

The changes submit in this CR – C1-200546 contradicts with C1-200486, section A.2.x where video announcements are added for only audio in SDP on both originating and terminating UEs.

AS only needs to check video feature-tag from MO/MT UEs, no need to check video content in SDP offer/answer

-

Hongxia

Firstly, I plan to remove A2.x. And I don’t think these two CRs are contradict.

As per 200546, it says video announcement can only be provided to the UE which has the video handling capability. In 200486, though there is only audio in SDP, it’s possible that the UE has shown their video capability by video feature tag in Contact header of the previous request/response.

And more , I’m doing some change on 200486, will upload a draft later.

-

Upendra

C1-200546 has 2 conditions- video handling capability check and video description in SDP offer/answer. As per 200486 if SDP offer/answer has only audio and UE has included video media tag, video announcement can be added.

The AS shall not provide video announcement to the originating UE if video media feature tag is not included in the Contact header field of the received initial INVITE request and there is no video description in the SDP offer included in the initial INVITE request.

The AS shall not provide video announcement to the terminating UE if video media feature tag is not included in the Contact header field of the received response from terminating UE to the initial INVITE request, and there is no video description in the received SDP answer from terminating UE.

-

Hongxia

Yeah, I have noticed the words you highlighted.

She used “AS shall not provide… if not A and not B”, this saying is confused, Jorgen has suggested her to use an “AS shall provide… only if A or B”, this new saying will be better. From the new saying , you can see clearly A or B , not A and B.

I saw there are already a revision draft for 200546 on the server, but I cannot download, I am not sure whether you can download it?

Wish this make sense.

-

Michelle @Upendra,

Some old UE maybe have no video feature-tag but still have video capability,

which we should take them into account.

Jörgen Axell (Ericsson) Isn't this problematic as then the UE is offering a video call. Providing parallel media in such case will interfere with the end-to-end video between the UEs. Hongxia's contribution avoided this situation.

Upendra, was this your concern as well?

Hongxia: Please allow me to share my understanding:

I think 200546 just defined when the AS can provide video, it’s in general part, need to cover the biggest scope of providing video announcement.

You needn’t worry about providing video announcement during video conversation, because only 4.7.2.9.1 can be used for provide announcement during the established communication. Providing video announcement during video conversation is not allowed by 4.7.2.9.1.

Michelle:

I have obtained and submitted the following revision:

C1-200546 -> C1-200995;Thank you for your work on this.

BTW,I preferred to choose two paragraphs instead of one paragraph , because:

1)“ the initial SDP offer or answer” is a bit confusing, especially “the initial answer/response”(sometimes

the response would be”18X”but not “100” ) ;

2) Two paragraphs seems no ambiguity and there is no need to compress the words.

-

Yoshihiro

What is the conclusion of this CR?

You said as follows:

Some old UE maybe have no video feature-tag but still have video capability, which we should take them into account.

I think we should not introduce such conditions, considering the UE. The UE might not include video media type in the SDP despite the UE has video capability, if the UE does not initiate a video call.

Hongxia: Mingxue has taken your comments in new revision, please check, thanks!

**Decision:** The document was **revised to C1-200995**.

**C1-200995 Condition of providing video announcement**

*Type: CR For: Approval  
 24.628 v16.0.0 CR-0074 rev 1 Cat: C (Rel-16)  
  
 Source: China Telecom,Huawei, China Unicom, HiSilicon*

(Replaces C1-200546)

**Decision:** The document was **revised to C1-201057**.

**C1-201057 Condition of providing video announcement**

*Type: CR For: Approval  
 24.628 v16.0.0 CR-0074 rev 2 Cat: C (Rel-16)  
  
 Source: China Telecom,Huawei, China Unicom, HiSilicon*

(Replaces C1-200995)

**Discussion:**

Yoshihiro @Michelle

I think you misunderstood my concern.

Now, the proposed condition looks like "the AS shall not provide video announcement if the video media feature tag is included in the Contact header field of the received initial INVITE request.".

Condition becomes a strong restriction now.

As you mentioned the current situation of UEs, the restriction might have huge impact on current operator services. I think we should consider whether we should introduce such a condition or not, more carefully.

-

Michelle

I still feel a bit confused with what your concern:

"Now, the proposed condition looks like "the AS shall not provide video announcement if the video media feature tag is included in the Contact header field of the received initial INVITE request." " ???

To make things clearly, please see whether you agree the following analysis of 2 scenarios :

1. UE has video capability and include video feature tag in the Contact header .------The AS may provide video announcement to the UE, and also the AS may provide audio announcement.

2. Some old UE has video capability, but it does not include video feature tag in the Contact header.

(a)If the UE initiate an audio call, it does not include video media type in the SDP.----- AS will not know the UE has video capability, it cannot provide video announcement

(b)If the UE initiate an video call, it include video media type in the SDP. -----------AS will know the UE has video capability, the AS may provide video announcement, also the AS may provide audio announcement.

So, only when 1 and 2(b), the AS may provide announcement. Right?

Then:

(1)If we take 1 and 2(b) into account, we should write "The AS may provide announcement to the served UE if the video media feature tag is included in the Contact header field of the received initial INVITE request or there is a video description in the SDP received from the served UE" or write in another way "The AS shall not provide announcement to the served UE if the video media feature tag is not included in the Contact header field of the received initial INVITE request and there is not a video description in the SDP received from the served UE". Now I think the second is better.

(2)If we do not take 2 into account, we should write "The AS may provide video announcement to the served UE if the video media feature tag is included in the Contact header field of the received initial INVITE request " or in another way "The AS shall not provide video announcement to the served UE if the video media feature tag is not included in the Contact header field of the received initial INVITE request ".

Which one do you think is more reasonable? Please let us know, thanks a lot.

-

Jörgen Axell (Ericsson)

To some extent the case where SDP is negotiated in the end-to-end session is covered by the text above your new text which hints at providing an announcement in an existing media stream. So if you want to provide an announcement using that stream it can be done.

If I understood Yoshihiro (and maybe your scenarios below) your new text seems to prevent this if SDP is negotiated and the UE you want to send the announcement to has not indicated the video media feature tag.

So I think that with the current TS text, without any new text, you will be able to send an announcement using audio and video by using 3rd party call control.

So we have to discuss the use case as well. Are you targeting normal announcements or are you also trying to specify the use case with adding a video stream to an ongoing audio only call. I have assumed the latter.

Yoshihiro: As Jorgen said, I have concern that proposed condition brings restriction to current SDP negotiation. The AS can change/add the media stream as described in RFC 3264. Whether the AS can use the media type in the SDP offer or not depends on the SDP answer from the UE.

**Decision:** The document was **postponed**.

#### 16.3.14 Other Rel-16 IMS & MC issues

**C1-200365 SDP profile update to support FLUS**

*Type: CR For: Agreement  
 24.229 v16.4.0 CR-6409 Cat: B (Rel-16)  
  
 Source: Ericsson / Nevenka*

**Decision:** The document was **agreed**.

**C1-200673 Discussion on SRVCC from E-UTRAN to GERAN/UTRAN when IMS voice call is initiated in 5GS**

*Type: discussion For: (not specified)  
 Source: Ericsson / Ivo*

**Discussion:**

Christian Herrero (Huawei), on 673 and 674

There are discussions ongoing during the SA2 e-meeting on this topic of how to handle SRVCC from 5GS to EPS, and we would like to propose to postpone the CT1 discussion till the architectural discussion is settled in SA2. However, we are fine to discuss during this e-meeting the details of the CT1 proposal as proposed by Ericsson to collect comments.

Ivo Sedlacek (Ericsson): I am unaware of any discussions ongoing during the SA2 e-meeting on this topic of how to handle SRVCC from 5GS to EPS.

can you please point me to any SA2 TDocs? Thank you

Christian Herrero (Huawei): Please, check at least S2-2001973, S2-2001974 from us. The SA2 CRs from us do not focus on the IMS part but the general signalling part but anyhow there is need to analyze the impacts of each other if agreed, and anyhow it is recommended from my side that we wait for stage 2 (SA2) first so we, CT1, are on the safe side.

Ivo Sedlacek (Ericsson): S2-2001973 and S2-2001974 seem to describe how the MME communicates with eNode during inter-system change from N1 mode to S1 mode.

C1-200673 and C1-200674 describe how the ATCF is informed by SCC AS about possible PS to CS SRVCC, when the UE is in 5GS.

Can you please clarify linkage of those discussions? Thank you.

Christian Herrero (Huawei): Ivo, I wonder if you did read my e-mails. You have the answer to your questions.

-

John-Luc Bakker (BlackBerry): SA2 have decided in Incheon to put CT1 in charge. This was included in the meeting notes: “Wait for discussions in CT1 on this topic to determine what needs to be done in SA2”.

I will remind SA2 of this decision too.

--

Ivo Sedlacek (Ericsson)

please see a revision of C1-200673 in [1].

Main changes:

- proposal focuses on solution where the SCC AS analyzes IMS signalling sent by the UE and determines that g.3gpp.accesstype media feature tag is included in the Contact header field of the REGISTER request from the UE

- "3gpp.accesstype media feature tag indicates that the UE is an SC UE" -> "3gpp.accesstype media feature tag is included by a UE compliant to TS 24.237", and supporting quotes from 24.237 added in Annex A.5

- NOTE is reformulated and simplified, and also addresses a possiblity of a non-SC ISC UE providing the 3gpp.accesstype media feature tag

Please see a revision of C1-200674 in [2].

Main changes:

- reason for change updated.

- condition for providing SRVCC information changed to refer to presence of g.3gpp.accesstype media feature tag in a Contact header field of the SIP REGISTER request.

Does this make the proposal clearer? Any other comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iasa-was-C1-200673-v01.zip

[2] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iata-was-C1-200674-v01.zip

**Decision:** The document was **revised to C1-200940**.

**C1-200940 Discussion on SRVCC from E-UTRAN to GERAN/UTRAN when IMS voice call is initiated in 5GS**

*Type: discussion For: -  
 Source: Ericsson / Ivo*

(Replaces C1-200673)

**Decision:** The document was **postponed**.

**C1-200674 SRVCC from E-UTRAN to GERAN/UTRAN when IMS voice call is initiated in 5GS**

*Type: CR For: (not specified)  
 24.237 v16.3.0 CR-1298 Cat: F (Rel-16)  
  
 Source: Ericsson / Ivo*

**Discussion:**

Robert Zaus (Apple)

1) We are not in favour of leaving it up to “network implementation” to find out whether a UE is supporting SRVCC or not.

In our view, both networks and UEs would benefit from clear criteria. - Just imagine that we find out that for our UEs in certain networks SRVCC does not work in the scenario under discussion, but in other networks it is working perfectly well.

Should we then argue with the network vendor that he has chosen the wrong network-specific implementation?

So we would prefer to have a list of clear criteria.

(I also don’t think that the scenario under discussion should be considered a ‘rare corner case’. This may be the case for some networks; but in others it could be a quite common case:

if an EPS network is using SRVCC today, it will probably continue doing so after NR has been deployed. If then the network or the UE does not support VoNR, there will be many cases of EPS fallback - where the UE initiates the signalling for the IMS call via NR before it is handed over to EPS. And for any such call, if there is a subsequent SRVCC handover to 2G/3G, we will run into the issue.)

2) I have a question regarding the proposed NOTE 2 in subclause 6.3.2:

> NOTE 2: A UE supporting the PS to CS SRVCC is an SC UE. Presence of the g.3gpp.accesstype media feature tag in a Contact header field of the SIP REGISTER request that created the binding indicates that the UE is an SC UE.

Apparently, here the intention is to give such a criterion in the form of note, but are you sure that the 2nd sentence is correct?

In my view it should rather read:

> A UE that is an SC UE includes the g.3gpp.accesstype media feature tag in a Contact header field of the SIP REGISTER request.

which is basically a repetition of the requirement in 6.2.2, General:

> The SC UE shall include the g.3gpp.accesstype media feature tag as described in clause B.3 of 3GPP TS 24.292 [4] in the Contact header field of the SIP REGISTER request.

The g.3gpp.accesstype media feature tag is defined in TS 24.292, annex B.3, and according to 24.292, subclause 6.2, it primarily indicates that “ICS is enabled for the UE”.

(Especially, if in a SIP REGISTER request it is combined with a g.3gpp.ics media feature tag set to “principal” as shown in the signalling flows in 24.237, annex A.3.)

3) It is our understanding that you want to collect comments, but that a final decision between the proposal in C1-200674 and the proposal in C1ah-200012 (or some third proposal) will be taken at a meeting where both proposals can be tabled and discussed at the same meeting.

--

John-Luc Bakker (BlackBerry)

BlackBerry requests that C1-200674 is postponed. As pointed out, a competing (and complete) solution exists which could not be submitted to this meeting.

A detailed comment:

It is unclear what the purpose is of the new NOTE 2. According to 5.2 in 24.237, an SC UE can, dependent on the desired functionality, implement only one of the following 24.237 procedures: procedures in subclauses 6A.2, subclause 7.2, subclause 8.2, subclause 9.2, subclause 10.2, subclause 11.2, subclause 12.2, subclause 13.2 or subclause 20.1.

This means:

- An SC UE could be a UE that supports receiving some operator policy via OMA Device Management (3GPP TS 24.216) only, i.e. no SRVCC.

- An SC UE could be a UE that supports PS-PS access transfer only.

- An SC UE could even be using ICS.

Neither has to support SRVCC!

Thus, instead of “the SCC AS determines using implementation specific means that the PS to CS SRVCC is possible” the SCC AS has no way of determining whether PS to CS SRVCC is possible for any UE.

As a consequence the operator has to either assume all UEs support PS to CS SRVCC or none of them do. I.e. the operator supporting SRVCC needs to increase capacity in order to anchor all sessions in the SCC AS/ATCF/ATGW.

For any operator that depends on the UE PS to CS SRVCC capability, this is an incompatible change.

While the HSS will provide a correct “UE PS to CS SRVCC capability” value for UEs that have attached via EPS, when the same UE initially registers via 5GS, the “UE PS to CS SRVCC capability” value provided by the HSS will be incorrect.

When the same UE subsequently transfers from 5GS to EPS, the SCC AS isn’t triggered to check with the HSS whether the “UE PS to CS SRVCC capability” value has changed at the HSS (due to the UE having performed TAU with the EPS).

Hence, SRVCC will continue to fail for these operators and UEs.

The proposal essentially makes things “implementation-specific” and adds an obscure NOTE. And it doesn’t work.

--

Ivo Sedlacek (Ericsson):

A UE supporting SRVCC needs to both register and establish an IMS voice call. I.e. the UE needs to perform 24.237 6.2 and 7.2 and 8.2, in addition to 12.2. 24.237 6.2 states:

-----------------

The SC UE shall include the g.3gpp.accesstype media feature tag as described in clause B.3 of 3GPP TS 24.292 [4] in the Contact header field of the SIP REGISTER request.

-----------------

This is also reconfirmed in GSMA IR.92 which states:

-----------------

If the UE is a Session Continuity UE (SC-UE) (e.g. due to support of SR-VCC as described in Annex A.3), then the UE must include the g.3gpp.accesstype media feature tag as specified in section 6.2.2 of Release 11 of 3GPP TS 24.237 [16].

-----------------

I.e. SRVCC UE includes the g.3gpp.accesstype media feature tag in REGISTER request.

In C1-200674, when the g.3gpp.accesstype media feature tag is included in REGISTER request, SCC AS can provides SRVCC information to ATCF.

In this solution, ATGW will get SRVCC information for every SRVCC UE and this ensures that SRVCC handover will be performed correctly. This solution works with Rel-15 5GS network (both in VPLMN and HPLMN), with Rel-15 UEs, and with Rel-15 ATGW.

There might be other possible solution ensuring the above and that's why the CR states "implementation specific means that the PS to CS SRVCC is possible", with the above given as one possible solution.

Regarding whether other UEs can provide the g.3gpp.accesstype media feature tag in REGISTER request too. In theory, this is possible and the DISC paper stated so. In reality, we are not aware of deployments of such UEs. If such UE is anyway deployed, the services will continue being used as normally, the only effect is anchoring of the call in ATGW. Anchoring of unnecessary call in ATGW is a small cost in comparison to your solution which precludes SRVCC handover from E-UTRA to GERAN/UTRAN of a IMS voice call which was originally established by Rel-15 UE in Rel-15 5GS network and then moved to EPS using inter-system change from N1 mode to S1.

--

Robert Zaus:

1)

> In C1-200674, when the g.3gpp.accesstype media feature tag is included in REGISTER request, SCC AS can provides SRVCC information to ATCF.

If that is the intention, can we please have this stated in a more normative way, as a requirement?

2)

> Regarding whether other UEs can provide the g.3gpp.accesstype media feature tag in REGISTER request too. In theory, this is possible and the DISC paper stated so. In reality, we are not aware of deployments of such UEs.

The DISC paper contains the same - wrong - claim that 'every UE sending a g.3gpp.accesstype media feature tag is an SC UE':

<snip>

The implementation specific means can consist of e.g. the SCC AS using UE's SRVCC capability received previously and stored in the SCC AS or the SCC AS analyzing IMS signalling sent by the UE. In the latter, the SCC AS can decide that SRVCC is possible e.g. if the g.3gpp.accesstype media feature tag is included in the Contact header field of the REGISTER request, as g.3gpp.accesstype media feature tag indicates that the UE is an SC UE and a UE supporting PS to CS SRVCC is an SC UE.

NOTE: All SC UEs are a super set of all UEs supporting PS to CS SRVCC. I.e. a UE supporting PS to CS SRVCC is an SC UE but not all SC UEs support PS to CS SRVCC. E.g. an SC UE that does not support PS to CS SRVCC and supports PS to CS DRVCC or inter-UE-transfer can exist. If the SCC AS provides the SRVCC information to the ATCF for such a UE, IMS voice calls of such UE would be anchored in an ATGW unnecessarily.

<snap>

So can we please have the Note in the CR corrected? - Even if - for the time being - there is no implementation of an ISC UE which is not also an SC UE, in my view your statement is confusing the reader.

--

Ivo Sedlacek (Ericsson)

thank your for your comments.

1)

> In C1-200674, when the g.3gpp.accesstype media feature tag is included in REGISTER request, SCC AS can provides SRVCC information to ATCF.

If that is the intention, can we please have this stated in a more normative way, as a requirement?

[Ivo] Intention was to allow other solutions. However, if people want to make this normative, it can be done.

2)

> Regarding whether other UEs can provide the g.3gpp.accesstype media feature tag in REGISTER request too. In theory, this is possible and the DISC paper stated so. In reality, we are not aware of deployments of such UEs.

The DISC paper contains the same - wrong - claim that 'every UE sending a g.3gpp.accesstype media feature tag is an SC UE':

<snip>

The implementation specific means can consist of e.g. the SCC AS using UE's SRVCC capability received previously and stored in the SCC AS or the SCC AS analyzing IMS signalling sent by the UE. In the latter, the SCC AS can decide that SRVCC is possible e.g. if the g.3gpp.accesstype media feature tag is included in the Contact header field of the REGISTER request, as g.3gpp.accesstype media feature tag indicates that the UE is an SC UE and a UE supporting PS to CS SRVCC is an SC UE.

NOTE: All SC UEs are a super set of all UEs supporting PS to CS SRVCC. I.e. a UE supporting PS to CS SRVCC is an SC UE but not all SC UEs support PS to CS SRVCC. E.g. an SC UE that does not support PS to CS SRVCC and supports PS to CS DRVCC or inter-UE-transfer can exist. If the SCC AS provides the SRVCC information to the ATCF for such a UE, IMS voice calls of such UE would be anchored in an ATGW unnecessarily.

<snap>

So can we please have the Note in the CR corrected? - Even if - for the time being - there is no implementation of an ISC UE which is not also an SC UE, in my view your statement is confusing the reader.

[Ivo]

Based on your feedback, I assume you wish to have the following update:

In the latter, the SCC AS can decide that SRVCC is possible e.g. if the g.3gpp.accesstype media feature tag is included in the Contact header field of the REGISTER request, as g.3gpp.accesstype media feature tag indicates that the UE is an SC UE or an ICS UE and a UE supporting PS to CS SRVCC is an SC UE.

This is not a big difference - if someone deploys an ICS UE (which seems unlikely, given your statement), the services will continue being used as normally, the only effect is anchoring of the call in ATGW. As I stated before - anchoring of unnecessary call in ATGW is a small cost in comparison to BlackBerry's solution which precludes SRVCC handover from E-UTRA to GERAN/UTRAN of a IMS voice call which was originally established by Rel-15 UE in Rel-15 5GS network and then moved to EPS using inter-system change from N1 mode to S1.

Your view?

-

Robert Zaus

1)

> In C1-200674, when the g.3gpp.accesstype media feature tag is included in REGISTER request, SCC AS can provides SRVCC information to ATCF.

If that is the intention, can we please have this stated in a more normative way, as a requirement?

[Ivo] Intention was to allow other solutions. However, if people want to make this normative, it can be done.

[Robert] I understand your intention, but I think “to allow other solutions” would be an appropriate approach if we were talking about some “quick and dirty” solution for Rel-15, and a “regular” solution (using explicit capability signalling) for Rel-16 were already in preparation. But your CR is against Rel-16, so we should strive for something more deterministic.

2)

> Regarding whether other UEs can provide the g.3gpp.accesstype media feature tag in REGISTER request too. In theory, this is possible and the DISC paper stated so. In reality, we are not aware of deployments of such UEs.

The DISC paper contains the same - wrong - claim that 'every UE sending a g.3gpp.accesstype media feature tag is an SC UE':

<snip>

The implementation specific means can consist of e.g. the SCC AS using UE's SRVCC capability received previously and stored in the SCC AS or the SCC AS analyzing IMS signalling sent by the UE. In the latter, the SCC AS can decide that SRVCC is possible e.g. if the g.3gpp.accesstype media feature tag is included in the Contact header field of the REGISTER request, as g.3gpp.accesstype media feature tag indicates that the UE is an SC UE and a UE supporting PS to CS SRVCC is an SC UE.

NOTE: All SC UEs are a super set of all UEs supporting PS to CS SRVCC. I.e. a UE supporting PS to CS SRVCC is an SC UE but not all SC UEs support PS to CS SRVCC. E.g. an SC UE that does not support PS to CS SRVCC and supports PS to CS DRVCC or inter-UE-transfer can exist. If the SCC AS provides the SRVCC information to the ATCF for such a UE, IMS voice calls of such UE would be anchored in an ATGW unnecessarily.

<snap>

So can we please have the Note in the CR corrected? - Even if - for the time being - there is no implementation of an ISC UE which is not also an SC UE, in my view your statement is confusing the reader.

[Ivo]

Based on your feedback, I assume you wish to have the following update:

In the latter, the SCC AS can decide that SRVCC is possible e.g. if the g.3gpp.accesstype media feature tag is included in the Contact header field of the REGISTER request, as g.3gpp.accesstype media feature tag indicates that the UE is an SC UE or an ICS UE and a UE supporting PS to CS SRVCC is an SC UE.

This is not a big difference - if someone deploys an ICS UE (which seems unlikely, given your statement), the services will continue being used as normally, the only effect is anchoring of the call in ATGW. As I stated before - anchoring of unnecessary call in ATGW is a small cost in comparison to BlackBerry's solution which precludes SRVCC handover from E-UTRA to GERAN/UTRAN of a IMS voice call which was originally established by Rel-15 UE in Rel-15 5GS network and then moved to EPS using inter-system change from N1 mode to S1.

Your view?

[Robert] Yes, the above modification (to the sentence in the discussion paper) is an improvement. The exact wording for the CR remains to be seen. -

One clarification on “ICS UE (which seems unlikely, given your statement)”: I did not do any own research whether there is such a UE implementation (supporting ISC, but not SC), my intention was only to refer to your previous statement that you are not aware of any such UE.

-

John-Luc Bakker (BlackBerry)

Apologies for only reviewing the revision now. Upon first glance I have the following comment:

Clause D.3.3 references the condition “PS to CS SRVCC is not usable for the UE (see subclause 6.3.2)”.

However, 6.3.2 does not define the condition.

**Decision:** The document was **revised to C1-200941**.

**C1-200941 SRVCC from E-UTRAN to GERAN/UTRAN when IMS voice call is initiated in 5GS**

*Type: CR For: -  
 24.237 v16.3.0 CR-1298 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson / Ivo*

(Replaces C1-200674)

**Discussion:**

John-Luc Bakker (BlackBerry)

@Ivo

BlackBerry prefers that the solutions like in C1-200941 and C1ah-200012 are compared side by side, at a future meeting.

First:

First of all, it is not required for a UE to indicate g.3gpp.accesstype media feature tag and support SRVCC (as acknowledged). In fact, a UE can change its service configuration, SRVCC capability, codecs or classmark at any time and still indicate the g.3gpp.accesstype media feature tag. Or worse, the other way around, not indicate g.3gpp.accesstype media feature tag while changing the SRVCC capability from no to yes.

Second:

Clause 6.3.1 of 24.237 has:

The SCC AS can obtain registration state information that it needs to implement SCC specific requirements from:

a) any received third-party SIP REGISTER request (e.g. including information contained in the body of the third-party SIP REGISTER request) as specified in 3GPP TS 24.229 [2];

b) any received reg event package as specified in 3GPP TS 24.229 [2]; or

c) the Sh interface as specified in 3GPP TS 29.328 [6] and 3GPP TS 29.329 [7].

NOTE 1: Obtaining registration state information from HSS using Sh interface does not allow the SCC AS to know the capabilities supported by the user registered UE(s), including the used IP-CAN(s), other than that is specified in 3GPP TS 29.328 [6], e.g. the UE PS to CS SRVCC capability and 3GPP access networks' information related to T-ADS.

This part of the specification suggests there are several ways of obtaining “registration state information”, and specifically notes that the “UE PS to CS SRVCC capability” comes via Sh. In your proposal, the “g.3gpp.accesstype media feature tag” can be used to determine the UE’s usability of SRVCC. The SCC AS can only obtain the media feature tag via option a), “third-party SIP REGISTER request”.

Your CR has so far neglected to indicate that an SCC AS must use/support third party registration in order to determine usability of SRVCC capability by the UE if the SCC AS relies on “g.3gpp.accesstype media feature tag”. This needs clarifying.

Third:

CT4 delegates, for example, have been discussing what if “the SCC-AS receives an INVITE from ATCF (target->ATU-STI previously provided to SRVCC), and determines that UE is not SRVCC capable (via Sh-Pull), what is the expected behavior of SCC-AS”.

Ericsson’s solution would exacerbate the number of these cases and corresponding SCC AS behaviors. When the SCC AS produces an alarm due to above inconsistency or when a voice call fails due to this, operator personnel have to investigate. Errors like these reflect badly on the KPIs of operator personnel/departments involved and take away resources from other projects.

So far the specifications have relied on actual UE service capability indication via NAS, Sh (since Rel-10 or prior). Ericsson’s solution regresses the situation and proposes to rely on inconsistent information.

We request that C1-200941 or its revision is postponed.

**Decision:** The document was **postponed**.

## 17 void

## 18 Output liaison statements

**C1-200309 Reply LS on General Status of Work**

*Type: LS out For: (not specified)  
 to Broadband Forum, cc 3GPP TSG SA, 3GPP TSG SA WG 2, 3GPP TSG RAN WG 3  
 Source: Ericsson / Ivo*

**Decision:** The document was **approved**.

**C1-200310 Reply LS on sending CAG ID**

*Type: LS out For: (not specified)  
 to 3GPP TSG SA, cc 3GPP TSG SA WG 2, 3GPP TSG SA WG 3, 3GPP TSG RAN WG 2, 3GPP TSG RAN WG 3  
 Source: Ericsson / Ivo*

**Discussion:**

Kundan Tiwari (Samsung) proposed some revisions

@Ivo

Ivo,

Thanks for your response. IMO, any network will update the UE configuration ASAP and SA2 also understands this. So by writing this sentence does not give any action item to them. With this line do you want to them to capture in the specification this line or capture some visible network action? The LS from SA2 was regarding sending CAG ID from UE to network direction your sentence is from network to UE direction. I see a disconnection between the line and original intent of the LS.

Regarding your example of Manual CAG section case the AMF will not know the registration procedure is due to Manual or automatic CAG selection. Even then If you want to emphasize that in Manual CAG selection this line is useful can you plz capture in the LS response that we need this updating behaviour for case of manual CAG selection procedure.

-

Ivo Sedlacek (Ericsson)

let me be more precise - proper operation of the UE after manual CAG selection was given below as an example. Sync in other de-sychronized situations is needed too.

Given that Samsung is NOT OK to keep the paragraph, I have removed the paragraph from the LS.

Draft revision of C1-200310 is in [1].

Main changes:

- removal of the last paragraph from the overall description

**Decision:** The document was **revised to C1-201027**.

**C1-201027 Reply LS on sending CAG ID**

*Type: LS out For: -  
 to 3GPP TSG SA, cc 3GPP TSG SA WG 2, 3GPP TSG SA WG 3, 3GPP TSG RAN WG 2, 3GPP TSG RAN WG 3  
 Source: Ericsson / Ivo*

(Replaces C1-200310)

**Decision:** The document was **approved**.

**C1-200323 Response to LS on Non-UE N2 Message Services Operations**

*Type: LS out For: Approval  
 to SA2, cc CT4  
 Source: Cisco Systems Belgium*

**Abstract:**

CT1 reviewed the SA2 CR 1973 and agreed the actions proposed in those CRs. CT1 CRs are in line with SA2 CRs agreed during CT1#122 meeting

**Decision:** The document was **withdrawn**.

**C1-200395 Reply LS on SUCI computation from an NSI**

*Type: LS out For: (not specified)  
 to SA3, cc CT6, SA2, CT4  
 Source: Ericsson / Ivo*

**Discussion:**

There is consensus in CT1 that an NSI derived from an IMSI is not needed for access to SNPNs using USIM credentials in Rel-16. However Qualcomm disagrees that this also applies to future releases: it could be useful to be able to use an NSI derived from an IMSI for roaming scenarios in Rel-17, for instance by appending an NID to the IMSI in the NSI for routing purposes.

Consequently, we would like to change

“CT1 does not see advantages in specification of a SUPI of the NSI SUPI type containing an NSI derived from an IMSI”

to

“CT1 does not see the need for a SUPI of the NSI SUPI type containing an NSI derived from an IMSI in Rel-16”

-

Ivo Sedlacek (Ericsson)

please see draft revision in [1].

The only change is update as proposed below.

Any comments?

References:

[1] https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20iaka-was-C1-200395-v01.zip

--

Lena Chaponnière (Qualcomm)

Thanks for taking into account my comments. Since the body of the LS was modified as described below, the action to SA3 also needs to be modified as follows:

ACTION: CT1 asks SA3 to provide reasons for specification of a SUPI of the NSI SUPI type containing an NSI derived from an IMSI in Rel-16.

-

Sung Hwan Won (Nokia):

@Ivo,

I don’t see any need for the last paragraph, that is:

CT1 would like to point out that TS 23.003 requires a unique IMSI to be allocated to a mobile subscriber. Therefore, SUPIs of the IMSI SUPI type can be used to address as many mobile subscribers as SUPIs of the NSI SUPI type containing the NSIs derived from the IMSIs.

In fact, it is misleading because an NSI can be globally unique, but IMSI is unique within an SNPN only. So, I proposed to remove this paragraph.

-

Ivo Sedlacek (Ericsson)

On:

I don’t see any need for the last paragraph, that is:

CT1 would like to point out that TS 23.003 requires a unique IMSI to be allocated to a mobile subscriber. Therefore, SUPIs of the IMSI SUPI type can be used to address as many mobile subscribers as SUPIs of the NSI SUPI type containing the NSIs derived from the IMSIs.

In fact, it is misleading because an NSI can be globally unique, but IMSI is unique within an SNPN only. So, I proposed to remove this paragraph.

[Ivo]

IMSI has always be unique in the entire system, not just within an operator.

However, I can live with removing of the last paragraph.

Updated LS can be found at: https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Docs/C1-200938.zip

Changes:

- the last paragraph of overall description is removed, as requested by Sung

- action is applicable in Rel-16 only, as requested by Lena

-

**Decision:** The document was **revised to C1-200938**.

**C1-200938 Reply LS on SUCI computation from an NSI**

*Type: LS out For: -  
 to SA3, cc CT6, SA2, CT4  
 Source: Ericsson / Ivo*

(Replaces C1-200395)

**Decision:** The document was **approved**.

**C1-200416 LS on UE specific DRX for NB-S1 mode**

*Type: LS out For: (not specified)  
 to SA2, cc SA, RAN, CT, RAN3, RAN1  
 Source: Qualcomm Incorporated / Amer*

**Discussion:**

competes with 499

Amer Catovic (Qualcomm)

Please see attached the revised draft Reply LS to SA2 on UE specific DRX (Qualcomm version) in C1-200416.

**Decision:** The document was **revised to C1-200854**.

**C1-200854 LS on UE specific DRX for NB-S1 mode**

*Type: LS out For: -  
 to SA2, cc SA, RAN, CT, RAN3, RAN1  
 Source: Qualcomm Incorporated / Amer*

(Replaces C1-200416)

**Discussion:**

merged into 1024

**Decision:** The document was **merged**.

**C1-200434 LS on secure that a UE does not wait indefinitely for completion of NSSAA procedure**

*Type: LS out For: (not specified)  
 to SA2  
 Source: ZTE*

**Discussion:**

Lin Shu (Huawei) on 434 and 429

If we will go to the direction as indicated in the revision of C1-200429 https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-2008xx\_was0429\_EN1.docx, Then it seems the outgoing LS C1-200434 to SA2 is not needed, or?

**Decision:** The document was **postponed**.

**C1-200445 [Draft] LS on Unicode symbol numbers representing disasters**

*Type: LS out For: Approval  
 to ISO/IEC JTC1/SC2  
 Source: SyncTechno Inc.*

**Abstract:**

[Draft] LS on Unicode symbol numbers representing disasters

**Discussion:**

Ivo Sedlacek (Ericsson):

- the LS is too open on which disasters are to be considered, given "e.g." and "etc" in the text below. Please remove "e.g." and "etc" in the below.

-----------------

Question 1. 3GPP CT WG1 would like to ask ISO/IEC JTC1/SC2 to provide what Unicode symbols defined in ISO/IEC 10646 are possible to be recommended as language-independent contents such as pictograms mapping to disasters (e.g. earthquake, tsunami, fire, flood/typhoon/hurricane, volcano, epidemic, chemical hazard etc.) that can be compatible with Unicode-based texts and can be included in public warning message.

Question 2. If there are no proper Unicode symbols recommendable for the ePWS purpose to address the language issue existed in text-based warning messages in ISO/IEC 10646, 3GPP CT WG1 would like to request ISO/IEC JTC1/SC2 the standardization of Unicode-based language-independent contents representing earthquake, tsunami, flood, typhoon, hurricane, tornado, volcano, epidemic and chemical hazard etc..

-----------------

- Annex A is confusing since it also refers to UEs with no user interfaces which use new message IDs rather than Unicode characters. I suggest to either remove the annex A or reduce the annex A so that it only contains text for the scenarios where the new unicode characters are intended to be used.

-

Hyounhee @Ivo

I uploaded revised version (file name: C1-200445\_r1.doc) in “Drafts” folder of “Inbox’ folder.

I deleted “e.g.” and “etc.” because I agree with you.

And I deleted Annex A and moved sentences introducing links related to 3GPP documents in main texts.

I hope all of your comments are clarified above.

-

Ivo Sedlacek (Ericsson): C1-200445\_r1 addresses my comments raised before.

I spotted an additional issue - the list of disasters in Q1 is not the same as the list of disasters in Q2? Shouldn't they be the same?

-

Hyounhee

You are right. Listing same disasters will be better to get rid of unnecessary misunderstanding.

I corrected them and uploaded revised version (file name: C1-200445\_r2.doc) in “Drafts” folder of “Inbox’ folder.

I will upload the official revision C1-200920.zip to the inbox in 4 hours from now on.

-

Ivo Sedlacek (Ericsson) C1-200445\_r2 is OK with me.

**Decision:** The document was **revised to C1-200920**.

**C1-200920 [Draft] LS on Unicode symbol numbers representing disasters**

*Type: LS out For: Approval  
 to ISO/IEC JTC1/SC2  
 Source: SyncTechno Inc.*

(Replaces C1-200445)

**Decision:** The document was **revised to C1-201043**.

**C1-201043 LS on Unicode symbol numbers representing disasters**

*Type: LS out For: Approval  
 to ISO/IEC JTC1/SC2, cc TSG CT, TSG SA  
 Source: SyncTechno Inc.*

(Replaces C1-200920)

**Decision:** The document was **approved**.

**C1-200453 LS on limited service state for CAG cell**

*Type: LS out For: Action  
 to SA2  
 Source: Huawei, HiSilicon / Vishnu*

**Discussion:**

Lena Chaponnière (Qualcomm): since SA2 has already agreed a CR by which Rel-16 UEs which are not CAG capable can camp on a CAG cell in limited service state to receive emergency services (see S2-2001693), why do we need to send them an LS to ask them to support the same?

--

Ivo Sedlacek (Ericsson):

- whether a UE not supporting CAG can camp on an acceptable CAG cell depends on broadcast information provided in AS layer. According to my information, RAN2 expects that the CAG cell will indicate "cellreservedForOtherUse" which might prevent a UE not supporting CAG from camping on the acceptable CAG cell. We believe that CT1 should wait for RAN2 decision on whether a UE not supporting CAG can camp on an acceptable CAG cell.

--

Lena Chaponnière (Qualcomm):My understanding of the situation is as follows:

- SA2 agreed S2-2001693 by which Rel-16 UEs not supporting CAG can camp on a CAG cell in limited service state to get emergency services

- RAN2 has not yet decided on whether/how Rel-15 UEs can camp on a CAG cell in limited service state to get emergency services

So for Rel-15 UEs, we need to wait for RAN2. For Rel-16 UEs, we can align TS 23.122 with the SA2 agreement and there is no need to send any LS to SA2.

Vishnu Preman (Huawei): Thank you pointing out the agreed SA2 paper which actually addresses the concern raised by the LS. So we will not proceed with the LS.

In our understanding, the point here to discuss is whether a UE that does not support CAG is allowed to camp on a CAG cell for limited service or not. And the answer to that question is ‘yes’ according to the agreed SA2 paper.

Now coming to your concern, based on the RAN2 decision, ‘some cells’ may be excluded for camping for limited service based on “CellReserviedForOtherUse”, but that is not the main point that we discuss. So we don’t think we need to wait for RAN2 decision.

As I proposed in another email, we can modify the new statement and add an EN to address your concerns, are you ok with that ?

j) MS not supporting CAG is camped on a CAG cell when no other non-CAG cells are available and the CAG cell is available for emergency services; and

Editor's note: Determination of availability of CAG-cell for emergency services is subject to RAN2 agreement.

Thanks Lena for further information on this.

@Ivo, As I am not aware of such RAN2 discussion, can you please share further information on this, like any Tdoc numbers etc?

-

Ivo Sedlacek (Ericsson): my understanding of RAN2 discussion is:

- RAN2 agreed that CAG-only cell will enable emergency calls for Rel-15 UE.

It can be done by indicating a PLMN without CAG-ID (= PLMN X) - i.e. from CT1 point of view, the cell will NOT be considered as CAG cell for the PLMN X (as the cell broadcasts no CAG-ID for the PLMN X) - see https://www.3gpp.org/ftp/TSG\_RAN/WG2\_RL2/TSGR2\_109\_e/Docs/R2-2000570.zip (submitted but not agreed)

- RAN2 also agreed that CAG-only cell will enable emergency calls for Rel-16 UE not supporting CAG, but it is not clear yet whether the solution will be the same as the one for Rel-15 UEs or not.

If the same, then see previous bullet.

If different, there might be some CT1 impact.

Ericsson prefers to wait until this is clear.

**Decision:** The document was **withdrawn**.

**C1-200499 Reply LS on Rel-16 NB-IoT enhancements**

*Type: LS out For: Approval  
 to SA2, cc RAN2, RAN3, TSG SA, TSG RAN, TSG CT  
 Source: Huawei, HiSilicon/Lin*

**Discussion:**

Lin Shu (Huawei):To make the way forward on this topic, I have updated the draft reply LS as in draft box below, please check.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20xxxx(rev%20of%200499)\_reply\_LS\_UE%20specific%20DRX%20for%20NB-IoT-v1.doc

In principle, we could capture something we could reach the consensus and then leave others as FFS. Anyway I believe we need to reply something to SA2 in this meeting.

It was discussed in yesterday’s telco on who will hold the pen on this reply LS, I would like to say:

(1) We are the source company of incoming SA2 LS and we have already provided the draft reply LS, so as CT1 usually handled, if the source company wants to hold the pen, it is better to let it hold the pen. About the content, we can discuss separately.

(2) Before the meeting on discussion the CIOT work plan, I have firstly sent out in the email list to indicate that as the source company, we will prepare a draft reply LS on this and at that time, you indicated OK on my plan.

-

Mikael Wass (Ericsson)

“Both options are feasible from the NAS protocol perspective if backward compatible cases are not taken into account.”

I do not understand what you want to say with this text. Currently it implies that there are issues with one, or both, solutions but nothing is explained what problems there are to make LS recipients wiser. And I do not think providing more details on this is a feasible way ahead as I suspect there are two quite different positions on what solution has a problem.

My recommendation is to remove this part and assume that CT1 in the end will need to agree a backwards compatible solution, either by using a solution without backwards compatibility issues, or by enhancing a solution to make it backwards compatible.

The question to RAN 3 is in principle fine, but I think we need to make it a little bit clearer:

“Question to RAN3: When the UE is accessing via NB, whether the legacy MME is mandated provide the stored UE specific DRX value requested by the UE over NAS in S1 paging message to the eNB?”-

-

Yang Lu (Vodafone) Given the fact that we must ensure backwards compatible by all means, I support Mikael to remove the text related to “backward compatible” in the LS.

-

**Decision:** The document was **revised to C1-200865**.

**C1-200865 Reply LS on Rel-16 NB-IoT enhancements**

*Type: LS out For: Approval  
 to SA2, cc RAN2, RAN3, TSG SA, TSG RAN, TSG CT  
 Source: Huawei, HiSilicon/Lin*

(Replaces C1-200499)

**Discussion:**

merged into 1024

**Decision:** The document was **merged**.

**C1-200545 Reply LS on PC5S and PC5 RRC unicast message protection**

*Type: LS out For: (not specified)  
 to SA3, cc SA2, RAN2  
 Source: OPPO / Rae*

**Discussion:**

chair : in the confcall on Tueday it was raised by number of companies that the LS in C1-200545 is not needed.

Rae, current assumption is that the LS is withdrawn.

Please confirm or challenge this assumption.

**Decision:** The document was **postponed**.

**C1-200590 LS on suspend indication to the NAS**

*Type: LS out For: Approval  
 to RAN2, cc SA2  
 Source: Samsung/Mahmoud*

**Discussion:**

Amer Catovic (Qualcomm): Based on our comments to C1-200588 and C1-200585, which provide the rationale for this outgoing LS, we believe that the LS is not needed.

Mahmoud Watfa (Samsung): Based on the responses so far, I will be revising the LS and modifying the “ACTION TO RAN2” as follows:

CT1 kindly requests RAN2 to clarify how the NAS can determine the actual reason behind a suspend indication from the RRC.

The revised tdoc number is C1-200785.

I will not upload it yet to see if there are any comments on the contents.

**Decision:** The document was **revised to C1-200785**.

**C1-200785 LS on suspend indication to the NAS**

*Type: LS out For: Approval  
 to RAN2, cc SA2  
 Source: Samsung/Mahmoud*

(Replaces C1-200590)

**Discussion:**

Amer Catovic (Qualcomm): Thanks for the draft LS to RAN2 on suspend indication to NAS. The draft LS describes the ambiguity related to the interpretation of the suspend indication that stems from the text in CT1 specs and asks RAN2 for a solution. This comes across to me as asking RAN2 to help us clean our own backyard. Is there a text in RAN2 specs that can be used to explain the ambiguity? We should draft the discussion and the question to RAN2 around it.

Mahmoud Watfa (Samsung)

The issue is not the text in CT1 specification. The issue is with the same suspend indication from the RRC spec that is being sent to the NAS for two different reasons/events.

Do you have an alternative proposal that you can kindly suggest?

Amer Catovic (Qualcomm)

Thanks for the reply. You say that the issue is not the text in CT1 specs, but the draft LS quotes only the text in CT1 specs, explains the issue with it and asks RRC for a solution. There is no reference to RAN2 specs or pointer to RAN2 requirements or some aspects from their specs. So the questions that pops in my head is why ask RAN2 about an issue if it has no connection to their specs?

My suggestion is to re-formulate the question to show how it relates to RAN2, e.g. point to the text in the RAN2 spec defining the suspend indication to the upper layers and explain where the ambiguity is.

Mahmoud Watfa (Samsung)

RAN2 knows where to find this info in their spec and I tried to keep the LS simple.

Nevertheless, I have added some reference and text in consideration of your comment. The changes are tracked.

Link to the document is:

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-20-LS%20to%20RAN2%20on%20suspend%20indication-v1.docx

Kindly let me know if this is OK. Otherwise, kindly suggest an alternative wording

**Decision:** The document was **revised to C1-201040**.

**C1-201040 LS on suspend indication to the NAS**

*Type: LS out For: Approval  
 to RAN2, cc SA2  
 Source: Samsung/Mahmoud*

(Replaces C1-200785)

**Decision:** The document was **approved**.

**C1-200671 Response to LS on Sending CAG ID**

*Type: LS out For: Approval  
 to 3GPP SA2, 3GPP SA  
 Source: Samsung/Kundan*

**Discussion:**

Merged into 310

**Decision:** The document was **merged**.

**C1-200699 LS on manual CAG selection**

*Type: LS out For: Approval  
 to RAN2, cc SA1, SA2  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Lena Chaponnière (Qualcomm) As it is currently worded, it seems like the LS is asking RAN2 to define a solution. We would prefer to be more to the point and directly ask RAN2 whether they can define a SIB indicator enabling the serving network to control whether a CAG ID not in the UE’s Allowed CAG list is shown to the user during manual CAG selection.

Vishnu Preman (Huawei): We support Lena’s suggestion to be more specific with the broadcasted SIM indicator in the LS.

-

Kundan Tiwari (Samsung)

Samsung does not see the requirement of sending this LS to RAN2. As RAN2 is already in CC list of the LS S1-201084. If RAN2 see anything is needed then they will respond.

Lena Chaponnière (Qualcomm)

I think that this LS is useful to make sure related RAN2 contributions are handled and that the SIB indicator is specified in Rel-16. RAN2 is so busy that without an LS, this might not make it into Rel-16. I support sending this SL.

Kundan Tiwari (Samsung)

You didn’t get my comment. S1 S1-201084 is also sent to RAN2, why we need to send an extra LS to make them more busy?? BTW every grp is busy with this emeeting.

We think this is redundant exercise. Samsung object sending the LS.

Sung Hwan Won (Nokia) The LS has a meaning for the purpose of fast-tracking the issue. Unless you want this issue (RPLMN’s control on manual CAG selection) to be in deadlock, I request for you to re-consider your position. Until there is any decision in RAN2, manual CAG selection will never be resolved clearly.

CT1 owns stage 2 in terms of network selection. In that sense, CT1 should give a clear indication on what RAN2 should work on based on stage 1 requirements. So what bad do you see?

Kundan Tiwari (Samsung)

If RAN2 was not included in the original LS, I would not have objected. As RAN2 is included in original LS I see CT1 LS is redundant LS. We need to avoid this.

@Sung: First off all, I have no intention of blocking any issues or solution and I am working in the direction to finish Rel-16. I am only saying that SA1 LS is already sent to RAN2 why we need an extra LS, what you will achieve? RAN2 is an efficient grp and know how to work. So sending an extra LS to influence their working model is not required and I am afraid sending an LS to influence other grp will create wrong precedence.

Sung Hwan Won (Nokia): So you assume that the To field and Cc filed in the LS do not have any difference, is that correct?

Kundan: Sung, when LS is sent to a grp whether in CC and To chairman asks to the delegates if any action is needed for the LS. This is very common practice and we see in every meeting. If any company wants to action for the LS they will notify to the chairman.

Vishnu: We support sending this LS and we believe that it will prioritize the work in RAN2 to find a solution in Rel-16 itself.

As Sung pointed out there is indeed a difference between being in CC to an LS, and forcing to get a reply LS by putting RAN2 in To list.

Kundan:

every chairman asks for LS in CC also whether you need an action. You must have heard in each meeting and any company feels that they need action for CC LS they bring contributions (an example is below). CT1 was CCed but companies bring proposal in C1-200334. If we make this a tradition believe me there will be a lot of LSs to other grp.

C1-200214

Reply LS on NID structure and length (R2-1916344) RAN2 Cc Proposed Noted

Related CR in C1-200334

Kundan Tiwari (Samsung): We cannot dictate what RAN2 should do. RAN2 can design a solution by themselves. There is no consensus in CT1 or agreed CR which captures the highlighted line. Usually you send the agreed CR capturing the line you added.

CT1 kindly asks RAN2 to confirm if, in order to fulfil the stage 1 requirement, RAN2 can define a SIB indicator enabling the serving network to control whether a CAG ID not in the UE’s Allowed CAG list is shown to the user during manual CAG selection

-

Kundan Tiwari (Samsung)

Thanks a lot for the revision and drafting the CR. here are final comments.

1. The LS from S1 came very late when the CT1 tdoc submission deadline has passed. So Samsung didn’t get enough time to study the LS and contribute this requirement from RAN2.

2. There can be a better solution than this e.g. configuration by HPLMN like we have in CSG or some other procedure.

3. There is a security problem with this solution, any fake base station can alter the setting, e.g. the fake base station broadcast the opposite settings.

We would like to get more time to discuss this issue. We think next F2F meeting is better to discuss the solution against the requirement raised by SA1. I believe my request is reasonable.

**Decision:** The document was **revised to C1-200974**.

**C1-200974 LS on manual CAG selection**

*Type: LS out For: Approval  
 to RAN2, cc SA1, SA2  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200699)

**Decision:** The document was **revised to C1-201041**.

**C1-201041 LS on manual CAG selection**

*Type: LS out For: Approval  
 to RAN2, cc SA1, SA2  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-200974)

**Decision:** The document was **revised to C1-201053**.

**C1-201053 LS on manual CAG selection**

*Type: LS out For: Approval  
 to RAN2, cc SA1, SA2  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces C1-201041)

**Decision:** The document was **postponed**.

**C1-200707 Reply LS on Mobile-terminated Early Data Transmission**

*Type: LS out For: (not specified)  
 to RAN2, SA2, cc RAN3, RAN, SA  
 Source: Ericsson / Mikael*

**Decision:** The document was **revised to C1-201062**.

**C1-201062 Reply LS on Mobile-terminated Early Data Transmission**

*Type: LS out For: -  
 to RAN2, SA2, cc RAN3, RAN, SA  
 Source: Ericsson / Mikael*

(Replaces C1-200707)

**Decision:** The document was **approved**.

**C1-200710 Reply LS on RRC establishment cause value in EPS voice fallback from NR to E-UTRAN**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

Osama Lotfallah (Qualcomm): We submitted TEI16 CR3316 in previous e-meeting to address action related to incoming LS in LS R2-1916530/C1-200221. Because of procedural objection from Huawei, we postponed the CR until next CT1 meeting where incoming LS can be discussed. Now this CT1 e-meeting excludes TEI16 CR therefore we did not submit any revised CR related to this incoming LS. Because of this, we think any discussion related to outgoing reply LS should be postponed as well until we have CT1 meeting where we can discussion proposed action TEI16 CRs related to that incoming LS.

Sung Hwan Won (Nokia)

Fair enough. I will bring a CR to 24.301 and re-submit the LS to the next meeting, which hopefully should be a f2f one. Please mark the LS as postponed.

Chairman: LS out proposal 710 is marked postponed.

The incoming LS from RAN2 will be marked “Postponed” to have a starting point for discussion of the topic in the April meeting

**Decision:** The document was **postponed**.

**C1-200717 Reply LS on extended NAS timers for CE in 5GS**

*Type: LS out For: (not specified)  
 to RAN2, cc RAN3, SA2  
 Source: Ericsson / Mikael*

**Decision:** The document was **approved**.

**C1-200718 Reply LS on configured NSSAI handling**

*Type: LS out For: Approval  
 to SA2  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **approved**.

**C1-200721 Reply LS on Non-UE N2 Message Services Operations**

*Type: LS out For: (not specified)  
 to SA2, cc CT4  
 Source: Ericsson / Mikael*

**Discussion:**

Christian Herrero (Huawei): We support sending a reply SA2 but we have the following comments to the draft reply LS in C1-200721 in order to improve it:

(1) the work item should be fixed as “5GS\_Ph1-CT” is in fact not a Rel-16 WID whereas “Rel-16” is indicated on the cover sheet of the draft LS. This leads to confusion to readers. Though we agree that the incoming SA2 LS (C1-200249) suffers of the very same problem, we want the CT1 reply be corrected. Note that the related agreed SA2 CR is to Rel-16 and the first work item indicated by the cover sheet of that CR is in fact “TEI16”; and

(2) the draft reply is unnecessary verbose and a sort of unclear. It can easily be simplified by having the following text instead: "CT1 agrees that duplicated documentation should be avoided, and therefore CT1 intends to address this issue in the Rel-16 version of TS 23.041 as recommended by SA2 in a future meeting" or something similar.

Mikael Wass (Ericsson): Thanks for the comments. We think sending an LS reply from this meeting is fine so I will revise the proposed reply LS.

On (1) I agree that we better use the appropriate CT1 WI and not repeat the “mistake” from the incoming LS. I however think “5GProtoc16” would be the better alternative as PWS Rel-15 was introduced in 5GS\_Ph1-CT.

On (2) I am ok to simplify the text and use your proposed wording.

A draft has been uploaded to the Drafts folder in draft\_C1-200721\_ReplyLS\_PWS\_SBI\_v2.doc

Peter Sanders (one2many): A small editorial change for better reading:

CT1 thanks SA2 for informing CT1 of …

Christian Herrero (Huawei) The revision of the draft LS is fine by me. Thanks for considering my comments.

**Decision:** The document was **revised to C1-200889**.

**C1-200889 Reply LS on Non-UE N2 Message Services Operations**

*Type: LS out For: -  
 to SA2, cc CT4  
 Source: Ericsson / Mikael*

(Replaces C1-200721)

**Decision:** The document was **approved**.

**C1-200764 reply LS for concurrent broadcast for CMAS**

*Type: LS out For: Agreement  
 to RAN3  
 Source: Samsung /Grace*

**Discussion:**

Grace Suh Kyungjoo (Samsung)

I got the comments from CT1 chairman Peter from Nokia, Mikael from Ericsson, and Peter Sanders from one2many.

The outgoing LS C1-200764 is related to incoming LS C1-200226 from RAN3 R3-197749.

The incoming LS is related to release 15 and our CT1 #122 e-meeting focuses on release 16 related incoming LS.

Therefore, I will postpone this out LS until upcoming April meeting CT1 #123.

If you have any opinion, please share your view and discuss this issue and improve the LS out.

In advance, I appreciate for you comments.

**Decision:** The document was **postponed**.

**C1-200839 LS on service area restriction for CIoT 5GS optimization**

*Type: LS out For: (not specified)  
 to -  
 Source: BEIJING SAMSUNG TELECOM R&D*

**Discussion:**

Mahmoud Watfa (Samsung)

As per the discussion related to [16.2.8\_C1-200593] and discussion in today’s conference call, please find the link to the draft LS on service area restriction for CIoT.

https://www.3gpp.org/ftp/tsg\_ct/WG1\_mm-cc-sm\_ex-CN1/TSGC1\_122e/Inbox/Drafts/C1-200839-draft.docx

Amer Catovic (Qualcomm)

Thanks for the draft. I think we should ask SA2 to take another look at the service area restrictions as it applies to the UE using CIoT optimizations. So I propose to send a simpler but broader question in the attached revision.

**Decision:** The document was **approved**.

**C1-200967 LS on 5G-GUTI reallocation after paging of a UE in 5GMM-IDLE mode with suspend indicatio**

*Type: LS out For: Approval  
 to -  
 Source: BEIJING SAMSUNG TELECOM R&D*

**Decision:** The document was **approved**.

**C1-200994 LS on the applicability of LADN in an SNPN**

*Type: LS out For: Approval  
 to -  
 Source: LG Electronics*

**Decision:** The document was **approved**.

**C1-201002 LS on the use of service area restriction during NSSAA**

*Type: LS out For: Approval  
 to -  
 Source: BEIJING SAMSUNG TELECOM R&D*

**Decision:** The document was **approved**.

**C1-201024 Reply LS on Rel-16 NB-IoT enhancements**

*Type: LS out For: Approval  
 to -  
 Source: Ericsson*

**Decision:** The document was **approved**.

## 19 Late and misplaced documents

**C1-200321 void**

*Type: pCR For: (not specified)  
 24.587 v1.0.1  
 Source: void*

(Replaces C1-198404)

**Abstract:**

Withdrawn to avoid redundant work

**Decision:** The document was **withdrawn**.

## 20 AOB

## +21 Closing

Report prepared by: FF

## Annex A: List of contribution documents

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Document | Title | Source | Decision | Replaces | Replaced by |
| * C1-200200 | * 3GPP TSG CT1#122 – agenda for Tdoc allocation | * CT1 chairman | * revised | * - | * C1-200275 |
| * C1-200201 | * 3GPP TSG CT1#122 – agenda after Tdoc allocation deadline | * CT1 chairman | * noted | * - | * - |
| * C1-200202 | * 3GPP TSG CT1#122 – agenda with proposed LS-actions | * CT1 chairman | * noted | * - | * - |
| * C1-200203 | * 3GPP TSG CT1#122 – agenda at start of meeting | * CT1 chairman | * noted | * - | * - |
| * C1-200204 | * 3GPP TSG CT1#122 – agenda Thursday (27th Feb) evening | * CT1 chairman | * noted | * - | * - |
| * C1-200205 | * 3GPP TSG CT1#122 – agenda at end of meeting | * CT1 chairman | * noted | * - | * - |
| * C1-200206 | * LS on usage of IMSI during 3GPP based authentication (C4-195574) | * CT4 | * noted | * - | * - |
| * C1-200207 | * LS on user identity when 5G-AKA or EAP AKA’ is used for SNPN (C6-190468) | * CT6 | * replied to | * - | * - |
| * C1-200208 | * LS on Proposal to transfer the study on service-based support for SMS in 5GC to CT WGs (CP-193301) | * TSG CT | * postponed | * - | * - |
| * C1-200209 | * Reply LS to Transfer the study on service-based support for SMS in 5GC to CT WGs (SP-191362) | * TSG SA | * postponed | * - | * - |
| * C1-200210 | * Response to 3GPP S2-1910806 and S2-1912767 on Line ID (LIAISE-353) | * Broadband Forum | * noted | * - | * - |
| * C1-200211 | * General Status of Work (LIAISE-363) | * Broadband Forum | * replied to | * - | * - |
| * C1-200212 | * LS on Testing and Certification of 3GPP Mission Critical features A GCF-TCCA Joint Approach to Develop and Manage MC Certification ( | * TCCA | * noted | * - | * - |
| * C1-200213 | * Reply LS on QoE Measurement Collection (R2-1916328) | * RAN2 | * noted | * - | * - |
| * C1-200214 | * Reply LS on NID structure and length (R2-1916344) | * RAN2 | * noted | * - | * - |
| * C1-200215 | * CMAS/ETWS and emergency services for SNPNs (R2-1916345) | * RAN2 | * noted | * - | * - |
| * C1-200216 | * Reply LS on Sending CAG ID in NAS layer (R2-1916349) | * RAN2 | * noted | * - | * - |
| * C1-200217 | * Reply LS on Mobile-terminated Early Data Transmission (R2-1916368) | * RAN2 | * replied to | * - | * - |
| * C1-200218 | * Reply LS on assistance indication for WUS (R2-1916440) | * RAN2 | * noted | * - | * - |
| * C1-200219 | * Reply LS on PC5S and PC5 RRC unicast message protection (R2-1916461) | * RAN2 | * noted | * - | * - |
| * C1-200220 | * LS on dependencies on AS design for mobility management aspects of NTN in 5GS (R2-1916470) | * RAN2 | * noted | * - | * - |
| * C1-200221 | * LS on RRC establishment cause value in EPS voice fallback from NR to E-UTRAN (R2-1916530) | * RAN2 | * postponed | * - | * - |
| * C1-200222 | * LS on inter-RAT HO from SA to EN-DC (R2-1916600) | * RAN2 | * noted | * - | * - |
| * C1-200223 | * LS on LS on system level design assumptions for satellite in 5GS (R2-1916620) | * RAN2 | * noted | * - | * - |
| * C1-200224 | * Reply LS on extended NAS timers for CE in 5GS (R2-1916623) | * RAN2 | * replied to | * - | * - |
| * C1-200225 | * Reply LS on Sending CAG ID in NAS layer (R3-197591) | * RAN3 | * noted | * - | * - |
| * C1-200226 | * LS on Concurrent Broadcasting for CMAS (R3-197749) | * RAN3 | * postponed | * - | * - |
| * C1-200227 | * Reply LS on UAC for NB-IOT (S1-193592) | * SA1 | * noted | * - | * - |
| * C1-200228 | * Reply LS on enhanced access control for IMS signalling (S1-193595) | * SA1 | * noted | * - | * - |
| * C1-200229 | * Reply LS on NSI requirements (S1-193596) | * SA1 | * noted | * - | * - |
| * C1-200230 | * Reply LS on LS on PC5S and PC5 RRC unicast message protection (S2-1912002) | * SA2 | * noted | * - | * - |
| * C1-200231 | * Reply LS on Enquiries on eV2XARC (S2-1912018) | * SA2 | * noted | * - | * - |
| * C1-200232 | * Reply LS on SUCI computation from an NSI (S2-1912417) | * SA2 | * noted | * - | * - |
| * C1-200233 | * LS on PLMN selection solutions for satellite access (S2-1912551) | * SA2 | * postponed | * - | * - |
| * C1-200234 | * Reply LS on applicability of the notification procedure in SNPNs (S2-1912601) | * SA2 | * noted | * - | * - |
| * C1-200235 | * LS on support of Control Plane CIoT 5GS Optimisation (S2-1912609) | * SA2 | * noted | * - | * - |
| * C1-200236 | * Reply LS on sending CAG ID during resume procedure (S2-1912731) | * SA2 | * noted | * - | * - |
| * C1-200237 | * Reply LS on Rel-16 NB-IoT enhancements (S2-1912763) | * SA2 | * noted | * - | * - |
| * C1-200238 | * Reply LS on clarification on the requirement for steering of roaming (S2-1912764) | * SA2 | * postponed | * - | * - |
| * C1-200239 | * LS on the support for ECN in 5GS (S2-1912765) | * SA2 | * noted | * - | * - |
| * C1-200240 | * Reply LS on "set of configuration parameters" in the precedence of the V2X configuration parameters (S2-2000970) | * SA2 | * noted | * - | * - |
| * C1-200241 | * Reply LS on PC5 unicast and groupcast security protection (S2-2000971) | * SA2 | * noted | * - | * - |
| * C1-200242 | * Reply LS on Response LS on SL RLM/RLF (S2-2000973) | * SA2 | * noted | * - | * - |
| * C1-200243 | * Reply LS on configured NSSAI handling (S2-2001110) | * SA2 | * replied to | * - | * - |
| * C1-200244 | * Reply LS on Dual-registration requirements for EHPLMNs (S2-2001130) | * SA2 | * postponed | * - | * - |
| * C1-200245 | * LS on MA PDU establishment when the VPLMN does not support ATSSS (S2-2001148) | * SA2 | * noted | * - | * - |
| * C1-200246 | * Reply LS on gPTP message delivery to DS-TT (S2-2001150) | * SA2 | * noted | * - | * - |
| * C1-200247 | * Reply LS on 5G-S-TMSI Truncation Procedure (S2-2001248) | * SA2 | * noted | * - | * - |
| * C1-200248 | * Reply LS on congestion during RLOS access (S2-2001335) | * SA2 | * noted | * - | * - |
| * C1-200249 | * LS on Non-UE N2 Message Services Operations (S2-2001340) | * SA2 | * replied to | * - | * - |
| * C1-200250 | * Reply LS on CMAS/ETWS and emergency services for SNPNs (S2-2001400) | * SA2 | * noted | * - | * - |
| * C1-200251 | * Reply LS on assistance indication for WUS (S2-2001578) | * SA2 | * withdrawn | * - | * - |
| * C1-200252 | * LS on Sending CAG ID (S2-2001616) | * SA2 | * replied to | * - | * - |
| * C1-200253 | * LS on PC5S and PC5 RRC unicast message protection (S3-193802) | * SA3 | * noted | * - | * - |
| * C1-200254 | * Reply LS to LS on usage of IMSI during 3GPP based authentication (S3-194454) | * SA3 | * noted | * - | * - |
| * C1-200255 | * Reply LS on SUCI computation from an NSI (S3-194455) | * SA3 | * replied to | * - | * - |
| * C1-200256 | * Reply LS to SA2 on 5G-S-TMSI Truncation Procedure (S3-194482) | * SA3 | * noted | * - | * - |
| * C1-200257 | * Reply LS on SUCI computation from an NSI (S3-194548) | * SA3 | * noted | * - | * - |
| * C1-200258 | * Reply LS on Sending CAG ID in NAS layer (S3-194559) | * SA3 | * noted | * - | * - |
| * C1-200259 | * Reply LS on IANA assigned values for mission critical (S3-194603) | * SA3 | * postponed | * - | * - |
| * C1-200260 | * LS to CT1 on 3rd ETSI MCX Remote Plugtest (S3-194611) | * SA3 | * noted | * - | * - |
| * C1-200261 | * LS on Reply on QoE Measurement Collection (S5-197543) | * SA5 | * noted | * - | * - |
| * C1-200262 | * Reply LS on how the IWF obtains key material for interworking group and private communications (S6-192194) | * SA6 | * noted | * - | * - |
| * C1-200263 | * Reply LS (S6-192023) on clarifications regarding SEAL services (S6-192318) | * SA6 | * noted | * - | * - |
| * C1-200264 | * Reply LS on Unicast resource management with SIP core (S6-200163) | * SA6 | * noted | * - | * - |
| * C1-200265 | * LS on API additions to SEAL and V2XAPP (S6-200270) | * SA6 | * noted | * - | * - |
| * C1-200266 | * Reply LS on Enquiries for supporting vertical applications (S6-200337) | * SA6 | * noted | * - | * - |
| * C1-200267 | * Reply LS on clarifications regarding V2XAPP services (S6-192385) | * SA6 | * noted | * - | * - |
| * C1-200268 | * LS on missing cause code mapping (C3-195374) | * CT3 | * noted | * - | * - |
| * C1-200269 | * Reply LS on LS on dependencies on AS design for mobility management aspects of NTN in 5GS / LS on system level design assumptions for satellite in 5GS (R3-197699) | * RAN3 | * noted | * - | * - |
| * C1-200270 | * Reply on QoE Measurement Collection (S4-200241) | * SA4 | * postponed | * - | * - |
| * C1-200271 | * Reply LS on Support for ECN in 5GS (S4-200298) | * SA4 | * noted | * - | * - |
| * C1-200272 | * LS on GSMA NG.116 Attribute Area of service and impact on PLMN selection (S2-2001726) | * SA2 | * postponed | * - | * - |
| * C1-200273 | * Questions on onboarding requirements (S2-2001729) | * SA2 | * postponed | * - | * - |
| * C1-200274 | * Reply LS on assistance indication for WUS (S2-2001732) | * SA2 | * postponed | * - | * - |
| * C1-200275 | * 3GPP TSG CT1#122 – agenda for Tdoc allocation | * CT1 chairman | * noted | * C1-200200 | * - |
| * C1-200276 | * Secondary authentication and W-AGF acting on behalf of FN-RG | * Ericsson, Charter Communications, CableLabs / Ivo | * agreed | * C1-198161 | * - |
| * C1-200277 | * EAP-5G handling and transport of NAS messages for wireline access | * Ericsson, Charter Communications, CableLabs / Ivo | * agreed | * C1-198159 | * - |
| * C1-200278 | * SUCI used by W-AGF acting on behalf of FN-RG | * Ericsson, Charter Communications, CableLabs / Ivo | * agreed | * - | * - |
| * C1-200279 | * Resolving editor's note on W-AGF acting on behalf of FN-RG not using the "null integrity protection algorithm" 5G-IA0 | * Ericsson, Charter Communications, CableLabs / Ivo | * agreed | * - | * - |
| * C1-200280 | * Resolving editor's note on service area restrictions in case of FN-BRG | * Ericsson / Ivo | * agreed | * - | * - |
| * C1-200281 | * Resolving editor's note in forbidden wireline access area | * Ericsson, Charter Communications, CableLabs / Ivo | * agreed | * - | * - |
| * C1-200282 | * Wireline 5G access network and wireline 5G access clean up | * Ericsson, Charter Communications, CableLabs / Ivo | * agreed | * - | * - |
| * C1-200283 | * PEI clean up | * Ericsson, Charter Communications, CableLabs / Ivo | * revised | * - | * C1-200925 |
| * C1-200284 | * Alignment for stop of enforcement of mobility restrictions in 5G-RG and W-AGF acting on behalf of FN-CRG | * Ericsson, Charter Communications, CableLabs / Ivo | * agreed | * - | * - |
| * C1-200285 | * Introduction of GCI and GLI | * Ericsson, Nokia, Nokia Shanghai Bell / Ivo | * revised | * - | * C1-200926 |
| * C1-200286 | * ATSSS PCO parameters for 5G-RG | * Ericsson, Charter Communications, CableLabs / Ivo | * revised | * - | * C1-200927 |
| * C1-200287 | * Contents of ATSSS PCO parameters for 5G-RG | * Ericsson, Charter Communications, CableLabs / Ivo | * revised | * - | * C1-200928 |
| * C1-200288 | * Procedures for establishment of a PDN connection as a user-plane resource of a MA PDU session | * Ericsson, Charter Communications, CableLabs / Ivo | * revised | * - | * C1-200929 |
| * C1-200289 | * PDU session ID usage when the UE is a 5G-RG and requests establishment of a PDN connection as a user-plane resource of a MA PDU session | * Ericsson, Charter Communications, CableLabs / Ivo | * revised | * - | * C1-200930 |
| * C1-200290 | * Always-On PDU session and URLLC | * Ericsson / Ivo | * revised | * - | * C1-200931 |
| * C1-200291 | * CAG information list storage | * Ericsson, NTT Docomo, MediaTek, Nokia, Nokia Shanghai Bell / Ivo | * revised | * - | * C1-200932 |
| * C1-200292 | * UE policies for V2X communication over PC5 | * Ericsson, LG Electronics / Ivo | * revised | * - | * C1-200933 |
| * C1-200293 | * Updates of configuration parameters for V2X communication over Uu | * Ericsson / Ivo | * revised | * - | * C1-200934 |
| * C1-200294 | * V2X communication over Uu | * Ericsson / Ivo | * revised | * - | * C1-200935 |
| * C1-200295 | * UE policies for V2X communication over Uu | * Ericsson, LG Electronics / Ivo | * revised | * - | * C1-200936 |
| * C1-200296 | * Stage-3 5GS NAS protocol development | * Ericsson / Ivo | * agreed | * CP-183087 | * - |
| * C1-200297 | * Removal of editor notes | * BlackBery UK Ltd. Motorola Mobility, Lenovo | * revised | * C1-200114 | * C1-200781 |
| * C1-200298 | * Update of Reading coverage enhancement status +CRCES for Connection to 5G Core Network | * BlackBerry UK Limited | * agreed | * C1-200116 | * - |
| * C1-200299 | * 5GSM capabilities for MA PDU session | * Motorola Mobility, Lenovo | * revised | * C1-200001 | * C1-200989 |
| * C1-200300 | * Additional QoS Information in an untrusted non-3GPP network | * Motorola Mobility, Lenovo | * revised | * C1-200002 | * C1-200984 |
| * C1-200301 | * MA PDU session is not supported | * Motorola Mobility, Lenovo | * withdrawn | * C1-200004 | * - |
| * C1-200302 | * Removal of editor's notes for N5CW device | * Motorola Mobility, Lenovo | * postponed | * C1-200005 | * - |
| * C1-200303 | * MA PDU session is not supported | * Motorola Mobility, Lenovo | * revised | * C1-200004 | * C1-200990 |
| * C1-200304 | * Removal of an editor's note | * Motorola Mobility, Lenovo, BlackBerry UK Ltd. | * agreed | * C1-200006 | * - |
| * C1-200305 | * PDU session handling for N5CW device | * Motorola Mobility, Lenovo | * revised | * C1-200007 | * C1-200991 |
| * C1-200306 | * work plan | * MCC | * noted | * - | * - |
| * C1-200307 | * draft C1-121 meeting report | * MCC | * approved | * - | * - |
| * C1-200308 | * Removal of Duplicate Service Operation Details | * Cisco Systems Belgium | * postponed | * - | * - |
| * C1-200309 | * Reply LS on General Status of Work | * Ericsson / Ivo | * approved | * - | * - |
| * C1-200310 | * Reply LS on sending CAG ID | * Ericsson / Ivo | * revised | * - | * C1-201027 |
| * C1-200311 | * CAG-ID not provided to lower layers during NAS signalling connection establishment | * Ericsson / Ivo | * revised | * - | * C1-200937 |
| * C1-200312 | * CT1#122-e Electronic Meeting – Process and Scope | * CT1 chairman | * noted | * - | * - |
| * C1-200313 | * Comparison of solutions for performance measurement function (PMF) protocol | * Ericsson / Ivo | * noted | * - | * - |
| * C1-200314 | * Performance management function protocol | * Ericsson, InterDigital, Nokia, Nokia Shanghai Bell, Huawei, HiSilicon, ZTE, SHARP, NTT DOCOMO, China Mobile / Ivo | * postponed | * C1-200110 | * - |
| * C1-200315 | * Alignment of error codes with 3GPP TS 24.501 | * InterDigital / Atle | * revised | * C1-200018 | * C1-200320 |
| * C1-200316 | * CAG Information in Registration Reject | * InterDigital / Atle | * postponed | * C1-200111 | * - |
| * C1-200317 | * MA-PDU Session establishment or activation in non-allowed area | * InterDigital / Atle | * revised | * C1-200112 | * C1-200799 |
| * C1-200318 | * Cleanups on introduction of pending NSSAI | * InterDigital / Atle | * revised | * C1-200113 | * C1-200797 |
| * C1-200319 | * Specification of NAS COUNT for 5G (FSAG Doc 78\_002) | * GSMA FSAG | * postponed | * - | * - |
| * C1-200320 | * Alignment of error codes with 3GPP TS 24.501 | * InterDigital / Atle | * revised | * C1-200315 | * C1-200796 |
| * C1-200321 | * void | * void | * withdrawn | * C1-198404 | * - |
| * C1-200322 | * Factoring in T3346 during access to RLOS | * Samsung, Qualcomm Incorporated, Ericsson, Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200793 |
| * C1-200323 | * Response to LS on Non-UE N2 Message Services Operations | * Cisco Systems Belgium | * withdrawn | * - | * - |
| * C1-200324 | * Direct link establishment procedure update based on SA3 LS | * OPPO / Rae | * merged | * - | * - |
| * C1-200325 | * Remove the FFS on non-IP | * OPPO / Rae | * agreed | * - | * - |
| * C1-200326 | * Decoding on V2X service ID and application ID | * OPPO / Rae | * revised | * - | * C1-200820 |
| * C1-200327 | * Keep alive procedure | * OPPO / Rae | * merged | * - | * - |
| * C1-200328 | * Removal of EN and additional abnormal case for cause #31 | * Samsung/Anikethan | * revised | * - | * C1-200862 |
| * C1-200329 | * Support for per-stream filtering and policing | * Intel / Thomas | * revised | * - | * C1-200835 |
| * C1-200330 | * Support for traffic forwarding | * Intel, Nokia, Nokia Shanghai Bell | * agreed | * - | * - |
| * C1-200331 | * Additional LLDP parameters | * Intel / Thomas | * agreed | * - | * - |
| * C1-200332 | * Handling of unsupported SSC mode | * Qualcomm Incorporated / Lena | * agreed | * C1ah-200147 | * - |
| * C1-200333 | * Removal of Editor’s note on the use of the NOTIFICATION message in SNPNs | * Qualcomm Incorporated / Lena | * agreed | * - | * - |
| * C1-200334 | * Updating length of NID | * Qualcomm Incorporated, Ericsson, Nokia, Nokia Shanghai Bell / Lena | * agreed | * - | * - |
| * C1-200335 | * Signalling of CAG-ID | * Qualcomm Incorporated / Lena | * noted | * - | * - |
| * C1-200336 | * Clarification to manual CAG selection | * Qualcomm Incorporated / Lena | * agreed | * - | * - |
| * C1-200337 | * Removal of the requirement for NAS to pass the selected CAG-ID to the lower layers | * Qualcomm Incorporated / Lena | * merged | * - | * - |
| * C1-200338 | * Including CAG information list in REGISTRATION ACCEPT message | * Qualcomm Incorporated / Lena | * revised | * - | * C1-200840 |
| * C1-200339 | * Update of text on time synchronization | * Qualcomm Incorporated / Lena | * agreed | * - | * - |
| * C1-200340 | * RACS CT work plan | * Qualcomm Incorporated / Lena | * noted | * - | * - |
| * C1-200341 | * Proposed way forward on remaining CT1 items for RACS | * Qualcomm Incorporated / Lena | * noted | * - | * - |
| * C1-200342 | * UE radio capability ID assignment via GUTI reallocation procedure | * Qualcomm Incorporated / Lena | * revised | * - | * C1-200841 |
| * C1-200343 | * Finalizing provisioning of manufacturer-assigned UE radio capability IDs at the UE | * Qualcomm Incorporated / Lena | * agreed | * - | * - |
| * C1-200344 | * Removal of Editor’s note on applicability of RACS to SNPNs | * Qualcomm Incorporated / Lena | * agreed | * - | * - |
| * C1-200345 | * Finalizing the encoding of the UE radio capability ID | * Qualcomm Incorporated / Lena | * agreed | * - | * - |
| * C1-200346 | * UE radio capability ID deletion upon Version ID change | * Qualcomm Incorporated / Lena | * revised | * - | * C1-200842 |
| * C1-200347 | * UE radio capability ID deletion upon Version ID change | * Qualcomm Incorporated / Lena | * revised | * - | * C1-200843 |
| * C1-200348 | * Revised WID on CT aspects of optimisations on UE radio capability signalling | * Qualcomm Incorporated / Lena | * endorsed | * - | * - |
| * C1-200349 | * Security establishment for PC5 unicast link | * Qualcomm Incorporated / Lena | * revised | * - | * C1-200844 |
| * C1-200350 | * PC5 unicast link keep-alive procedure | * Qualcomm Incorporated / Lena | * revised | * - | * C1-200845 |
| * C1-200351 | * Removal of EN and additional abnormal case for cause #31 | * Samsung/Anikethan | * revised | * - | * C1-200861 |
| * C1-200352 | * Handling of S-NSSAIs in the pending NSSAI | * LG Electronics / Sunhee | * revised | * - | * C1-200813 |
| * C1-200353 | * No impact from SBA on main body | * Nokia, Nokia Shanghai Bell, Ericsson | * postponed | * - | * - |
| * C1-200354 | * Correcting condition for Network Slice-Specific Authentication and Authorization | * Samsung Electronics Polska / Ricky | * merged | * - | * - |
| * C1-200355 | * Applicability of UE specific DRX Parameter for NB-S1 mode Indicator | * Vodafone GmbH | * revised | * - | * C1-201007 |
| * C1-200356 | * General status of WWC work (LIAISE-376) | * Broadband Forum | * noted | * - | * - |
| * C1-200357 | * Correcting SIP related terminology | * Ericsson / Nevenka | * agreed | * - | * - |
| * C1-200358 | * Correcting SIP related terminology | * Ericsson / Nevenka | * agreed | * - | * - |
| * C1-200359 | * Correcting SIP related terminology | * Ericsson / Nevenka | * agreed | * - | * - |
| * C1-200360 | * Update of OMA references | * Ericsson / Nevenka | * agreed | * - | * - |
| * C1-200361 | * Adding interactions with "Multi-Device" and "Multi-Identity" services | * Ericsson / Nevenka | * agreed | * - | * - |
| * C1-200362 | * Adding interactions with "Multi-Device" and "Multi-Identity" services | * Ericsson / Nevenka | * agreed | * - | * - |
| * C1-200363 | * Adding interactions with "Multi-Device" and "Multi-Identity" services | * Ericsson / Nevenka | * revised | * - | * C1-200810 |
| * C1-200364 | * Adding interactions with "Multi-Device" and "Multi-Identity" services | * Ericsson / Nevenka | * agreed | * - | * - |
| * C1-200365 | * SDP profile update to support FLUS | * Ericsson / Nevenka | * agreed | * - | * - |
| * C1-200366 | * Non-3GPP Message for Data interworking | * Sepura, Hytera Communications Corp. | * revised | * - | * C1-200912 |
| * C1-200367 | * SDS media plane message handling by IWF | * Sepura, Hytera Communications Corp. | * revised | * - | * C1-200913 |
| * C1-200368 | * Addition of MT-EDT support indication | * Ericsson, Qualcomm Incorporated, OPPO / Mikael | * revised | * - | * C1-200892 |
| * C1-200369 | * Remove editor's note – clause 4.1 | * FirstNet / Mike | * agreed | * - | * - |
| * C1-200370 | * Remove editor's note – clause 4.2.2 | * FirstNet / Mike | * agreed | * - | * - |
| * C1-200371 | * Remove editor's note – clause 6.3.2.1 | * FirstNet / Mike | * agreed | * - | * - |
| * C1-200372 | * Remove editor's note – clause 6.6.2 | * FirstNet / Mike | * revised | * - | * C1-200946 |
| * C1-200373 | * Remove editor's note – clause 8.3.2.8 | * FirstNet / Mike | * revised | * - | * C1-200948 |
| * C1-200374 | * Affiliation in a regroup | * FirstNet / Mike | * revised | * - | * C1-200949 |
| * C1-200375 | * Ambiguity of location information in 6.3.2.1.4 | * FirstNet / Mike | * withdrawn | * - | * - |
| * C1-200376 | * Calling party location | * FirstNet / Mike | * withdrawn | * - | * - |
| * C1-200377 | * Check for controlling function identity in 10.1.1.3.1.1 | * FirstNet / Mike | * revised | * - | * C1-200952 |
| * C1-200378 | * Check for groups that are already regrouped | * FirstNet / Mike | * revised | * - | * C1-200956 |
| * C1-200379 | * Correct clause reference in 11.1.1.3.1.2 | * FirstNet / Mike | * revised | * - | * C1-200954 |
| * C1-200380 | * Missing client procedures for preconfigured regroup | * FirstNet / Mike | * revised | * - | * C1-200957 |
| * C1-200381 | * Correct reference in 8.3.2.6 | * FirstNet / Mike | * revised | * - | * C1-200955 |
| * C1-200382 | * Update on Plugtest Reported Issues | * FirstNet / Mike | * revised | * - | * C1-201006 |
| * C1-200383 | * Resolve Editor´s Notes on NB-N1 mode extended NAS timers for CE | * Ericsson / Mikael | * agreed | * - | * - |
| * C1-200384 | * Resolve Editor´s Notes on WB-N1 mode extended NAS timers for CE | * Ericsson / Mikael | * agreed | * - | * - |
| * C1-200385 | * Adding abnormal case on the network side | * Huawei, HiSilicon / Chen | * agreed | * - | * - |
| * C1-200386 | * Correction for the list of the V2X services authorized for PPPR over V2X PC5 in E-UTRA | * Huawei, HiSilicon / Chen | * revised | * - | * C1-200874 |
| * C1-200387 | * Correction for the list of V2X service identifier to PDU session parameters mapping rules over V2X Uu | * Huawei, HiSilicon / Chen | * agreed | * - | * - |
| * C1-200388 | * Correction for the list of V2X service identifier to Tx profiles mapping rules over V2X PC5 | * Huawei, HiSilicon / Chen | * revised | * - | * C1-200875 |
| * C1-200389 | * Correction for the list of V2X service identifier to V2X E-UTRA frequency mapping rules over V2X PC5 | * Huawei, HiSilicon / Chen | * agreed | * - | * - |
| * C1-200390 | * Resolution of the editor's note on details about PC5 unicast link establishment procedure not accepted by the target UE | * Huawei, HiSilicon / Chen | * revised | * - | * C1-200876 |
| * C1-200391 | * Resolution of the editor's note on validity timer | * Huawei, HiSilicon / Chen | * agreed | * - | * - |
| * C1-200392 | * Clarification on HPLMN S-NSSAI | * LG Electronics / Sunhee Kim | * revised | * - | * C1-200830 |
| * C1-200393 | * Adding NSSAA result indication into Network slicing indication IE of the CONFIGURATION UPDATE COMMAND message | * China Telecommunications | * postponed | * - | * - |
| * C1-200394 | * Adding NSSAA failed or revoked to 5GSM and 5GMM cause IE | * China Telecommunications | * postponed | * - | * - |
| * C1-200395 | * Reply LS on SUCI computation from an NSI | * Ericsson / Ivo | * revised | * - | * C1-200938 |
| * C1-200396 | * MA PDU session and one set of QoS parameters | * Ericsson / Ivo | * revised | * - | * C1-200939 |
| * C1-200397 | * "MO exception data" access category | * Ericsson / Ivo | * merged | * - | * - |
| * C1-200398 | * "CAG information list" preventing selection of any available and allowable PLMN | * Ericsson / Ivo | * agreed | * - | * - |
| * C1-200399 | * Update to registration procedure due to eNS | * vivo / Yanchao | * revised | * - | * C1-200868 |
| * C1-200400 | * Stop T3565 upon connection resumption | * vivo / Yanchao | * revised | * - | * C1-200831 |
| * C1-200401 | * Definition of Rejected NSSAI due to the failed and revorked NSSAA | * vivo / Yanchao | * merged | * - | * - |
| * C1-200402 | * RACS not apply for non-3GPP access | * vivo / Yanchao | * revised | * - | * C1-200829 |
| * C1-200403 | * Clarification on CAG selection | * Intel / Thomas | * merged | * - | * - |
| * C1-200404 | * Minor Correction to ATSSS container IE desciption | * China Mobile | * agreed | * - | * - |
| * C1-200405 | * Updating requirements and descriptions of NS for NSSAA | * China Mobile | * revised | * - | * C1-201059 |
| * C1-200406 | * Minor Correction to Traffic descriptor component type identifier of ATSSS rules | * China Mobile | * revised | * - | * C1-201000 |
| * C1-200407 | * Clarification of T35xx timer during Network slice-specific authentication and authorization procedure | * LG Electronics / Sunhee Kim | * merged | * - | * - |
| * C1-200408 | * Automatic group affiliation and deaffiliation based on location or functional alias | * Kontron Transportation, Nokia, Nokia Shanghai Bell | * revised | * C1-198846 | * C1-200886 |
| * C1-200409 | * Automatic group affiliation and deaffiliation based on location or functional alias | * Kontron Transportation, Nokia, Nokia Shanghai Bell | * agreed | * C1-198847 | * - |
| * C1-200410 | * Automatic group affiliation and deaffiliation based on location or functional alias | * Kontron TransportationS, Nokia, Nokia Shanghai Bell | * agreed | * C1-198803 | * - |
| * C1-200411 | * Port management corrections | * Intel / Thomas | * revised | * - | * C1-200832 |
| * C1-200412 | * IP Connectivity | * Kontron Transportation | * revised | * - | * C1-201022 |
| * C1-200413 | * Removing editor's note | * Motorola Mobility, Lenovo | * revised | * - | * C1-200988 |
| * C1-200414 | * MA PDU session is not supported | * Motorola Mobility France S.A.S | * revised | * - | * C1-200992 |
| * C1-200415 | * Network-requested PDU session release due no longer available S-NSSAI | * Motorola Mobility, Lenovo, China Mobile | * postponed | * - | * - |
| * C1-200416 | * LS on UE specific DRX for NB-S1 mode | * Qualcomm Incorporated / Amer | * revised | * - | * C1-200854 |
| * C1-200417 | * Support for UE specific DRX for NB-S1 mode | * Qualcomm Incorporated, Ericsson / Amer | * noted | * - | * - |
| * C1-200418 | * Support for the signalling of the capability for receiving WUS assistance information | * Qualcomm Incorporated / Amer | * revised | * - | * C1-200812 |
| * C1-200419 | * Handling of user-plane resources for NB-IoT UEs having at least two PDU sessions | * Qualcomm Incorporated, Ericsson / Amer | * revised | * C1-198585 | * C1-200853 |
| * C1-200420 | * 5GSM congestion timers apply to data transfer over control plane | * Qualcomm Incorporated / Amer | * postponed | * - | * - |
| * C1-200421 | * Definition of a new access category for MO exception data | * Qualcomm Incorporated / Amer | * merged | * - | * - |
| * C1-200422 | * 5G\_CIoT WI workplan | * Qualcomm Incorporated / Amer | * noted | * - | * - |
| * C1-200423 | * Revised WID on CT aspects of Cellular IoT support and evolution for the 5G System | * Qualcomm Incorporated / Amer | * agreed | * - | * - |
| * C1-200424 | * Update of +CNMPSD for NR | * BlackBerry UK Ltd. | * agreed | * - | * - |
| * C1-200425 | * Correct reference | * BlackBerry UK Ltd. | * revised | * - | * C1-200779 |
| * C1-200426 | * Enabling mobility with (emergency) sessions/connections between the (trusted) non-3GPP access network connected to the 5GCN and the E-UTRAN | * BlackBerry UK Ltd. | * revised | * - | * C1-200780 |
| * C1-200427 | * Use registration message to inform the network when the SRVCC information changes | * BlackBerry UK Ltd. | * revised | * - | * C1-200811 |
| * C1-200428 | * Work Plan for eNS in CT1 | * ZTE | * noted | * - | * - |
| * C1-200429 | * Deleting Editors note regarding indefinite wait at the UE for NSSAA completion | * ZTE | * revised | * - | * C1-200998 |
| * C1-200430 | * UE behaviour for other causes in the rejected NSSAI during deregistration procedure | * ZTE | * revised | * - | * C1-200794 |
| * C1-200431 | * Pending NSSAI update for the configured NSSAI in the CUC message | * ZTE | * revised | * - | * C1-200790 |
| * C1-200432 | * Cleanup for NSSAA message and coding | * ZTE | * revised | * - | * C1-200791 |
| * C1-200433 | * Rejected NSSAI during the initial registration procedure | * ZTE | * revised | * - | * C1-200795 |
| * C1-200434 | * LS on secure that a UE does not wait indefinitely for completion of NSSAA procedure | * ZTE | * postponed | * - | * - |
| * C1-200435 | * UE behaviour when T3447 running | * ZTE | * revised | * - | * C1-200792 |
| * C1-200436 | * PDU session release at the UE side | * ZTE, China Unicom, Ericsson | * revised | * - | * C1-200833 |
| * C1-200437 | * PC5 unicast link release procedure | * vivo | * revised | * - | * C1-200824 |
| * C1-200438 | * Encoding of direct link release messages and parameters | * vivo | * revised | * - | * C1-200825 |
| * C1-200439 | * PC5 unicast link identifier update procedure | * vivo | * revised | * - | * C1-200826 |
| * C1-200440 | * Updates to the link modification procedure | * vivo | * revised | * - | * C1-200827 |
| * C1-200441 | * Encoding of direct link modification messages and parameters | * vivo | * revised | * - | * C1-200828 |
| * C1-200442 | * CR 23.041#0208 Addition of message identifiers for UEs with no user interface | * SyncTechno Inc. | * revised | * - | * C1-200890 |
| * C1-200443 | * CR 23.041#0209 Support of a stored language-independent content referenced by a warning message | * SyncTechno Inc. | * revised | * - | * C1-200891 |
| * C1-200444 | * CR 23.041#0210 Example of Unicode based symbols as the language independent contents mapping to disasters in NOTE | * SyncTechno Inc. | * postponed | * - | * - |
| * C1-200445 | * [Draft] LS on Unicode symbol numbers representing disasters | * SyncTechno Inc. | * revised | * - | * C1-200920 |
| * C1-200446 | * Workplan for ePWS-CT aspects | * SyncTechno Inc. | * noted | * - | * - |
| * C1-200447 | * Key download procedrue for MCData | * Samsung / Sapan | * revised | * - | * C1-200798 |
| * C1-200448 | * Retrieval of stored object | * AT&T, Samsung | * revised | * - | * C1-200544 |
| * C1-200449 | * Obtain list of users based on location | * Samsung / Sapan | * revised | * - | * C1-200808 |
| * C1-200450 | * Annex to describes the functionality expected from the HTTP entities | * Samsung, Intel / Sapan | * agreed | * - | * - |
| * C1-200451 | * Discussion on limited service on CAG cell | * Huawei, HiSilicon/Vishnu | * noted | * - | * - |
| * C1-200452 | * Limited service state on CAG cell | * Huawei, HiSilicon / Vishnu | * revised | * - | * C1-201023 |
| * C1-200453 | * LS on limited service state for CAG cell | * Huawei, HiSilicon / Vishnu | * withdrawn | * - | * - |
| * C1-200454 | * ACS information via DHCP | * ZTE / Joy | * agreed | * - | * - |
| * C1-200455 | * LADN service does not apply for RG connected to 5GC via wireline access | * ZTE / Joy | * agreed | * - | * - |
| * C1-200456 | * Discussion on handling of clause 5.2 of TS 24.193 | * ZTE / Joy | * noted | * - | * - |
| * C1-200457 | * Move the content of clause 5.2 out of TS 24.193 | * ZTE / Joy | * postponed | * - | * - |
| * C1-200458 | * Introduction of multi-access PDU connectivity service | * ZTE / Joy | * postponed | * - | * - |
| * C1-200459 | * Remove editor's notes | * ZTE / Joy | * postponed | * - | * - |
| * C1-200460 | * Clarification on link-specific address/prefix | * ZTE / Joy | * revised | * - | * C1-200789 |
| * C1-200461 | * Clarification on multi-homing and UL-CL funtionalities in MA PDU Session | * ZTE / Joy | * agreed | * - | * - |
| * C1-200462 | * Name of the rejected NSSAI cause values | * vivo | * revised | * - | * C1-200922 |
| * C1-200463 | * Clarification of the cause of start of T3550 | * vivo | * agreed | * - | * - |
| * C1-200464 | * Clarification of forbidden TAI lists for SNPN | * vivo | * revised | * - | * C1-200834 |
| * C1-200465 | * Deletion of all CAG IDs of a CAG cell for 5GMM cause #76 | * Huawei, HiSilicon / Vishnu | * agreed | * - | * - |
| * C1-200466 | * Correction to Limited service state for SNPN | * Huawei, HiSilicon / Vishnu | * revised | * - | * C1-200943 |
| * C1-200467 | * Removal of the indication of CAG-ID for N1 NAS signalling connection | * Huawei, HiSilicon / Vishnu | * merged | * - | * - |
| * C1-200468 | * Presentation of PLMN with non-CAG cells for manual selection | * Huawei, HiSilicon / Vishnu | * revised | * - | * C1-200924 |
| * C1-200469 | * Clarify that access to RLOS is not supported in SNPN | * Huawei, HiSilicon / Vishnu | * revised | * - | * C1-200942 |
| * C1-200470 | * Clarification of the rejected NSSAI cause value | * vivo | * agreed | * - | * - |
| * C1-200471 | * Removal of term CAG access control | * Huawei, HiSilicon / Vishnu | * agreed | * - | * - |
| * C1-200472 | * Revised WID on Multi-device and multi-identity | * Ericsson /Jörgen | * agreed | * - | * - |
| * C1-200473 | * Search for Objects in MCData message store | * AT&T, Samsung | * revised | * - | * C1-200548 |
| * C1-200474 | * Update Object(s) in MCData message store | * AT&T, Samsung | * revised | * - | * C1-200550 |
| * C1-200475 | * Delete Stored Object(s) in MCData message store | * AT&T, Samsung | * revised | * - | * C1-200856 |
| * C1-200476 | * Support of restriction on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * revised | * - | * C1-200814 |
| * C1-200477 | * Support of restriction on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * revised | * - | * C1-200815 |
| * C1-200478 | * NAS configuration on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * revised | * - | * C1-200816 |
| * C1-200479 | * Authentication and security handling for RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * revised | * - | * C1-200817 |
| * C1-200480 | * Manual network selection procedure for access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * agreed | * - | * - |
| * C1-200481 | * Work plan for eIMSVideo | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * noted | * - | * - |
| * C1-200482 | * Use precondition only for CAT when network disables precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * revised | * - | * C1-200787 |
| * C1-200483 | * Use precondition for CAT when originating UE and network both support precondtion | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * revised | * - | * C1-200908 |
| * C1-200484 | * Use precondition for CRS when network disables precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * revised | * - | * C1-200788 |
| * C1-200485 | * Use precondition for CRS when terminating UE supports or requires precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * revised | * - | * C1-200911 |
| * C1-200486 | * Providing video announcement at the same time with audio conversation | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * revised | * - | * C1-200910 |
| * C1-200487 | * Work plan for eIMSVideo | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * withdrawn | * - | * - |
| * C1-200488 | * Use precondition only for CAT when network disables precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * withdrawn | * - | * - |
| * C1-200489 | * Use precondition for CAT when originating UE and network both support precondtion | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * withdrawn | * - | * - |
| * C1-200490 | * Use precondition for CRS when network disables precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * withdrawn | * - | * - |
| * C1-200491 | * Use precondition for CRS when terminating UE supports or requires precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * withdrawn | * - | * - |
| * C1-200492 | * Providing video announcement at the same time with audio conversation | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * withdrawn | * - | * - |
| * C1-200493 | * Definition alignment for UE-DS-TT residence time | * vivo | * agreed | * - | * - |
| * C1-200494 | * Prevention of indefinite wait for completion of the network slice-specific authentication and authorization procedure | * InterDigital / Atle | * withdrawn | * - | * - |
| * C1-200495 | * Enhancement on CPSR for CIoT CP data transport | * Huawei, HiSilicon, Vodafone, ZTE, China Mobile, China Telecom, CATT/Lin | * revised | * C1-198581 | * C1-200893 |
| * C1-200496 | * Ciphering and deciphering handling of CPSR message | * Huawei, HiSilicon/Lin | * agreed | * - | * - |
| * C1-200497 | * UE-requested user-plane resources release in NB-N1 mode | * Huawei, HiSilicon/Lin | * revised | * - | * C1-200996 |
| * C1-200498 | * NAS evaluation on options for UE specific DRX for NB-IoT | * Huawei, HiSilicon/Lin | * noted | * - | * - |
| * C1-200499 | * Reply LS on Rel-16 NB-IoT enhancements | * Huawei, HiSilicon/Lin | * revised | * - | * C1-200865 |
| * C1-200500 | * Discussion on truncated 5G-S-TMSI over NAS | * Huawei, HiSilicon/Lin | * noted | * - | * - |
| * C1-200501 | * Truncated 5G-S-TMSI over NAS | * Huawei, HiSilicon/Lin | * revised | * - | * C1-200895 |
| * C1-200502 | * AMF behavior on stop T3448 | * Huawei, HiSilicon/Lin | * agreed | * - | * - |
| * C1-200503 | * No SMS in payload container IE in CPSR message | * Huawei, HiSilicon/Lin | * revised | * - | * C1-200894 |
| * C1-200504 | * Correction on 5GMM cause #74/#75 for no touching non-3GPP access | * Huawei, HiSilicon/Lin | * revised | * - | * C1-200896 |
| * C1-200505 | * 5GMM cause #72 not used in SNPN | * Huawei, HiSilicon/Lin | * postponed | * - | * - |
| * C1-200506 | * Correction on term "non-3GPP access" used in SNPN | * Huawei, HiSilicon/Lin | * agreed | * - | * - |
| * C1-200507 | * Correction on term "shared network" definition for SNPN | * Huawei, HiSilicon/Lin | * revised | * - | * C1-200897 |
| * C1-200508 | * Reset the registration attempt counter for #76 in service reject | * Huawei, HiSilicon/Lin | * agreed | * - | * - |
| * C1-200509 | * Requested NSSAI creation from configured NSSAI excluding pending NSSA | * Huawei, HiSilicon/Lin | * not pursued | * - | * - |
| * C1-200510 | * Remove mobility restriction after NSSAA | * Huawei, HiSilicon/Lin | * merged | * - | * - |
| * C1-200511 | * ENs resolution for revoked or failed NSSAA | * Huawei, HiSilicon/Lin | * revised | * - | * C1-200898 |
| * C1-200512 | * Consistent name for NSSAA | * Huawei, HiSilicon/Lin | * agreed | * - | * - |
| * C1-200513 | * Work plan for SINE\_5G | * Huawei, HiSilicon/Lin | * noted | * C1-198222 | * - |
| * C1-200514 | * No retry in 4G for PDU session type related 5GSM causes | * Huawei, HiSilicon/Lin | * agreed | * - | * - |
| * C1-200515 | * Deletion of the rejected NSSAI for the current registration area | * Huawei, HiSilicon/Lin | * agreed | * C1ah-200157 | * - |
| * C1-200516 | * Updates for Manual CAG selection | * Huawei, HiSilicon / Vishnu | * merged | * C1-198992 | * - |
| * C1-200517 | * Configuration for the presentation of CAG cells for manual CAG selection | * Huawei, HiSilicon / Vishnu | * merged | * C1-199010 | * - |
| * C1-200518 | * Work plan for the CT1 part of 5WWC | * Huawei, HiSilicon /Christian | * noted | * - | * - |
| * C1-200519 | * Work plan for the CT1 part of V2XAPP | * Huawei, HiSilicon /Christian | * noted | * - | * - |
| * C1-200520 | * Work plan for the CT1 part of eV2XARC | * Huawei, HiSilicon /Christian | * noted | * - | * - |
| * C1-200521 | * Latest reference version of draft TS 24.587 | * Huawei, HiSilicon /Christian | * noted | * - | * - |
| * C1-200522 | * Latest reference version of draft TS 24.486 | * Huawei, HiSilicon /Christian | * noted | * - | * - |
| * C1-200523 | * Latest reference version of draft TS 24.545 | * Huawei, HiSilicon /Christian | * noted | * - | * - |
| * C1-200524 | * Latest reference version of draft TS 24.548 | * Huawei, HiSilicon /Christian | * noted | * - | * - |
| * C1-200525 | * Resolution of the editor's notes on precedence of V2X configuration parameters | * Huawei, HiSilicon /Christian | * revised | * - | * C1-201028 |
| * C1-200526 | * Off-network procedures for SEAL location management | * Huawei, HiSilicon /Christian | * agreed | * - | * - |
| * C1-200527 | * Off-network procedures for SEAL network resource management | * Huawei, HiSilicon /Christian | * agreed | * - | * - |
| * C1-200528 | * Application level location tracking procedure | * Huawei, HiSilicon /Christian | * revised | * - | * C1-200944 |
| * C1-200529 | * V2X message delivery procedure | * Huawei, HiSilicon /Christian | * revised | * - | * C1-200903 |
| * C1-200530 | * V2X service discovery procedure | * Huawei, HiSilicon /Christian | * agreed | * - | * - |
| * C1-200531 | * Add Message Store Client subclause | * AT&T, Samsung | * revised | * - | * C1-200848 |
| * C1-200532 | * V2X sevice continuity procedure | * Huawei, HiSilicon /Christian | * agreed | * - | * - |
| * C1-200533 | * General on provisioning of parameters | * Huawei, HiSilicon /Christian | * agreed | * - | * - |
| * C1-200534 | * void | * void | * withdrawn | * - | * - |
| * C1-200535 | * void | * void | * withdrawn | * - | * - |
| * C1-200536 | * Operations for broadcast mode and groupcast mode communication over PC5 | * Huawei, HiSilicon /Christian | * revised | * - | * C1-200900 |
| * C1-200537 | * Data transmission over PC5 unicast link | * Huawei, HiSilicon /Christian | * revised | * - | * C1-200899 |
| * C1-200538 | * Introduction of “PC5 Unicast Link Identifier Update Procedure” | * InterDigital Communications | * merged | * - | * - |
| * C1-200539 | * Copy stored object(s) and-or folder(s) | * AT&T, Samsung | * revised | * - | * C1-200863 |
| * C1-200540 | * Creating new folder | * AT&T, Samsung | * revised | * - | * C1-200864 |
| * C1-200541 | * Delete folder | * AT&T, Samsung | * revised | * - | * C1-200866 |
| * C1-200542 | * Move object(s) and folder(s) | * AT&T, Samsung | * revised | * - | * C1-200867 |
| * C1-200543 | * Search for Folders in MCData message store | * AT&T, Samsung | * revised | * - | * C1-200869 |
| * C1-200544 | * Retrieval of stored object | * AT&T, Samsung | * revised | * C1-200448 | * C1-200846 |
| * C1-200545 | * Reply LS on PC5S and PC5 RRC unicast message protection | * OPPO / Rae | * postponed | * - | * - |
| * C1-200546 | * Condition of providing video announcement | * China Telecom,Huawei, China Unicom, HiSilicon | * revised | * - | * C1-200995 |
| * C1-200547 | * Correction on UE retry restriction on EPLMN | * China Telecom, Huawei, HiSilicon | * agreed | * - | * - |
| * C1-200548 | * Search for Objects in MCData message store | * AT&T, Samsung | * revised | * C1-200473 | * C1-200860 |
| * C1-200549 | * Clarification on Public Network Integrated NPN in TS 24.501 | * China Telecom | * revised | * - | * C1-201001 |
| * C1-200550 | * Update Object(s) in MCData message store | * AT&T, Samsung | * revised | * C1-200474 | * C1-200857 |
| * C1-200551 | * UE receives CAG information in SNPN access mode | * Huawei, HiSilicon/Cristina | * revised | * - | * C1-200999 |
| * C1-200552 | * Fetching location reporting configuration | * Huawei, HiSilicon / Chen | * merged | * - | * - |
| * C1-200553 | * Structure and data semantics for fetching location reporting configuration | * Huawei, HiSilicon / Chen | * merged | * - | * - |
| * C1-200554 | * On-demand location reporting procedure | * Huawei, HiSilicon / Chen | * revised | * - | * C1-200877 |
| * C1-200555 | * Structure and data semantics for on-demand location reporting procedure | * Huawei, HiSilicon / Chen | * agreed | * - | * - |
| * C1-200556 | * Location reporting event-triggered configuration cancel procedure | * Huawei, HiSilicon / Chen | * agreed | * - | * - |
| * C1-200557 | * Location information subscription procedure | * Huawei, HiSilicon / Chen | * revised | * - | * C1-200878 |
| * C1-200558 | * Structure and data semantics for location information subscription procedure | * Huawei, HiSilicon / Chen | * agreed | * - | * - |
| * C1-200559 | * Event-triggered location information notification procedure | * Huawei, HiSilicon / Chen | * revised | * - | * C1-200879 |
| * C1-200560 | * Structure and data semantics for Event-triggered location information notification procedure | * Huawei, HiSilicon / Chen | * agreed | * - | * - |
| * C1-200561 | * On-demand usage of location information procedure | * Huawei, HiSilicon / Chen | * revised | * - | * C1-200880 |
| * C1-200562 | * MBMS bearer announcement over MBMS bearer procedure | * Huawei, HiSilicon / Chen | * revised | * - | * C1-200881 |
| * C1-200563 | * MBMS bearer quality detection procedure | * Huawei, HiSilicon / Chen | * revised | * - | * C1-200882 |
| * C1-200564 | * Establish PDU session to transfer port management information containers | * Huawei, HiSilicon/Cristina | * revised | * - | * C1-200855 |
| * C1-200565 | * ATSSS Non-MPTCP traffic support | * Apple | * revised | * - | * C1-200870 |
| * C1-200566 | * Correction on port management message direction | * Huawei, HiSilicon/Cristina | * merged | * - | * - |
| * C1-200567 | * ATSSS Non-MPTCP traffic support | * Apple | * revised | * - | * C1-200871 |
| * C1-200568 | * Adding UE initiated LCS service operations | * CATT/Scott | * revised | * - | * C1-201060 |
| * C1-200569 | * LCS messages and coding | * CATT/Scott | * revised | * - | * C1-201061 |
| * C1-200570 | * Add PSFP parameters | * Huawei, HiSilicon/Cristina | * merged | * - | * - |
| * C1-200571 | * Correction for the wrongly implemented CR1963r1 | * Huawei, HiSilicon/Cristina | * revised | * - | * C1-200997 |
| * C1-200572 | * EPS selection when the UE is deregistered due to NSSAA failure | * Samsung/Kundan | * postponed | * - | * - |
| * C1-200573 | * Exchange port management information container through N4 Session Level Reporting procedure | * Huawei, HiSilicon/Cristina | * agreed | * - | * - |
| * C1-200574 | * Handling of NSSAA at non suppoting AMF | * Samsung/Kundan | * postponed | * - | * - |
| * C1-200575 | * PDN connection establishment and NSSAA | * Samsung/Kundan | * postponed | * - | * - |
| * C1-200576 | * NSSAA revocation function | * Samsung/Kundan | * agreed | * - | * - |
| * C1-200577 | * Intersystem selection procedure when all allowed S-NSSAI are subject to NSSAA | * Samsung/Kundan | * postponed | * - | * - |
| * C1-200578 | * Discussion on requirement of sending CAG ID by UE | * Samsung/Kundan | * noted | * - | * - |
| * C1-200579 | * Correction related the rejected NSSAI due to the failed or revoked NSSAA | * SHARP | * revised | * - | * C1-200883 |
| * C1-200580 | * Stopping of T3513 after connection resume for user plane CIoT 5GS optimization | * Samsung/Mahmoud | * revised | * - | * C1-200852 |
| * C1-200581 | * Handling of manual CAG selection procedure | * Samsung/Kundan | * postponed | * - | * - |
| * C1-200582 | * Correction UE behaviour when the UE recives the pending NSSAI | * SHARP | * agreed | * - | * - |
| * C1-200583 | * 5G-GUTI reallocation after resume from 5GMM-IDLE mode with suspend indication due to paging | * Samsung/Mahmoud | * revised | * - | * C1-200782 |
| * C1-200584 | * Correction related the rejected NSSAI | * SHARP | * merged | * - | * - |
| * C1-200585 | * Adding an editor’s note for suspend indication due to user plane CIoT 5GS optimization | * Samsung/Mahmoud | * revised | * - | * C1-200783 |
| * C1-200586 | * CAG only UE and Manual PLMN selection | * Samsung/Kundan | * merged | * - | * - |
| * C1-200587 | * Correlation of SNPN entry stored in ME and USIM | * Samsung/Kundan | * postponed | * - | * - |
| * C1-200588 | * Ambiguity in the suspend indication from lower layers to the NAS | * Samsung/Mahmoud | * noted | * - | * - |
| * C1-200589 | * Handling of a CAG UE at non supporting AMF | * Samsung/Kundan | * postponed | * - | * - |
| * C1-200590 | * LS on suspend indication to the NAS | * Samsung/Mahmoud | * revised | * - | * C1-200785 |
| * C1-200591 | * Modification of the allowed CAG list | * Samsung/Kundan | * postponed | * - | * - |
| * C1-200592 | * Recovery from fallback for UEs using CP CIoT optimization | * Samsung/Mahmoud | * revised | * - | * C1-200859 |
| * C1-200593 | * Service area restrictions for UEs using CIoT 5GS optimization | * Samsung/Mahmoud | * postponed | * - | * - |
| * C1-200594 | * Adding reference to TS 24.501 for exception data reporting | * Samsung/Mahmoud | * merged | * - | * - |
| * C1-200595 | * Triggering service request procedure for V2X communication over PC5 interface | * LG Electronics / SangMin | * agreed | * - | * - |
| * C1-200596 | * Discussion on multiple V2X services during the direct link establishment procedure | * LG Electronics / SangMin | * noted | * - | * - |
| * C1-200597 | * Multiple V2X service identifiers in DIRECT LINK ESTABLISHMENT REQUEST message | * LG Electronics / SangMin | * postponed | * - | * - |
| * C1-200598 | * Association between V2X service id and PC5 QoS flow description | * LG Electronics / SangMin | * postponed | * - | * - |
| * C1-200599 | * Handlig of PLMN specific NID | * Samsung/Kundan | * postponed | * - | * - |
| * C1-200600 | * Handling of LADN infotmation when the UE operating in SNPN access mode | * SHARP | * postponed | * - | * - |
| * C1-200601 | * Discussion on eNS | * Samsung R&D Institute UK | * noted | * - | * - |
| * C1-200602 | * Removal of the use of Service area list IE during NSSAA | * BEIJING SAMSUNG TELECOM R&D | * revised | * - | * C1-200778 |
| * C1-200603 | * Latest reference version of draft TS 24.588 | * LG Electronics / SangMin | * noted | * - | * - |
| * C1-200604 | * Re-initiation of NSSAA for a registered UE | * BEIJING SAMSUNG TELECOM R&D | * postponed | * - | * - |
| * C1-200605 | * Additional triggers for deletion of pending S-NSSAI | * Samsung/Anikethan | * agreed | * - | * - |
| * C1-200606 | * Considerations for AML over SMS in roaming scenarios | * Apple | * postponed | * - | * - |
| * C1-200607 | * Latest draft version of TS 24.547 ver 1.0.0 | * Intel / Vivek | * agreed | * - | * - |
| * C1-200608 | * Update to Event-triggered location reporting procedure | * Huawei, HiSilicon /Christian | * revised | * - | * C1-200774 |
| * C1-200609 | * Updates to Client User Authentication Procedure | * Intel / Vivek | * agreed | * - | * - |
| * C1-200610 | * Update to structure and data semantics for event-triggered location reporting procedure | * Huawei, HiSilicon /Christian | * revised | * - | * C1-200775 |
| * C1-200611 | * Updates to Server User Authentication Procedure | * Intel / Vivek | * agreed | * - | * - |
| * C1-200612 | * Updates to Client Token Exchange Procedure | * Intel / Vivek | * agreed | * - | * - |
| * C1-200613 | * Updates to Server Token Exchange Procedure | * Intel / Vivek | * revised | * - | * C1-200819 |
| * C1-200614 | * Off Network Procedures for Identity Management | * Intel / Vivek | * revised | * - | * C1-200818 |
| * C1-200615 | * Resolution of editor's note under clause 6.2.2.2.1 | * Huawei, HiSilicon /Christian | * agreed | * - | * - |
| * C1-200616 | * Resolution of editor's note under 6.2.2.2.3 | * Huawei, HiSilicon /Christian | * agreed | * - | * - |
| * C1-200617 | * General on unicast resource management | * Huawei, HiSilicon /Christian | * revised | * - | * C1-200904 |
| * C1-200618 | * Value range of UE specific DRX in NB-S1 mode | * Vodafone GmbH | * postponed | * - | * - |
| * C1-200619 | * Structure and data semantics for application level location tracking procedure | * Huawei, HiSilicon /Christian | * revised | * - | * C1-200905 |
| * C1-200620 | * Dual-registration requirements for EHPLMNs | * Intel, Qualcomm Incorporated / Vivek | * postponed | * - | * - |
| * C1-200621 | * Structure and data semantics for V2X message delivery procedure | * Huawei, HiSilicon /Christian | * revised | * - | * C1-200906 |
| * C1-200622 | * Structure and data semantics for V2X service discovery procedure | * Huawei, HiSilicon /Christian | * agreed | * - | * - |
| * C1-200623 | * Structure and data semantics for V2X UE registration procedure | * Huawei, HiSilicon /Christian | * agreed | * - | * - |
| * C1-200624 | * Structure and data semantics for V2X UE de-registration procedure | * Huawei, HiSilicon /Christian | * agreed | * - | * - |
| * C1-200625 | * Location information; mid-call access change | * Ericsson, Deutsche Telekom /Jörgen | * revised | * - | * C1-200963 |
| * C1-200626 | * Indication of change in the use of enhanced coverage | * BEIJING SAMSUNG TELECOM R&D | * revised | * - | * C1-200786 |
| * C1-200627 | * Considering allowed NSSAI when establishing MA PDU session | * MediaTek Inc., ZTE / JJ | * revised | * - | * C1-201012 |
| * C1-200628 | * UE Handling upon receipt of PDU session release command | * MediaTek Inc. / JJ | * revised | * - | * C1-201013 |
| * C1-200629 | * Correction of release of user-plane resources | * MediaTek Inc. / JJ | * revised | * - | * C1-201014 |
| * C1-200630 | * Correction of "a different PLMN" | * MediaTek Inc. / JJ | * agreed | * - | * - |
| * C1-200631 | * S-NSSAI as a mandatory parameter to support interworking with 5GS | * MediaTek Inc., Ericsson / JJ | * agreed | * C1ah-200131 | * - |
| * C1-200632 | * PC5 unicast link keep-alive procedure – additions to C1-200350 | * Apple | * merged | * - | * - |
| * C1-200633 | * Adding access token in proper header of HTTP request from client | * Samsung / Sapan | * revised | * - | * C1-201004 |
| * C1-200634 | * XML schema for SEAL group document and update coding | * Samsung / Sapan | * agreed | * - | * - |
| * C1-200635 | * Updating client side procedures based on XML schema | * Samsung / Sapan | * agreed | * - | * - |
| * C1-200636 | * Location based group creation procedure | * Samsung / Sapan | * agreed | * - | * - |
| * C1-200637 | * Parameters for group event subscription and notification | * Samsung / Sapan | * agreed | * - | * - |
| * C1-200638 | * Procedures for management of group events subscription | * Samsung / Sapan | * revised | * - | * C1-200887 |
| * C1-200639 | * Procedures to notify group events | * Samsung / Sapan | * revised | * - | * C1-200888 |
| * C1-200640 | * Removal of clause for security parameter | * Samsung / Sapan | * agreed | * - | * - |
| * C1-200641 | * Group announcement and join procedure | * Samsung / Sapan | * revised | * - | * C1-200885 |
| * C1-200642 | * Group member leave procedure | * Samsung / Sapan | * revised | * - | * C1-200884 |
| * C1-200643 | * Removal of editor’s note for off-network | * Samsung / Sapan | * revised | * - | * C1-200822 |
| * C1-200644 | * Update references | * Samsung / Sapan | * agreed | * - | * - |
| * C1-200645 | * XML schema for VAL user profile document and update of coding | * Samsung / Sapan | * agreed | * - | * - |
| * C1-200646 | * XML schema and coding for VAL UE configuration document | * Samsung / Sapan | * agreed | * - | * - |
| * C1-200647 | * Management of configuration event subscription | * Samsung / Sapan | * revised | * - | * C1-200873 |
| * C1-200648 | * Procedure to notify configuration management event | * Samsung / Sapan | * revised | * - | * C1-200872 |
| * C1-200649 | * Parameters for configuration event subscription and notification | * Samsung / Sapan | * agreed | * - | * - |
| * C1-200650 | * Corrections in procedures | * Samsung / Sapan | * revised | * - | * C1-201005 |
| * C1-200651 | * Removal of editor’s note for off-network | * Samsung / Sapan | * revised | * - | * C1-200823 |
| * C1-200652 | * Clean-up for TS 24.588 | * LG Electronics / SangMin | * agreed | * - | * - |
| * C1-200653 | * Clarifications of identity definitions and activation procedures | * Ericsson /Jörgen | * revised | * - | * C1-200959 |
| * C1-200654 | * Call log handling, Additional-Identity | * Ericsson /Jörgen | * agreed | * - | * - |
| * C1-200655 | * ATSSS Performance Measurement Function Protocols and Procedures | * Apple, Deutsche Telekom, Charter Communications | * postponed | * C1-199051 | * - |
| * C1-200656 | * Conf indication completion | * Ericsson /Jörgen | * agreed | * - | * - |
| * C1-200657 | * Management object correction, MuD | * Ericsson /Jörgen | * revised | * - | * C1-200961 |
| * C1-200658 | * Correction to UL CIoT user data container not routable or not allowed to be routed | * Ericsson /kaj | * revised | * - | * C1-200915 |
| * C1-200659 | * Correction of P-Associated-URI handling | * Ericsson /Jörgen | * agreed | * - | * - |
| * C1-200660 | * Latest draft version of TS 24.544 ver 1.0.0 | * Samsung / Sapan | * noted | * - | * - |
| * C1-200661 | * Single downlink data only indication and release of NAS signalling connection | * Ericsson /kaj | * revised | * - | * C1-201034 |
| * C1-200662 | * Latest draft version of TS 24.546 ver 1.0.0 | * Samsung / Sapan | * noted | * - | * - |
| * C1-200663 | * PDU session status with control plane service request message | * Ericsson /KAJ | * revised | * - | * C1-200914 |
| * C1-200664 | * MO for MuD and MiD correction | * Orange / Mariusz | * revised | * - | * C1-201011 |
| * C1-200665 | * MuD MiD and CAT interactions | * Orange / Mariusz | * revised | * - | * C1-200947 |
| * C1-200666 | * Service gap control timer corrections | * Ericsson /kaj | * agreed | * - | * - |
| * C1-200667 | * MuD MiD and CRS interactions | * Orange / Mariusz | * revised | * - | * C1-200950 |
| * C1-200668 | * CAT interactsions with MuD and MiD | * Orange / Mariusz | * revised | * - | * C1-200951 |
| * C1-200669 | * Service gap control, correction when to start service gap control timer in UE and NW | * Ericsson /kaj | * revised | * - | * C1-200919 |
| * C1-200670 | * CRS interactsions with MuD and MiD | * Orange / Mariusz | * revised | * - | * C1-200953 |
| * C1-200671 | * Response to LS on Sending CAG ID | * Samsung/Kundan | * merged | * - | * - |
| * C1-200672 | * Clarification of control plane service request message options | * Ericsson /kaj | * revised | * - | * C1-200918 |
| * C1-200673 | * Discussion on SRVCC from E-UTRAN to GERAN/UTRAN when IMS voice call is initiated in 5GS | * Ericsson / Ivo | * revised | * - | * C1-200940 |
| * C1-200674 | * SRVCC from E-UTRAN to GERAN/UTRAN when IMS voice call is initiated in 5GS | * Ericsson / Ivo | * revised | * - | * C1-200941 |
| * C1-200675 | * CIoT user data container in CPSR message not forwarded | * Ericsson /kaj | * postponed | * C1-198950 | * - |
| * C1-200676 | * Workplan for SEAL | * Samsung / Sapan | * noted | * - | * - |
| * C1-200677 | * UAC updates for NB-IoT to include "MO exception data" | * DOCOMO Communications Lab. | * revised | * - | * C1-200821 |
| * C1-200678 | * Service area restrictions, case missing for when UE is out of allowed tracking area list and RA | * Ericsson /kaj | * agreed | * C1ah-200203 | * - |
| * C1-200679 | * Clarification on the use of exception data reporting | * DOCOMO Communications Lab. | * revised | * - | * C1-200916 |
| * C1-200680 | * Reject non-emergency PDU session request attempt while registered for emergency services | * Ericsson /kaj | * agreed | * C1ah-200205 | * - |
| * C1-200681 | * Update SNPN key differences | * Intel / Thomas | * revised | * - | * C1-200836 |
| * C1-200682 | * MO exception data for NB-IoT in 5G | * DOCOMO Communications Lab., Ericsson | * withdrawn | * - | * - |
| * C1-200683 | * NW slice authentication and authorization failure and revocation | * Ericsson /kaj | * revised | * C1-198772 | * C1-201055 |
| * C1-200684 | * UAC for MO-IMS registration related signalling EN resolution | * NTT DOCOMO INC. | * postponed | * - | * - |
| * C1-200685 | * Setting the Always-on PDU session indication IE in the PDU SESSION ESTABLISHMENT ACCEPT message | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200962 |
| * C1-200686 | * UE identifier for SNPN | * Nokia, Nokia Shanghai Bell, Qualcomm Incorporated, Vodafone, Charter Communications, NTT DOCOMO, Ericsson | * agreed | * - | * - |
| * C1-200687 | * Port management IE format and length updates | * Intel / Thomas | * agreed | * - | * - |
| * C1-200688 | * CAG information towards the lower layers for paging | * Nokia, Nokia Shanghai Bell | * agreed | * C1-196737 | * - |
| * C1-200689 | * No default S-NSSAI | * Nokia, Nokia Shanghai Bell | * postponed | * - | * - |
| * C1-200690 | * Missing NSSAI storage for rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization | * NEC | * merged | * - | * - |
| * C1-200691 | * Updating NSSAI status in AMF | * NEC | * postponed | * - | * - |
| * C1-200692 | * AMF updates the UE NSSAI storage after network slice-specific authentication and authorization is completed | * NEC | * agreed | * - | * - |
| * C1-200693 | * NSSAI status in AMF | * NEC | * postponed | * - | * - |
| * C1-200694 | * NSSAI storage at UE – pending NSSAI | * NEC | * postponed | * - | * - |
| * C1-200695 | * Release of PDU sessions due to revocation from AAA server or re-auth failure | * NEC | * not pursued | * - | * - |
| * C1-200696 | * Clarification on the S-NSSAI not subject to NSSAA included in allowed NSSAI | * Nokia, Nokia Shanghai Bell | * agreed | * - | * - |
| * C1-200697 | * Subscribed S-NSSAI marked as default and NSSAA | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200958 |
| * C1-200698 | * Additional conditions to the presence in the subscribed S-NSSAIs | * Nokia, Nokia Shanghai Bell | * agreed | * - | * - |
| * C1-200699 | * LS on manual CAG selection | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200974 |
| * C1-200700 | * Manual CAG selection | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200972 |
| * C1-200701 | * Triggering mobility registration update due to manual CAG selection | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200973 |
| * C1-200702 | * Definition of pending NSSAI | * Nokia, Nokia Shanghai Bell | * merged | * - | * - |
| * C1-200703 | * Emergency PDU session handling after NSSAA failure | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200960 |
| * C1-200704 | * Release of a PDU session due to failure/revocation in NSSAA | * Nokia, Nokia Shanghai Bell | * postponed | * - | * - |
| * C1-200705 | * Move the stored object to destination folder | * Samsung Electronics Co., Ltd | * revised | * - | * C1-200800 |
| * C1-200706 | * Resolving editor’s notes on reliable transmission | * Nokia, Nokia Shanghai Bell | * agreed | * - | * - |
| * C1-200707 | * Reply LS on Mobile-terminated Early Data Transmission | * Ericsson / Mikael | * revised | * - | * C1-201062 |
| * C1-200708 | * Duplicated Ethernet port parameters in case of validation and generation of LLDP frames processed centrally at NW-TT | * Nokia, Nokia Shanghai Bell | * agreed | * - | * - |
| * C1-200709 | * FEC encoding by the BM-SC | * ENENSYS | * revised | * - | * C1-200838 |
| * C1-200710 | * Reply LS on RRC establishment cause value in EPS voice fallback from NR to E-UTRAN | * Nokia, Nokia Shanghai Bell | * postponed | * - | * - |
| * C1-200711 | * Upload the objects to the MCData message store | * Samsung, AT&T | * revised | * - | * C1-200804 |
| * C1-200712 | * Included absolute URI associated with the media storage function of MCData content server | * Samsung | * revised | * - | * C1-200801 |
| * C1-200713 | * Included absolute URI associated with the media storage function of MCData content server | * Samsung | * revised | * - | * C1-200802 |
| * C1-200714 | * Accessing the absolute URI associated with the media storage function | * Samsung | * revised | * - | * C1-200803 |
| * C1-200715 | * Corrections to TDC2 and TDC3 timer handling | * Samsung | * revised | * - | * C1-200805 |
| * C1-200716 | * The pre-establshed session modification for MCData | * Samsung | * revised | * - | * C1-200806 |
| * C1-200717 | * Reply LS on extended NAS timers for CE in 5GS | * Ericsson / Mikael | * approved | * - | * - |
| * C1-200718 | * Reply LS on configured NSSAI handling | * Nokia, Nokia Shanghai Bell | * approved | * - | * - |
| * C1-200719 | * Corrections in specifying reasons for errors | * Nokia, Nokia Shanghai Bell | * agreed | * C1ah-200181 | * - |
| * C1-200720 | * UE behaviour upon receipt of a UE radio capability ID deletion indication | * Nokia, Nokia Shanghai Bell | * agreed | * - | * - |
| * C1-200721 | * Reply LS on Non-UE N2 Message Services Operations | * Ericsson / Mikael | * revised | * - | * C1-200889 |
| * C1-200722 | * UE behaviour upon receipt of a UE radio capability ID deletion indication | * Nokia, Nokia Shanghai Bell | * agreed | * - | * - |
| * C1-200723 | * Format of the UE radio capability ID | * Nokia, Nokia Shanghai Bell | * merged | * - | * - |
| * C1-200724 | * Request S-NSSAI pending the NW slice-specific authentication and authorization | * Ericsson /kaj | * postponed | * - | * - |
| * C1-200725 | * RACS not applicable for non-3GPP access | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200809 |
| * C1-200726 | * UE radio capability information storage not needed for RACS | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200966 |
| * C1-200727 | * UE radio capability information storage not needed for RACS | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200968 |
| * C1-200728 | * Rejection of non-emergency PDU session establishment with 5GMM cause #76 | * Nokia, Nokia Shanghai Bell | * withdrawn | * - | * - |
| * C1-200729 | * Handling of a UE with an emergency PDU session in terms of CAG | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200975 |
| * C1-200730 | * Determination of CAG cell | * Nokia, Nokia Shanghai Bell | * agreed | * - | * - |
| * C1-200731 | * Discussion to manual CAG selection | * Ericsson / Ivo | * noted | * - | * - |
| * C1-200732 | * Manual CAG selection | * Ericsson / Ivo | * postponed | * - | * - |
| * C1-200733 | * Manual CAG selection - providing HRNN | * Ericsson / Ivo | * postponed | * - | * - |
| * C1-200734 | * Clarification on calculation of the residence time spent within the 5G system | * Intel / Thomas | * agreed | * - | * - |
| * C1-200735 | * Correction in UE behavior upon receipt of 5GMM cause value #74 or #75 via a non-integrity protected NAS message | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200970 |
| * C1-200736 | * List of SNPNs for which the N1 mode capability was disabled | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200847 |
| * C1-200737 | * Introduction of SNPN-specific N1 mode attempt counters | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-201032 |
| * C1-200738 | * N1 mode capability disabling and re-enabling for SNPN | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200969 |
| * C1-200739 | * #72 applicable and #31 not applicable in an SNPN | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200971 |
| * C1-200740 | * T3245 in an SNPN | * Nokia, Nokia Shanghai Bell | * postponed | * - | * - |
| * C1-200741 | * Validity of the USIM for an SNPN and for a specific access type | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200849 |
| * C1-200742 | * Handling of 5GMM cause values #62 in an SNPN | * Nokia, Nokia Shanghai Bell | * agreed | * - | * - |
| * C1-200743 | * No mandate to support default configured NSSAI or network slicing indication | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200921 |
| * C1-200744 | * SNN coding | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200850 |
| * C1-200745 | * 5GMM cause value #74 in an SNPN with a globally-unique SNPN identity | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200965 |
| * C1-200746 | * Display of the human readable name of an SNPN | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200964 |
| * C1-200747 | * service request for multiple access PDU session | * Samsung /Grace | * postponed | * - | * - |
| * C1-200748 | * Detach before RLOS and Emergency Attach | * MediaTek / Marko | * revised | * - | * C1-201029 |
| * C1-200749 | * Work plan for the CT1 part of MONASTERY2 | * Nokia, Nokia Shanghai Bell | * noted | * - | * - |
| * C1-200750 | * Analysis of options for FA resolution | * Nokia, Nokia Shanghai Bell | * noted | * - | * - |
| * C1-200751 | * Support of functional alias in first-to-answer calls | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200982 |
| * C1-200752 | * Update service configuration to support limiting the number of authorized clients per MCPTT user | * Nokia, Nokia Shanghai Bell | * postponed | * - | * - |
| * C1-200753 | * Update service authorization procedures to support limiting the number of authorized clients per MCPTT user | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200983 |
| * C1-200754 | * Registration of N5GC devices via wireline access | * Nokia, Nokia Shanghai Bell,Charter Communications | * revised | * - | * C1-200978 |
| * C1-200755 | * Support of authentication and registration of N5GC devices via wireline access | * Nokia, Nokia Shanghai Bell,Charter Communications | * revised | * - | * C1-200979 |
| * C1-200756 | * Corrections on EUI-64 as PEI | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200980 |
| * C1-200757 | * Corrections on N5CW support | * Nokia, Nokia Shanghai Bell | * agreed | * - | * - |
| * C1-200758 | * Supporting IPTV NAS impacts | * Nokia, Nokia Shanghai Bell | * withdrawn | * - | * - |
| * C1-200759 | * Supporting IPTV via wireline access | * Nokia, Nokia Shanghai Bell | * withdrawn | * - | * - |
| * C1-200760 | * ATSSS 5GSM capability indication | * Nokia, Nokia Shanghai Bell | * withdrawn | * - | * - |
| * C1-200761 | * SUPI and SUCI for legacy wireline access | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200981 |
| * C1-200762 | * Work plan for CT aspects of Vertical\_LAN | * Nokia, Nokia Shanghai Bell | * revised | * - | * C1-200767 |
| * C1-200763 | * De-registration before initial registration for RLOS and Emergency | * MediaTek / Marko | * withdrawn | * - | * - |
| * C1-200764 | * reply LS for concurrent broadcast for CMAS | * Samsung /Grace | * postponed | * - | * - |
| * C1-200765 | * handling of ePWS message | * Samsung /Grace | * postponed | * - | * - |
| * C1-200766 | * File distribution over MBMS - signalling control | * ENENSYS | * postponed | * C1-198542 | * - |
| * C1-200767 | * Work plan for CT aspects of Vertical\_LAN | * Nokia, Nokia Shanghai Bell | * noted | * C1-200762 | * - |
| * C1-200768 | * handling of PDU session authentication | * Samsung/Grace | * postponed | * - | * - |
| * C1-200769 | * discussion for concurrent broadcast for CMAS | * Samsung R&D Institute UK | * withdrawn | * - | * - |
| * C1-200770 | * discussion for concurrent broadcast for CMAS | * Samsung R&D Institute UK | * withdrawn | * - | * - |
| * C1-200771 | * discussion for concurrent broadcast for CMAS | * Samsung /Grace | * postponed | * - | * - |
| * C1-200772 | * Correction in IMS\_Registration\_handling policy about how UE should deregister | * Mediatek Inc. | * noted | * - | * - |
| * C1-200773 | * MO exception data reporting for NB-IoT in 5G | * DOCOMO Communications Lab., Ericsson | * revised | * - | * C1-200917 |
| * C1-200774 | * Update to Event-triggered location reporting procedure | * Huawei, HiSilicon /Christian | * revised | * C1-200608 | * C1-200901 |
| * C1-200775 | * Update to structure and data semantics for event-triggered location reporting procedure | * Huawei, HiSilicon /Christian | * revised | * C1-200610 | * C1-200902 |
| * C1-200776 | * Reply LS on manual CAG selection (S1-201084) | * SA1 | * noted | * - | * - |
| * C1-200777 | * LS on Questions on onboarding requirements (S1-201087) | * SA1 | * postponed | * - | * - |
| * C1-200778 | * Removal of the use of Service area list IE during NSSAA | * BEIJING SAMSUNG TELECOM R&D | * agreed | * C1-200602 | * - |
| * C1-200779 | * Correct reference | * BlackBerry UK Ltd. | * agreed | * C1-200425 | * - |
| * C1-200780 | * Enabling mobility with (emergency) sessions/connections between the (trusted) non-3GPP access network connected to the 5GCN and the E-UTRAN | * BlackBerry UK Ltd. | * revised | * C1-200426 | * C1-200837 |
| * C1-200781 | * Removal of editor notes | * BlackBery UK Ltd. Motorola Mobility, Lenovo | * revised | * C1-200297 | * C1-200784 |
| * C1-200782 | * 5G-GUTI reallocation after resume from 5GMM-IDLE mode with suspend indication due to paging | * Samsung/Mahmoud | * postponed | * C1-200583 | * - |
| * C1-200783 | * Adding an editor’s note for suspend indication due to user plane CIoT 5GS optimization | * Samsung/Mahmoud | * agreed | * C1-200585 | * - |
| * C1-200784 | * Removal of editor notes | * BlackBery UK Ltd. Motorola Mobility, Lenovo | * postponed | * C1-200781 | * - |
| * C1-200785 | * LS on suspend indication to the NAS | * Samsung/Mahmoud | * revised | * C1-200590 | * C1-201040 |
| * C1-200786 | * Indication of change in the use of enhanced coverage | * BEIJING SAMSUNG TELECOM R&D | * postponed | * C1-200626 | * - |
| * C1-200787 | * Use precondition only for CAT when network disables precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * postponed | * C1-200482 | * - |
| * C1-200788 | * Use precondition for CRS when network disables precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * postponed | * C1-200484 | * - |
| * C1-200789 | * Clarification on link-specific address/prefix | * ZTE / Joy | * agreed | * C1-200460 | * - |
| * C1-200790 | * Pending NSSAI update for the configured NSSAI in the CUC message | * ZTE | * agreed | * C1-200431 | * - |
| * C1-200791 | * Cleanup for NSSAA message and coding | * ZTE | * agreed | * C1-200432 | * - |
| * C1-200792 | * UE behaviour when T3447 running | * ZTE | * agreed | * C1-200435 | * - |
| * C1-200793 | * Factoring in T3346 during access to RLOS | * Samsung, Qualcomm Incorporated, Ericsson, Nokia, Nokia Shanghai Bell | * agreed | * C1-200322 | * - |
| * C1-200794 | * UE behaviour for other causes in the rejected NSSAI during deregistration procedure | * ZTE | * agreed | * C1-200430 | * - |
| * C1-200795 | * Rejected NSSAI during the initial registration procedure | * ZTE | * agreed | * C1-200433 | * - |
| * C1-200796 | * Alignment of error codes with 3GPP TS 24.501 | * InterDigital / Atle | * agreed | * C1-200320 | * - |
| * C1-200797 | * Cleanups on introduction of pending NSSAI | * InterDigital / Atle | * agreed | * C1-200318 | * - |
| * C1-200798 | * Key download procedrue for MCData | * Samsung / Sapan | * agreed | * C1-200447 | * - |
| * C1-200799 | * MA-PDU Session establishment or activation in non-allowed area | * InterDigital / Atle | * revised | * C1-200317 | * C1-200807 |
| * C1-200800 | * Move the stored object to destination folder | * Samsung Electronics, AT&T | * agreed | * C1-200705 | * - |
| * C1-200801 | * Included absolute URI associated with the media storage function of MCData content server | * Samsung | * agreed | * C1-200712 | * - |
| * C1-200802 | * Included absolute URI associated with the media storage function of MCData content server | * Samsung | * agreed | * C1-200713 | * - |
| * C1-200803 | * Accessing the absolute URI associated with the media storage function | * Samsung | * agreed | * C1-200714 | * - |
| * C1-200804 | * Upload the objects to the MCData message store | * Samsung, AT&T | * agreed | * C1-200711 | * - |
| * C1-200805 | * Corrections to TDC2 and TDC3 timer handling | * Samsung | * agreed | * C1-200715 | * - |
| * C1-200806 | * The pre-establshed session modification for MCData | * Samsung | * agreed | * C1-200716 | * - |
| * C1-200807 | * MA-PDU Session establishment or activation in non-allowed area | * InterDigital / Atle | * agreed | * C1-200799 | * - |
| * C1-200808 | * Obtain list of users based on location | * Samsung, Huawei, HiSilicon | * agreed | * C1-200449 | * - |
| * C1-200809 | * Additional condition to change UE radio capability ID during mobility registration update | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200725 | * - |
| * C1-200810 | * Adding interactions with "Multi-Device" and "Multi-Identity" services | * Ericsson / Nevenka | * agreed | * C1-200363 | * - |
| * C1-200811 | * Use registration message to inform the network when the SRVCC information changes | * BlackBerry UK Ltd. | * withdrawn | * C1-200427 | * - |
| * C1-200812 | * Support for the signalling of the capability for receiving WUS assistance information | * Qualcomm Incorporated / Amer | * revised | * C1-200418 | * C1-201050 |
| * C1-200813 | * Handling of S-NSSAIs in the pending NSSAI | * LG Electronics / Sunhee | * revised | * C1-200352 | * C1-201042 |
| * C1-200814 | * Support of restriction on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * agreed | * C1-200476 | * - |
| * C1-200815 | * Support of restriction on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * revised | * C1-200477 | * C1-200986 |
| * C1-200816 | * NAS configuration on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * revised | * C1-200478 | * C1-200987 |
| * C1-200817 | * Authentication and security handling for RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * agreed | * C1-200479 | * - |
| * C1-200818 | * Off Network Procedures for Identity Management | * Intel / Vivek | * agreed | * C1-200614 | * - |
| * C1-200819 | * Updates to Server Token Exchange Procedure | * Intel / Vivek | * revised | * C1-200613 | * C1-201003 |
| * C1-200820 | * Decoding on V2X service ID and application ID | * OPPO / Rae | * agreed | * C1-200326 | * - |
| * C1-200821 | * UAC updates for NB-IoT to include "MO exception data" | * DOCOMO Communications Lab., Ericsson, Qualcomm, Huawei, HiSilicon | * agreed | * C1-200677 | * - |
| * C1-200822 | * Removal of editor’s note for off-network | * Samsung / Sapan | * agreed | * C1-200643 | * - |
| * C1-200823 | * Removal of editor’s note for off-network | * Samsung / Sapan | * agreed | * C1-200651 | * - |
| * C1-200824 | * PC5 unicast link release procedure | * vivo | * agreed | * C1-200437 | * - |
| * C1-200825 | * Encoding of direct link release messages and parameters | * vivo, Ericsson | * agreed | * C1-200438 | * - |
| * C1-200826 | * PC5 unicast link identifier update procedure | * vivo | * agreed | * C1-200439 | * - |
| * C1-200827 | * Updates to the link modification procedure | * vivo | * revised | * C1-200440 | * C1-200907 |
| * C1-200828 | * Encoding of direct link modification messages and parameters | * vivo | * revised | * C1-200441 | * C1-200909 |
| * C1-200829 | * RACS not apply for non-3GPP access | * vivo / Yanchao | * agreed | * C1-200402 | * - |
| * C1-200830 | * Clarification on HPLMN S-NSSAI | * LG Electronics / Sunhee Kim | * agreed | * C1-200392 | * - |
| * C1-200831 | * Stop T3565 upon connection resumption | * vivo / Yanchao | * agreed | * C1-200400 | * - |
| * C1-200832 | * Port management corrections | * Intel / Thomas | * agreed | * C1-200411 | * - |
| * C1-200833 | * PDU session release | * ZTE, China Unicom, Ericsson | * agreed | * C1-200436 | * - |
| * C1-200834 | * Clarification of forbidden TAI lists for SNPN | * vivo | * agreed | * C1-200464 | * - |
| * C1-200835 | * Support for per-stream filtering and policing | * Intel, Huawei, HiSilicon | * postponed | * C1-200329 | * - |
| * C1-200836 | * Update SNPN key differences | * Intel / Thomas | * revised | * C1-200681 | * C1-200923 |
| * C1-200837 | * Enabling mobility with (emergency) sessions/connections between the (trusted) non-3GPP access network connected to the 5GCN and the E-UTRAN | * BlackBerry UK Ltd. | * revised | * C1-200780 | * C1-200945 |
| * C1-200838 | * FEC encoding by the BM-SC | * ENENSYS | * agreed | * C1-200709 | * - |
| * C1-200839 | * LS on service area restriction for CIoT 5GS optimization | * BEIJING SAMSUNG TELECOM R&D | * approved | * - | * - |
| * C1-200840 | * Including CAG information list in REGISTRATION ACCEPT message | * Qualcomm Incorporated / Lena | * revised | * C1-200338 | * C1-200985 |
| * C1-200841 | * UE radio capability ID assignment via GUTI reallocation procedure | * Qualcomm Incorporated / Lena | * agreed | * C1-200342 | * - |
| * C1-200842 | * UE radio capability ID deletion upon Version ID change | * Qualcomm Incorporated, Nokia, Nokia Shanghai Bell | * agreed | * C1-200346 | * - |
| * C1-200843 | * UE radio capability ID deletion upon Version ID change | * Qualcomm Incorporated / Lena | * agreed | * C1-200347 | * - |
| * C1-200844 | * Security establishment for PC5 unicast link | * Qualcomm Incorporated / Lena | * agreed | * C1-200349 | * - |
| * C1-200845 | * PC5 unicast link keep-alive procedure | * Qualcomm Incorporated / Lena | * agreed | * C1-200350 | * - |
| * C1-200846 | * Retrieval of stored object | * AT&T, Samsung | * agreed | * C1-200544 | * - |
| * C1-200847 | * List of SNPNs for which the N1 mode capability was disabled | * Nokia, Nokia Shanghai Bell, Ericsson | * agreed | * C1-200736 | * - |
| * C1-200848 | * Add Message Store Client subclause | * AT&T, Samsung | * agreed | * C1-200531 | * - |
| * C1-200849 | * Validity of the USIM for an SNPN and for a specific access type | * Nokia, Nokia Shanghai Bell, Ericsson | * agreed | * C1-200741 | * - |
| * C1-200850 | * SNN coding | * Nokia, Nokia Shanghai Bell | * revised | * C1-200744 | * C1-200851 |
| * C1-200851 | * SNN coding | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200850 | * - |
| * C1-200852 | * Stopping of T3513 after connection resume for user plane CIoT 5GS optimization | * Samsung/Mahmoud | * agreed | * C1-200580 | * - |
| * C1-200853 | * Handling of user-plane resources for NB-IoT UEs having at least two PDU sessions | * Qualcomm Incorporated, Ericsson / Amer | * revised | * C1-200419 | * C1-201054 |
| * C1-200854 | * LS on UE specific DRX for NB-S1 mode | * Qualcomm Incorporated / Amer | * merged | * C1-200416 | * - |
| * C1-200855 | * Establish PDU session to transfer port management information containers | * Huawei, HiSilicon/Cristina | * revised | * C1-200564 | * C1-200993 |
| * C1-200856 | * Delete Stored Object(s) in MCData message store | * AT&T, Samsung | * agreed | * C1-200475 | * - |
| * C1-200857 | * Update Object(s) in MCData message store | * AT&T, Samsung | * withdrawn | * C1-200550 | * C1-200858 |
| * C1-200858 | * Update Object(s) in MCData message store | * AT&T, Samsung | * agreed | * C1-200857 | * - |
| * C1-200859 | * Recovery from fallback for UEs using CP CIoT optimization | * Samsung/Mahmoud | * agreed | * C1-200592 | * - |
| * C1-200860 | * Search for Objects in MCData message store | * AT&T, Samsung | * agreed | * C1-200548 | * - |
| * C1-200861 | * Removal of EN and additional abnormal case for cause #31 | * Samsung/Anikethan | * revised | * C1-200351 | * C1-201026 |
| * C1-200862 | * Removal of EN and additional abnormal case for cause #31 | * Samsung/Anikethan | * revised | * C1-200328 | * C1-201025 |
| * C1-200863 | * Copy stored object(s) and-or folder(s) | * AT&T, Samsung | * agreed | * C1-200539 | * - |
| * C1-200864 | * Creating new folder | * AT&T, Samsung | * agreed | * C1-200540 | * - |
| * C1-200865 | * Reply LS on Rel-16 NB-IoT enhancements | * Huawei, HiSilicon/Lin | * merged | * C1-200499 | * - |
| * C1-200866 | * Delete folder | * AT&T, Samsung | * agreed | * C1-200541 | * - |
| * C1-200867 | * Move object(s) and folder(s) | * AT&T, Samsung | * agreed | * C1-200542 | * - |
| * C1-200868 | * Update to registration procedure due to eNS | * vivo / Yanchao | * agreed | * C1-200399 | * - |
| * C1-200869 | * Search for Folders in MCData message store | * AT&T, Samsung | * agreed | * C1-200543 | * - |
| * C1-200870 | * ATSSS Non-MPTCP traffic support | * Apple | * revised | * C1-200565 | * C1-201008 |
| * C1-200871 | * ATSSS Non-MPTCP traffic support | * Apple | * revised | * C1-200567 | * C1-201009 |
| * C1-200872 | * Procedure to notify configuration management event | * Samsung / Sapan | * agreed | * C1-200648 | * - |
| * C1-200873 | * Management of configuration event subscription | * Samsung / Sapan | * agreed | * C1-200647 | * - |
| * C1-200874 | * Correction for the list of the V2X services authorized for PPPR over V2X PC5 in E-UTRA | * Huawei, HiSilicon / Chen | * revised | * C1-200386 | * C1-201015 |
| * C1-200875 | * Correction for the list of V2X service identifier to Tx profiles mapping rules over V2X PC5 | * Huawei, HiSilicon / Chen | * revised | * C1-200388 | * C1-201016 |
| * C1-200876 | * Resolution of the editor's note on details about PC5 unicast link establishment procedure not accepted by the target UE | * Huawei, HiSilicon / Chen | * revised | * C1-200390 | * C1-201017 |
| * C1-200877 | * On-demand location reporting procedure | * Huawei, HiSilicon / Chen | * revised | * C1-200554 | * C1-201018 |
| * C1-200878 | * Location information subscription procedure | * Huawei, HiSilicon / Chen | * agreed | * C1-200557 | * - |
| * C1-200879 | * Event-triggered location information notification procedure | * Huawei, HiSilicon / Chen | * agreed | * C1-200559 | * - |
| * C1-200880 | * On-demand usage of location information procedure | * Huawei, HiSilicon / Chen | * revised | * C1-200561 | * C1-201019 |
| * C1-200881 | * MBMS bearer announcement over MBMS bearer procedure | * Huawei, HiSilicon / Chen | * agreed | * C1-200562 | * - |
| * C1-200882 | * MBMS bearer quality detection procedure | * Huawei, HiSilicon / Chen | * agreed | * C1-200563 | * - |
| * C1-200883 | * Correction related the rejected NSSAI due to the failed or revoked NSSAA | * SHARP, NEC | * merged | * C1-200579 | * - |
| * C1-200884 | * Group member leave procedure | * Samsung / Sapan | * agreed | * C1-200642 | * - |
| * C1-200885 | * Group announcement and join procedure | * Samsung / Sapan | * agreed | * C1-200641 | * - |
| * C1-200886 | * Automatic group affiliation and deaffiliation based on location or functional alias | * Kontron Transportation, Nokia, Nokia Shanghai Bell | * agreed | * C1-200408 | * - |
| * C1-200887 | * Procedures for management of group events subscription | * Samsung / Sapan | * agreed | * C1-200638 | * - |
| * C1-200888 | * Procedures to notify group events | * Samsung / Sapan | * agreed | * C1-200639 | * - |
| * C1-200889 | * Reply LS on Non-UE N2 Message Services Operations | * Ericsson / Mikael | * approved | * C1-200721 | * - |
| * C1-200890 | * CR 23.041#0208 Addition of message identifiers for UEs with no user interface | * SyncTechno Inc. | * revised | * C1-200442 | * C1-201033 |
| * C1-200891 | * CR 23.041#0209 Support of a stored language-independent content referenced by a warning message | * SyncTechno Inc. | * agreed | * C1-200443 | * - |
| * C1-200892 | * Addition of MT-EDT support indication | * Ericsson, Qualcomm Incorporated, OPPO / Mikael | * revised | * C1-200368 | * C1-200976 |
| * C1-200893 | * Enhancement on CPSR for CIoT CP data transport | * Huawei, HiSilicon, Vodafone, ZTE, China Mobile, China Telecom, CATT/Lin | * postponed | * C1-200495 | * - |
| * C1-200894 | * No SMS in payload container IE in CPSR message | * Huawei, HiSilicon/Lin | * agreed | * C1-200503 | * - |
| * C1-200895 | * Truncated 5G-S-TMSI over NAS | * Huawei, HiSilicon/Lin | * agreed | * C1-200501 | * - |
| * C1-200896 | * Correction on 5GMM cause #74/#75 for no touching non-3GPP access | * Huawei, HiSilicon/Lin | * agreed | * C1-200504 | * - |
| * C1-200897 | * Correction on term "shared network" definition for SNPN | * Huawei, HiSilicon/Lin | * agreed | * C1-200507 | * - |
| * C1-200898 | * ENs resolution for revoked or failed NSSAA | * Huawei, HiSilicon/Lin | * agreed | * C1-200511 | * - |
| * C1-200899 | * Data transmission over PC5 unicast link | * Huawei, HiSilicon /Christian | * agreed | * C1-200537 | * - |
| * C1-200900 | * Operations for broadcast mode and groupcast mode communication over PC5 | * Huawei, HiSilicon /Christian | * agreed | * C1-200536 | * - |
| * C1-200901 | * Update to Event-triggered location reporting procedure | * Huawei, HiSilicon /Christian | * agreed | * C1-200774 | * - |
| * C1-200902 | * Update to structure and data semantics for event-triggered location reporting procedure | * Huawei, HiSilicon /Christian | * agreed | * C1-200775 | * - |
| * C1-200903 | * V2X message delivery procedure | * Huawei, HiSilicon /Christian | * agreed | * C1-200529 | * - |
| * C1-200904 | * General on unicast resource management | * Huawei, HiSilicon /Christian | * agreed | * C1-200617 | * - |
| * C1-200905 | * Structure and data semantics for application level location tracking procedure | * Huawei, HiSilicon /Christian | * agreed | * C1-200619 | * - |
| * C1-200906 | * Structure and data semantics for V2X message delivery procedure | * Huawei, HiSilicon /Christian | * agreed | * C1-200621 | * - |
| * C1-200907 | * Updates to the link modification procedure | * vivo, Huawei, HiSilicon | * agreed | * C1-200827 | * - |
| * C1-200908 | * Use precondition for CAT when originating UE and network both support precondtion | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * revised | * C1-200483 | * C1-201045 |
| * C1-200909 | * Encoding of direct link modification messages and parameters | * vivo, Ericsson, Huawei, HiSilicon | * agreed | * C1-200828 | * - |
| * C1-200910 | * Providing video announcement at the same time with audio conversation | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * revised | * C1-200486 | * C1-201048 |
| * C1-200911 | * Use precondition for CRS when terminating UE supports or requires precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * revised | * C1-200485 | * C1-201047 |
| * C1-200912 | * Non-3GPP Message for Data interworking | * Sepura, Hytera Communications Corp. | * agreed | * C1-200366 | * - |
| * C1-200913 | * SDS media plane message handling by IWF | * Sepura, Hytera Communications Corp. | * agreed | * C1-200367 | * - |
| * C1-200914 | * PDU session status with control plane service request message | * Ericsson /KAJ | * revised | * C1-200663 | * C1-201038 |
| * C1-200915 | * Correction to UL CIoT user data container not routable or not allowed to be routed | * Ericsson /kaj | * agreed | * C1-200658 | * - |
| * C1-200916 | * Clarification on the use of exception data reporting | * DOCOMO Communications Lab. | * agreed | * C1-200679 | * - |
| * C1-200917 | * MO exception data reporting for NB-IoT in 5G | * DOCOMO Communications Lab., Ericsson | * agreed | * C1-200773 | * - |
| * C1-200918 | * Clarification of control plane service request message options | * Ericsson /kaj | * agreed | * C1-200672 | * - |
| * C1-200919 | * Service gap control, correction when to start service gap control timer in UE and NW | * Ericsson /kaj | * agreed | * C1-200669 | * - |
| * C1-200920 | * [Draft] LS on Unicode symbol numbers representing disasters | * SyncTechno Inc. | * revised | * C1-200445 | * C1-201043 |
| * C1-200921 | * No mandate to support default configured NSSAI or network slicing indication | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200743 | * - |
| * C1-200922 | * Name of the rejected NSSAI cause values | * vivo, SHARP | * agreed | * C1-200462 | * - |
| * C1-200923 | * Update SNPN key differences | * Intel / Thomas | * revised | * C1-200836 | * C1-201010 |
| * C1-200924 | * Presentation of PLMN with non-CAG cells for manual selection | * Huawei, HiSilicon / Vishnu | * revised | * C1-200468 | * C1-201020 |
| * C1-200925 | * PEI clean up | * Ericsson, Charter Communications, CableLabs / Ivo | * agreed | * C1-200283 | * - |
| * C1-200926 | * Introduction of GCI and GLI | * Ericsson, Nokia, Nokia Shanghai Bell / Ivo | * agreed | * C1-200285 | * - |
| * C1-200927 | * ATSSS PCO parameters for 5G-RG | * Ericsson, Charter Communications, CableLabs / Ivo | * agreed | * C1-200286 | * - |
| * C1-200928 | * Contents of ATSSS PCO parameters for 5G-RG | * Ericsson, Charter Communications, CableLabs / Ivo | * agreed | * C1-200287 | * - |
| * C1-200929 | * Procedures for establishment of a PDN connection as a user-plane resource of a MA PDU session | * Ericsson, Charter Communications, CableLabs / Ivo | * agreed | * C1-200288 | * - |
| * C1-200930 | * PDU session ID usage when the UE is a 5G-RG and requests establishment of a PDN connection as a user-plane resource of a MA PDU session | * Ericsson, Charter Communications, CableLabs / Ivo | * agreed | * C1-200289 | * - |
| * C1-200931 | * Always-On PDU session and URLLC | * Ericsson / Ivo | * agreed | * C1-200290 | * - |
| * C1-200932 | * CAG information list storage | * Ericsson, NTT Docomo, MediaTek, Nokia, Nokia Shanghai Bell / Ivo | * agreed | * C1-200291 | * - |
| * C1-200933 | * UE policies for V2X communication over PC5 | * Ericsson, LG Electronics / Ivo | * agreed | * C1-200292 | * - |
| * C1-200934 | * Updates of configuration parameters for V2X communication over Uu | * Ericsson / Ivo | * agreed | * C1-200293 | * - |
| * C1-200935 | * V2X communication over Uu | * Ericsson / Ivo | * agreed | * C1-200294 | * - |
| * C1-200936 | * UE policies for V2X communication over Uu | * Ericsson, LG Electronics / Ivo | * agreed | * C1-200295 | * - |
| * C1-200937 | * CAG-ID not provided to lower layers during NAS signalling connection establishment | * Ericsson / Ivo | * postponed | * C1-200311 | * - |
| * C1-200938 | * Reply LS on SUCI computation from an NSI | * Ericsson / Ivo | * approved | * C1-200395 | * - |
| * C1-200939 | * MA PDU session and one set of QoS parameters | * Ericsson / Ivo | * agreed | * C1-200396 | * - |
| * C1-200940 | * Discussion on SRVCC from E-UTRAN to GERAN/UTRAN when IMS voice call is initiated in 5GS | * Ericsson / Ivo | * postponed | * C1-200673 | * - |
| * C1-200941 | * SRVCC from E-UTRAN to GERAN/UTRAN when IMS voice call is initiated in 5GS | * Ericsson / Ivo | * postponed | * C1-200674 | * - |
| * C1-200942 | * Clarify that access to RLOS is not supported in SNPN | * Huawei, HiSilicon / Vishnu | * agreed | * C1-200469 | * - |
| * C1-200943 | * Correction to Limited service state for SNPN | * Huawei, HiSilicon / Vishnu | * agreed | * C1-200466 | * - |
| * C1-200944 | * Application level location tracking procedure | * Huawei, HiSilicon /Christian | * agreed | * C1-200528 | * - |
| * C1-200945 | * Enabling mobility with (emergency) sessions/connections between the (trusted) non-3GPP access network connected to the 5GCN and the E-UTRAN | * BlackBerry UK Ltd. | * agreed | * C1-200837 | * - |
| * C1-200946 | * Remove editor's note – clause 6.6.2 | * FirstNet / Mike | * agreed | * C1-200372 | * - |
| * C1-200947 | * MuD MiD and CAT interactions | * Orange / Mariusz | * agreed | * C1-200665 | * - |
| * C1-200948 | * Remove editor's note – clause 8.3.2.8 | * FirstNet / Mike | * agreed | * C1-200373 | * - |
| * C1-200949 | * Affiliation in a regroup | * FirstNet / Mike | * agreed | * C1-200374 | * - |
| * C1-200950 | * MuD MiD and CRS interactions | * Orange / Mariusz | * agreed | * C1-200667 | * - |
| * C1-200951 | * CAT interactsions with MuD and MiD | * Orange / Mariusz | * agreed | * C1-200668 | * - |
| * C1-200952 | * Check for controlling function identity in 10.1.1.3.1.1 | * FirstNet / Mike | * agreed | * C1-200377 | * - |
| * C1-200953 | * CRS interactsions with MuD and MiD | * Orange / Mariusz | * agreed | * C1-200670 | * - |
| * C1-200954 | * Correct clause reference in 11.1.1.3.1.2 | * FirstNet / Mike | * agreed | * C1-200379 | * - |
| * C1-200955 | * Correct reference in 8.3.2.6 | * FirstNet / Mike | * agreed | * C1-200381 | * - |
| * C1-200956 | * Check for groups that are already regrouped | * FirstNet / Mike | * agreed | * C1-200378 | * - |
| * C1-200957 | * Missing client procedures for preconfigured regroup | * FirstNet / Mike | * revised | * C1-200380 | * C1-200977 |
| * C1-200958 | * Subscribed S-NSSAI marked as default and NSSAA | * Nokia, Nokia Shanghai Bell | * revised | * C1-200697 | * C1-201049 |
| * C1-200959 | * Clarifications of identity definitions and activation procedures | * Ericsson /Jörgen | * revised | * C1-200653 | * C1-201046 |
| * C1-200960 | * Emergency PDU session handling after NSSAA failure | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200703 | * - |
| * C1-200961 | * Management object correction, MuD | * Ericsson /Jörgen | * merged | * C1-200657 | * - |
| * C1-200962 | * Setting the Always-on PDU session indication IE in the PDU SESSION ESTABLISHMENT ACCEPT message | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200685 | * - |
| * C1-200963 | * Location information; mid-call access change | * Ericsson, Deutsche Telekom /Jörgen | * postponed | * C1-200625 | * - |
| * C1-200964 | * Display of the human readable name of an SNPN | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200746 | * - |
| * C1-200965 | * 5GMM cause value #74 in an SNPN with a globally-unique SNPN identity | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200745 | * - |
| * C1-200966 | * UE radio capability information storage not needed for RACS | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200726 | * - |
| * C1-200967 | * LS on 5G-GUTI reallocation after paging of a UE in 5GMM-IDLE mode with suspend indicatio | * BEIJING SAMSUNG TELECOM R&D | * approved | * - | * - |
| * C1-200968 | * UE radio capability information storage not needed for RACS | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200727 | * - |
| * C1-200969 | * N1 mode capability disabling and re-enabling for SNPN | * Nokia, Nokia Shanghai Bell | * revised | * C1-200738 | * C1-201031 |
| * C1-200970 | * Correction in UE behavior upon receipt of 5GMM cause value #74 or #75 via a non-integrity protected NAS message | * Nokia, Nokia Shanghai Bell | * postponed | * C1-200735 | * - |
| * C1-200971 | * #72 applicable and #31 not applicable in an SNPN | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200739 | * - |
| * C1-200972 | * Manual CAG selection | * Nokia, Nokia Shanghai Bell | * revised | * C1-200700 | * C1-201037 |
| * C1-200973 | * Triggering mobility registration update due to manual CAG selection | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200701 | * - |
| * C1-200974 | * LS on manual CAG selection | * Nokia, Nokia Shanghai Bell | * revised | * C1-200699 | * C1-201041 |
| * C1-200975 | * Handling of a UE with an emergency PDU session in terms of CAG | * Nokia, Nokia Shanghai Bell | * revised | * C1-200729 | * C1-201035 |
| * C1-200976 | * Addition of MT-EDT support indication | * Ericsson, Qualcomm Incorporated, OPPO / Mikael | * revised | * C1-200892 | * C1-201021 |
| * C1-200977 | * Missing client procedures for preconfigured regroup | * FirstNet / Mike | * agreed | * C1-200957 | * - |
| * C1-200978 | * Registration of N5GC devices via wireline access | * Nokia, Nokia Shanghai Bell,Charter Communications | * agreed | * C1-200754 | * - |
| * C1-200979 | * Support of authentication and registration of N5GC devices via wireline access | * Nokia, Nokia Shanghai Bell,Charter Communications | * agreed | * C1-200755 | * - |
| * C1-200980 | * Corrections on EUI-64 as PEI | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200756 | * - |
| * C1-200981 | * SUPI and SUCI for legacy wireline access | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200761 | * - |
| * C1-200982 | * Support of functional alias in first-to-answer calls | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200751 | * - |
| * C1-200983 | * Update service authorization procedures to support limiting the number of authorized clients per MCPTT user | * Nokia, Nokia Shanghai Bell | * revised | * C1-200753 | * C1-201056 |
| * C1-200984 | * Additional QoS Information in an untrusted non-3GPP network | * Motorola Mobility, Lenovo | * agreed | * C1-200300 | * - |
| * C1-200985 | * Including CAG information list in REGISTRATION ACCEPT message | * Qualcomm Incorporated / Lena | * agreed | * C1-200840 | * - |
| * C1-200986 | * Support of restriction on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * agreed | * C1-200815 | * - |
| * C1-200987 | * NAS configuration on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * agreed | * C1-200816 | * - |
| * C1-200988 | * Removing editor's note | * Motorola Mobility, Lenovo | * agreed | * C1-200413 | * - |
| * C1-200989 | * 5GSM capabilities for MA PDU session | * Motorola Mobility, Lenovo | * agreed | * C1-200299 | * - |
| * C1-200990 | * MA PDU session is not supported | * Motorola Mobility, Lenovo | * revised | * C1-200303 | * C1-201044 |
| * C1-200991 | * PDU session handling for N5CW device | * Motorola Mobility, Lenovo | * agreed | * C1-200305 | * - |
| * C1-200992 | * MA PDU session is not supported | * Motorola Mobility France S.A.S | * revised | * C1-200414 | * C1-201036 |
| * C1-200993 | * Establish PDU session to transfer port management information containers | * Huawei, HiSilicon/Cristina | * agreed | * C1-200855 | * - |
| * C1-200994 | * LS on the applicability of LADN in an SNPN | * LG Electronics | * approved | * - | * - |
| * C1-200995 | * Condition of providing video announcement | * China Telecom,Huawei, China Unicom, HiSilicon | * revised | * C1-200546 | * C1-201057 |
| * C1-200996 | * UE-requested user-plane resources release in NB-N1 mode | * Huawei, HiSilicon/Lin | * postponed | * C1-200497 | * - |
| * C1-200997 | * Correction for the wrongly implemented CR1963r1 | * Huawei, HiSilicon/Cristina | * agreed | * C1-200571 | * - |
| * C1-200998 | * Deleting Editors note regarding indefinite wait at the UE for NSSAA completion | * ZTE | * revised | * C1-200429 | * C1-201051 |
| * C1-200999 | * UE receives CAG information in SNPN access mode | * Huawei, HiSilicon/Cristina | * agreed | * C1-200551 | * - |
| * C1-201000 | * Minor Correction to Traffic descriptor component type identifier of ATSSS rules | * China Mobile | * agreed | * C1-200406 | * - |
| * C1-201001 | * Clarification on Public Network Integrated NPN in TS 24.501 | * China Telecom | * agreed | * C1-200549 | * - |
| * C1-201002 | * LS on the use of service area restriction during NSSAA | * BEIJING SAMSUNG TELECOM R&D | * approved | * - | * - |
| * C1-201003 | * Updates to Server Token Exchange Procedure | * Intel / Vivek | * agreed | * C1-200819 | * - |
| * C1-201004 | * Adding access token in proper header of HTTP request from client | * Samsung / Sapan | * agreed | * C1-200633 | * - |
| * C1-201005 | * Corrections in procedures | * Samsung / Sapan | * agreed | * C1-200650 | * - |
| * C1-201006 | * Update on Plugtest Reported Issues | * FirstNet / Mike | * noted | * C1-200382 | * - |
| * C1-201007 | * Applicability of UE specific DRX Parameter for NB-S1 mode Indicator | * Vodafone GmbH | * reserved | * C1-200355 | * - |
| * C1-201008 | * ATSSS Non-MPTCP traffic support | * Apple | * agreed | * C1-200870 | * - |
| * C1-201009 | * ATSSS Non-MPTCP traffic support | * Apple | * agreed | * C1-200871 | * - |
| * C1-201010 | * Update SNPN key differences | * Intel / Thomas | * postponed | * C1-200923 | * - |
| * C1-201011 | * MO for MuD and MiD correction | * Orange / Mariusz | * revised | * C1-200664 | * C1-201030 |
| * C1-201012 | * Considering allowed NSSAI when establishing MA PDU session | * MediaTek Inc., ZTE / JJ | * agreed | * C1-200627 | * - |
| * C1-201013 | * UE Handling upon receipt of PDU session release command | * MediaTek Inc. / JJ | * agreed | * C1-200628 | * - |
| * C1-201014 | * Correction of release of user-plane resources | * MediaTek Inc. / JJ | * agreed | * C1-200629 | * - |
| * C1-201015 | * Correction for the list of the V2X services authorized for PPPR over V2X PC5 in E-UTRA | * Huawei, HiSilicon / Chen | * agreed | * C1-200874 | * - |
| * C1-201016 | * Correction for the list of V2X service identifier to Tx profiles mapping rules over V2X PC5 | * Huawei, HiSilicon / Chen | * agreed | * C1-200875 | * - |
| * C1-201017 | * Resolution of the editor's note on details about PC5 unicast link establishment procedure not accepted by the target UE | * Huawei, HiSilicon / Chen | * agreed | * C1-200876 | * - |
| * C1-201018 | * On-demand location reporting procedure | * Huawei, HiSilicon / Chen | * agreed | * C1-200877 | * - |
| * C1-201019 | * On-demand usage of location information procedure | * Huawei, HiSilicon / Chen | * agreed | * C1-200880 | * - |
| * C1-201020 | * Presentation of PLMN with non-CAG cells for manual selection | * Huawei, HiSilicon / Vishnu | * agreed | * C1-200924 | * - |
| * C1-201021 | * Addition of MT-EDT support indication | * Ericsson, Qualcomm Incorporated, OPPO / Mikael | * agreed | * C1-200976 | * - |
| * C1-201022 | * IP Connectivity | * Kontron Transportation | * agreed | * C1-200412 | * - |
| * C1-201023 | * Limited service state on CAG cell | * Huawei, HiSilicon / Vishnu | * agreed | * C1-200452 | * - |
| * C1-201024 | * Reply LS on Rel-16 NB-IoT enhancements | * Ericsson | * approved | * - | * - |
| * C1-201025 | * Removal of EN and additional abnormal case for cause #31 | * Samsung/Anikethan | * agreed | * C1-200862 | * - |
| * C1-201026 | * Removal of EN and additional abnormal case for cause #31 | * Samsung/Anikethan | * agreed | * C1-200861 | * - |
| * C1-201027 | * Reply LS on sending CAG ID | * Ericsson / Ivo | * approved | * C1-200310 | * - |
| * C1-201028 | * Resolution of the editor's notes on precedence of V2X configuration parameters | * Huawei, HiSilicon /Christian | * agreed | * C1-200525 | * - |
| * C1-201029 | * Detach before RLOS and Emergency Attach | * MediaTek / Marko | * agreed | * C1-200748 | * - |
| * C1-201030 | * MO for MuD and MiD correction | * Orange / Mariusz | * agreed | * C1-201011 | * - |
| * C1-201031 | * N1 mode capability disabling and re-enabling for SNPN | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200969 | * - |
| * C1-201032 | * Introduction of SNPN-specific N1 mode attempt counters | * Nokia, Nokia Shanghai Bell | * postponed | * C1-200737 | * - |
| * C1-201033 | * CR 23.041#0208 Addition of message identifiers for UEs with no user interface | * SyncTechno Inc. | * agreed | * C1-200890 | * - |
| * C1-201034 | * Single downlink data only indication and release of NAS signalling connection | * Ericsson /kaj | * agreed | * C1-200661 | * - |
| * C1-201035 | * Handling of a UE with an emergency PDU session in terms of CAG | * Nokia, Nokia Shanghai Bell | * postponed | * C1-200975 | * - |
| * C1-201036 | * MA PDU session is not supported | * Motorola Mobility France S.A.S | * agreed | * C1-200992 | * - |
| * C1-201037 | * Manual CAG selection | * Nokia, Nokia Shanghai Bell | * revised | * C1-200972 | * C1-201039 |
| * C1-201038 | * PDU session status with control plane service request message | * Ericsson /KAJ | * agreed | * C1-200914 | * - |
| * C1-201039 | * Manual CAG selection | * Nokia, Nokia Shanghai Bell | * revised | * C1-201037 | * C1-201052 |
| * C1-201040 | * LS on suspend indication to the NAS | * Samsung/Mahmoud | * approved | * C1-200785 | * - |
| * C1-201041 | * LS on manual CAG selection | * Nokia, Nokia Shanghai Bell | * revised | * C1-200974 | * C1-201053 |
| * C1-201042 | * Handling of S-NSSAIs in the pending NSSAI | * LG Electronics / Sunhee | * agreed | * C1-200813 | * - |
| * C1-201043 | * LS on Unicode symbol numbers representing disasters | * SyncTechno Inc. | * approved | * C1-200920 | * - |
| * C1-201044 | * MA PDU session is not supported | * Motorola Mobility, Lenovo | * agreed | * C1-200990 | * - |
| * C1-201045 | * Use precondition for CAT when originating UE and network both support precondtion | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * postponed | * C1-200908 | * - |
| * C1-201046 | * Clarifications of identity definitions and activation procedures | * Ericsson /Jörgen | * agreed | * C1-200959 | * - |
| * C1-201047 | * Use precondition for CRS when terminating UE supports or requires precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * postponed | * C1-200911 | * - |
| * C1-201048 | * Providing video announcement at the same time with audio conversation | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * agreed | * C1-200910 | * - |
| * C1-201049 | * Subscribed S-NSSAI marked as default and NSSAA | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200958 | * - |
| * C1-201050 | * Support for the signalling of the capability for receiving WUS assistance information | * Qualcomm Incorporated / Amer | * revised | * C1-200812 | * C1-201058 |
| * C1-201051 | * Deleting Editors note regarding indefinite wait at the UE for NSSAA completion | * ZTE | * postponed | * C1-200998 | * - |
| * C1-201052 | * Manual CAG selection | * Nokia, Nokia Shanghai Bell | * postponed | * C1-201039 | * - |
| * C1-201053 | * LS on manual CAG selection | * Nokia, Nokia Shanghai Bell | * postponed | * C1-201041 | * - |
| * C1-201054 | * Handling of user-plane resources for NB-IoT UEs having at least two PDU sessions | * Qualcomm Incorporated, Ericsson / Amer | * agreed | * C1-200853 | * - |
| * C1-201055 | * NW slice authentication and authorization failure and revocation | * Ericsson /kaj | * agreed | * C1-200683 | * - |
| * C1-201056 | * Update service authorization procedures to support limiting the number of authorized clients per MCPTT user | * Nokia, Nokia Shanghai Bell | * agreed | * C1-200983 | * - |
| * C1-201057 | * Condition of providing video announcement | * China Telecom,Huawei, China Unicom, HiSilicon | * postponed | * C1-200995 | * - |
| * C1-201058 | * Support for the signalling of the capability for receiving WUS assistance information | * Qualcomm Incorporated / Amer | * agreed | * C1-201050 | * - |
| * C1-201059 | * Updating requirements and descriptions of NS for NSSAA | * China Mobile | * reserved | * C1-200405 | * - |
| * C1-201060 | * Adding UE initiated LCS service operations | * CATT/Scott | * postponed | * C1-200568 | * - |
| * C1-201061 | * LCS messages and coding | * CATT/Scott | * postponed | * C1-200569 | * - |
| * C1-201062 | * Reply LS on Mobile-terminated Early Data Transmission | * Ericsson / Mikael | * approved | * C1-200707 | * - |

## Annex B: List of change requests

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Document | Title | Source | Spec | CR | Rev | Rel | Cat | WI | Decision |
| * C1-200308 | * Removal of Duplicate Service Operation Details | * Cisco Systems Belgium | * 23.041 | * 0207 | * - | * Rel-16 | * F | * 5GS\_Ph1-CT | * postponed |
| * C1-200442 | * CR 23.041#0208 Addition of message identifiers for UEs with no user interface | * SyncTechno Inc. | * 23.041 | * 0208 | * - | * Rel-16 | * B | * ePWS | * revised |
| * C1-200890 | * CR 23.041#0208 Addition of message identifiers for UEs with no user interface | * SyncTechno Inc. | * 23.041 | * 0208 | * 1 | * Rel-16 | * B | * ePWS | * revised |
| * C1-201033 | * CR 23.041#0208 Addition of message identifiers for UEs with no user interface | * SyncTechno Inc. | * 23.041 | * 0208 | * 2 | * Rel-16 | * B | * ePWS | * agreed |
| * C1-200443 | * CR 23.041#0209 Support of a stored language-independent content referenced by a warning message | * SyncTechno Inc. | * 23.041 | * 0209 | * - | * Rel-16 | * B | * ePWS | * revised |
| * C1-200891 | * CR 23.041#0209 Support of a stored language-independent content referenced by a warning message | * SyncTechno Inc. | * 23.041 | * 0209 | * 1 | * Rel-16 | * B | * ePWS | * agreed |
| * C1-200444 | * CR 23.041#0210 Example of Unicode based symbols as the language independent contents mapping to disasters in NOTE | * SyncTechno Inc. | * 23.041 | * 0210 | * - | * Rel-16 | * F | * ePWS | * postponed |
| * C1-200765 | * handling of ePWS message | * Samsung /Grace | * 23.041 | * 0211 | * - | * Rel-16 | * F | * ePWS | * postponed |
| * C1-200517 | * Configuration for the presentation of CAG cells for manual CAG selection | * Huawei, HiSilicon / Vishnu | * 23.122 | * 0471 | * 5 | * Rel-16 | * C | * Vertical\_LAN | * merged |
| * C1-200336 | * Clarification to manual CAG selection | * Qualcomm Incorporated / Lena | * 23.122 | * 0489 | * - | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200403 | * Clarification on CAG selection | * Intel / Thomas | * 23.122 | * 0490 | * - | * Rel-16 | * F | * Vertical\_LAN | * merged |
| * C1-200452 | * Limited service state on CAG cell | * Huawei, HiSilicon / Vishnu | * 23.122 | * 0491 | * - | * Rel-16 | * B | * Vertical\_LAN | * revised |
| * C1-201023 | * Limited service state on CAG cell | * Huawei, HiSilicon / Vishnu | * 23.122 | * 0491 | * 1 | * Rel-16 | * B | * Vertical\_LAN | * agreed |
| * C1-200466 | * Correction to Limited service state for SNPN | * Huawei, HiSilicon / Vishnu | * 23.122 | * 0492 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200943 | * Correction to Limited service state for SNPN | * Huawei, HiSilicon / Vishnu | * 23.122 | * 0492 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200468 | * Presentation of PLMN with non-CAG cells for manual selection | * Huawei, HiSilicon / Vishnu | * 23.122 | * 0493 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200924 | * Presentation of PLMN with non-CAG cells for manual selection | * Huawei, HiSilicon / Vishnu | * 23.122 | * 0493 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-201020 | * Presentation of PLMN with non-CAG cells for manual selection | * Huawei, HiSilicon / Vishnu | * 23.122 | * 0493 | * 2 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200469 | * Clarify that access to RLOS is not supported in SNPN | * Huawei, HiSilicon / Vishnu | * 23.122 | * 0494 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200942 | * Clarify that access to RLOS is not supported in SNPN | * Huawei, HiSilicon / Vishnu | * 23.122 | * 0494 | * 1 | * Rel-16 | * F | * PARLOS | * agreed |
| * C1-200477 | * Support of restriction on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * 23.122 | * 0495 | * - | * Rel-16 | * B | * PARLOS | * revised |
| * C1-200815 | * Support of restriction on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * 23.122 | * 0495 | * 1 | * Rel-16 | * B | * PARLOS | * revised |
| * C1-200986 | * Support of restriction on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * 23.122 | * 0495 | * 2 | * Rel-16 | * B | * PARLOS | * agreed |
| * C1-200480 | * Manual network selection procedure for access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * 23.122 | * 0496 | * - | * Rel-16 | * B | * PARLOS | * agreed |
| * C1-200507 | * Correction on term "shared network" definition for SNPN | * Huawei, HiSilicon/Lin | * 23.122 | * 0497 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200897 | * Correction on term "shared network" definition for SNPN | * Huawei, HiSilicon/Lin | * 23.122 | * 0497 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200686 | * UE identifier for SNPN | * Nokia, Nokia Shanghai Bell, Qualcomm Incorporated, Vodafone, Charter Communications, NTT DOCOMO, Ericsson | * 23.122 | * 0498 | * - | * Rel-16 | * C | * Vertical\_LAN | * agreed |
| * C1-200700 | * Manual CAG selection | * Nokia, Nokia Shanghai Bell | * 23.122 | * 0499 | * - | * Rel-16 | * C | * Vertical\_LAN | * revised |
| * C1-200972 | * Manual CAG selection | * Nokia, Nokia Shanghai Bell | * 23.122 | * 0499 | * 1 | * Rel-16 | * C | * Vertical\_LAN | * revised |
| * C1-201037 | * Manual CAG selection | * Nokia, Nokia Shanghai Bell | * 23.122 | * 0499 | * 2 | * Rel-16 | * C | * Vertical\_LAN | * revised |
| * C1-201039 | * Manual CAG selection | * Nokia, Nokia Shanghai Bell | * 23.122 | * 0499 | * 3 | * Rel-16 | * C | * Vertical\_LAN | * revised |
| * C1-201052 | * Manual CAG selection | * Nokia, Nokia Shanghai Bell | * 23.122 | * 0499 | * 4 | * Rel-16 | * C | * Vertical\_LAN | * postponed |
| * C1-200730 | * Determination of CAG cell | * Nokia, Nokia Shanghai Bell | * 23.122 | * 0500 | * - | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200732 | * Manual CAG selection | * Ericsson / Ivo | * 23.122 | * 0501 | * - | * Rel-16 | * C | * Vertical\_LAN | * postponed |
| * C1-200736 | * List of SNPNs for which the N1 mode capability was disabled | * Nokia, Nokia Shanghai Bell | * 23.122 | * 0502 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200847 | * List of SNPNs for which the N1 mode capability was disabled | * Nokia, Nokia Shanghai Bell, Ericsson | * 23.122 | * 0502 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200746 | * Display of the human readable name of an SNPN | * Nokia, Nokia Shanghai Bell | * 23.122 | * 0503 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200964 | * Display of the human readable name of an SNPN | * Nokia, Nokia Shanghai Bell | * 23.122 | * 0503 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200286 | * ATSSS PCO parameters for 5G-RG | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.008 | * 3211 | * - | * Rel-16 | * B | * ATSSS, 5WWC | * revised |
| * C1-200927 | * ATSSS PCO parameters for 5G-RG | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.008 | * 3211 | * 1 | * Rel-16 | * B | * ATSSS, 5WWC | * agreed |
| * C1-200618 | * Value range of UE specific DRX in NB-S1 mode | * Vodafone GmbH | * 24.008 | * 3212 | * - | * Rel-16 | * B | * 5G\_CIoT | * postponed |
| * C1-200482 | * Use precondition only for CAT when network disables precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.182 | * 0114 | * - | * Rel-16 | * B | * eIMSVideo | * revised |
| * C1-200787 | * Use precondition only for CAT when network disables precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.182 | * 0114 | * 1 | * Rel-16 | * B | * eIMSVideo | * postponed |
| * C1-200483 | * Use precondition for CAT when originating UE and network both support precondtion | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.182 | * 0115 | * - | * Rel-16 | * B | * eIMSVideo | * revised |
| * C1-200908 | * Use precondition for CAT when originating UE and network both support precondtion | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.182 | * 0115 | * 1 | * Rel-16 | * B | * eIMSVideo | * revised |
| * C1-201045 | * Use precondition for CAT when originating UE and network both support precondtion | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.182 | * 0115 | * 2 | * Rel-16 | * B | * eIMSVideo | * postponed |
| * C1-200488 | * Use precondition only for CAT when network disables precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.182 | * 0116 | * - | * Rel-16 | * B | * eIMSVideo | * withdrawn |
| * C1-200489 | * Use precondition for CAT when originating UE and network both support precondtion | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.182 | * 0117 | * - | * Rel-16 | * B | * eIMSVideo | * withdrawn |
| * C1-200668 | * CAT interactsions with MuD and MiD | * Orange / Mariusz | * 24.182 | * 0118 | * - | * Rel-16 | * B | * MuD | * revised |
| * C1-200951 | * CAT interactsions with MuD and MiD | * Orange / Mariusz | * 24.182 | * 0118 | * 1 | * Rel-16 | * B | * MuD | * agreed |
| * C1-200484 | * Use precondition for CRS when network disables precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.183 | * 0057 | * - | * Rel-16 | * B | * eIMSVideo | * revised |
| * C1-200788 | * Use precondition for CRS when network disables precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.183 | * 0057 | * 1 | * Rel-16 | * B | * eIMSVideo | * postponed |
| * C1-200485 | * Use precondition for CRS when terminating UE supports or requires precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.183 | * 0058 | * - | * Rel-16 | * B | * eIMSVideo | * revised |
| * C1-200911 | * Use precondition for CRS when terminating UE supports or requires precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.183 | * 0058 | * 1 | * Rel-16 | * B | * eIMSVideo | * revised |
| * C1-201047 | * Use precondition for CRS when terminating UE supports or requires precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.183 | * 0058 | * 2 | * Rel-16 | * B | * eIMSVideo | * postponed |
| * C1-200490 | * Use precondition for CRS when network disables precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.183 | * 0059 | * - | * Rel-16 | * B | * eIMSVideo | * withdrawn |
| * C1-200491 | * Use precondition for CRS when terminating UE supports or requires precondition | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.183 | * 0060 | * - | * Rel-16 | * B | * eIMSVideo | * withdrawn |
| * C1-200670 | * CRS interactsions with MuD and MiD | * Orange / Mariusz | * 24.183 | * 0061 | * - | * Rel-16 | * B | * MuD | * revised |
| * C1-200953 | * CRS interactsions with MuD and MiD | * Orange / Mariusz | * 24.183 | * 0061 | * 1 | * Rel-16 | * B | * MuD | * agreed |
| * C1-200772 | * Correction in IMS\_Registration\_handling policy about how UE should deregister | * Mediatek Inc. | * 24.229 | * 6404 | * 5 | * Rel-16 | * - | * IMSProtoc16, 5GProtoc16 | * noted |
| * C1-200353 | * No impact from SBA on main body | * Nokia, Nokia Shanghai Bell, Ericsson | * 24.229 | * 6408 | * - | * Rel-16 | * F | * eIMS5G\_SBA | * postponed |
| * C1-200365 | * SDP profile update to support FLUS | * Ericsson / Nevenka | * 24.229 | * 6409 | * - | * Rel-16 | * B | * TEI16 | * agreed |
| * C1-200425 | * Correct reference | * BlackBerry UK Ltd. | * 24.229 | * 6410 | * - | * Rel-16 | * B | * 5WWC | * revised |
| * C1-200779 | * Correct reference | * BlackBerry UK Ltd. | * 24.229 | * 6410 | * 1 | * Rel-16 | * B | * 5WWC | * agreed |
| * C1-200625 | * Location information; mid-call access change | * Ericsson, Deutsche Telekom /Jörgen | * 24.229 | * 6411 | * - | * Rel-16 | * B | * IMSProtoc16 | * revised |
| * C1-200963 | * Location information; mid-call access change | * Ericsson, Deutsche Telekom /Jörgen | * 24.229 | * 6411 | * 1 | * Rel-16 | * B | * IMSProtoc16 | * postponed |
| * C1-200659 | * Correction of P-Associated-URI handling | * Ericsson /Jörgen | * 24.229 | * 6412 | * - | * Rel-16 | * F | * IMSProtoc16 | * agreed |
| * C1-200684 | * UAC for MO-IMS registration related signalling EN resolution | * NTT DOCOMO INC. | * 24.229 | * 6413 | * - | * Rel-16 | * F | * IMSProtoc16, 5GProtoc16 | * postponed |
| * C1-200674 | * SRVCC from E-UTRAN to GERAN/UTRAN when IMS voice call is initiated in 5GS | * Ericsson / Ivo | * 24.237 | * 1298 | * - | * Rel-16 | * F | * TEI16 | * revised |
| * C1-200941 | * SRVCC from E-UTRAN to GERAN/UTRAN when IMS voice call is initiated in 5GS | * Ericsson / Ivo | * 24.237 | * 1298 | * 1 | * Rel-16 | * F | * TEI16 | * postponed |
| * C1-200358 | * Correcting SIP related terminology | * Ericsson / Nevenka | * 24.281 | * 0089 | * - | * Rel-16 | * F | * MCProtoc16 | * agreed |
| * C1-200766 | * File distribution over MBMS - signalling control | * ENENSYS | * 24.282 | * 0093 | * 2 | * Rel-16 | * B | * eMCData2 | * postponed |
| * C1-200359 | * Correcting SIP related terminology | * Ericsson / Nevenka | * 24.282 | * 0099 | * - | * Rel-16 | * F | * MCProtoc16 | * agreed |
| * C1-200381 | * Correct reference in 8.3.2.6 | * FirstNet / Mike | * 24.282 | * 0100 | * - | * Rel-16 | * F | * enh2MCPTT-CT | * revised |
| * C1-200955 | * Correct reference in 8.3.2.6 | * FirstNet / Mike | * 24.282 | * 0100 | * 1 | * Rel-16 | * F | * enh2MCPTT-CT | * agreed |
| * C1-200412 | * IP Connectivity | * Kontron Transportation | * 24.282 | * 0101 | * - | * Rel-16 | * B | * MONASTERY2 | * revised |
| * C1-201022 | * IP Connectivity | * Kontron Transportation | * 24.282 | * 0101 | * 1 | * Rel-16 | * B | * MONASTERY2 | * agreed |
| * C1-200447 | * Key download procedrue for MCData | * Samsung / Sapan | * 24.282 | * 0102 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200798 | * Key download procedrue for MCData | * Samsung / Sapan | * 24.282 | * 0102 | * 1 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200448 | * Retrieval of stored object | * AT&T, Samsung | * 24.282 | * 0103 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200544 | * Retrieval of stored object | * AT&T, Samsung | * 24.282 | * 0103 | * 1 | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200846 | * Retrieval of stored object | * AT&T, Samsung | * 24.282 | * 0103 | * 2 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200473 | * Search for Objects in MCData message store | * AT&T, Samsung | * 24.282 | * 0104 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200548 | * Search for Objects in MCData message store | * AT&T, Samsung | * 24.282 | * 0104 | * 1 | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200860 | * Search for Objects in MCData message store | * AT&T, Samsung | * 24.282 | * 0104 | * 2 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200474 | * Update Object(s) in MCData message store | * AT&T, Samsung | * 24.282 | * 0105 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200550 | * Update Object(s) in MCData message store | * AT&T, Samsung | * 24.282 | * 0105 | * 1 | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200857 | * Update Object(s) in MCData message store | * AT&T, Samsung | * 24.282 | * 0105 | * 2 | * Rel-16 | * B | * eMCData2 | * withdrawn |
| * C1-200858 | * Update Object(s) in MCData message store | * AT&T, Samsung | * 24.282 | * 0105 | * 3 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200475 | * Delete Stored Object(s) in MCData message store | * AT&T, Samsung | * 24.282 | * 0106 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200856 | * Delete Stored Object(s) in MCData message store | * AT&T, Samsung | * 24.282 | * 0106 | * 1 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200531 | * Add Message Store Client subclause | * AT&T, Samsung | * 24.282 | * 0107 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200848 | * Add Message Store Client subclause | * AT&T, Samsung | * 24.282 | * 0107 | * 1 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200539 | * Copy stored object(s) and-or folder(s) | * AT&T, Samsung | * 24.282 | * 0108 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200863 | * Copy stored object(s) and-or folder(s) | * AT&T, Samsung | * 24.282 | * 0108 | * 1 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200540 | * Creating new folder | * AT&T, Samsung | * 24.282 | * 0109 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200864 | * Creating new folder | * AT&T, Samsung | * 24.282 | * 0109 | * 1 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200541 | * Delete folder | * AT&T, Samsung | * 24.282 | * 0110 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200866 | * Delete folder | * AT&T, Samsung | * 24.282 | * 0110 | * 1 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200542 | * Move object(s) and folder(s) | * AT&T, Samsung | * 24.282 | * 0111 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200867 | * Move object(s) and folder(s) | * AT&T, Samsung | * 24.282 | * 0111 | * 1 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200543 | * Search for Folders in MCData message store | * AT&T, Samsung | * 24.282 | * 0112 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200869 | * Search for Folders in MCData message store | * AT&T, Samsung | * 24.282 | * 0112 | * 1 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200705 | * Move the stored object to destination folder | * Samsung Electronics Co., Ltd | * 24.282 | * 0113 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200800 | * Move the stored object to destination folder | * Samsung Electronics, AT&T | * 24.282 | * 0113 | * 1 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200711 | * Upload the objects to the MCData message store | * Samsung, AT&T | * 24.282 | * 0114 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200804 | * Upload the objects to the MCData message store | * Samsung, AT&T | * 24.282 | * 0114 | * 1 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200714 | * Accessing the absolute URI associated with the media storage function | * Samsung | * 24.282 | * 0115 | * - | * Rel-16 | * C | * eMCData2 | * revised |
| * C1-200803 | * Accessing the absolute URI associated with the media storage function | * Samsung | * 24.282 | * 0115 | * 1 | * Rel-16 | * C | * eMCData2 | * agreed |
| * C1-200715 | * Corrections to TDC2 and TDC3 timer handling | * Samsung | * 24.282 | * 0116 | * - | * Rel-16 | * F | * eMCData2 | * revised |
| * C1-200805 | * Corrections to TDC2 and TDC3 timer handling | * Samsung | * 24.282 | * 0116 | * 1 | * Rel-16 | * F | * MCProtoc16 | * agreed |
| * C1-200716 | * The pre-establshed session modification for MCData | * Samsung | * 24.282 | * 0117 | * - | * Rel-16 | * B | * eMCData2 | * revised |
| * C1-200806 | * The pre-establshed session modification for MCData | * Samsung | * 24.282 | * 0117 | * 1 | * Rel-16 | * B | * eMCData2 | * agreed |
| * C1-200289 | * PDU session ID usage when the UE is a 5G-RG and requests establishment of a PDN connection as a user-plane resource of a MA PDU session | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.301 | * 3326 | * - | * Rel-16 | * B | * ATSSS, 5WWC | * revised |
| * C1-200930 | * PDU session ID usage when the UE is a 5G-RG and requests establishment of a PDN connection as a user-plane resource of a MA PDU session | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.301 | * 3326 | * 1 | * Rel-16 | * B | * ATSSS, 5WWC | * agreed |
| * C1-200322 | * Factoring in T3346 during access to RLOS | * Samsung, Qualcomm Incorporated, Ericsson, Nokia, Nokia Shanghai Bell | * 24.301 | * 3327 | * - | * Rel-16 | * F | * PARLOS | * revised |
| * C1-200793 | * Factoring in T3346 during access to RLOS | * Samsung, Qualcomm Incorporated, Ericsson, Nokia, Nokia Shanghai Bell | * 24.301 | * 3327 | * 1 | * Rel-16 | * F | * PARLOS | * agreed |
| * C1-200342 | * UE radio capability ID assignment via GUTI reallocation procedure | * Qualcomm Incorporated / Lena | * 24.301 | * 3328 | * - | * Rel-16 | * B | * RACS | * revised |
| * C1-200841 | * UE radio capability ID assignment via GUTI reallocation procedure | * Qualcomm Incorporated / Lena | * 24.301 | * 3328 | * 1 | * Rel-16 | * B | * RACS | * agreed |
| * C1-200347 | * UE radio capability ID deletion upon Version ID change | * Qualcomm Incorporated / Lena | * 24.301 | * 3329 | * - | * Rel-16 | * B | * RACS | * revised |
| * C1-200843 | * UE radio capability ID deletion upon Version ID change | * Qualcomm Incorporated / Lena | * 24.301 | * 3329 | * 1 | * Rel-16 | * B | * RACS | * agreed |
| * C1-200351 | * Removal of EN and additional abnormal case for cause #31 | * Samsung/Anikethan | * 24.301 | * 3330 | * - | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-200861 | * Removal of EN and additional abnormal case for cause #31 | * Samsung/Anikethan | * 24.301 | * 3330 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-201026 | * Removal of EN and additional abnormal case for cause #31 | * Samsung/Anikethan | * 24.301 | * 3330 | * 2 | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200355 | * Applicability of UE specific DRX Parameter for NB-S1 mode Indicator | * Vodafone GmbH | * 24.301 | * 3331 | * - | * Rel-16 | * B | * 5G\_CIoT | * revised |
| * C1-201007 | * Applicability of UE specific DRX Parameter for NB-S1 mode Indicator | * Vodafone GmbH | * 24.301 | * 3331 | * 1 | * Rel-16 | * B | * 5G\_CIoT | * reserved |
| * C1-200368 | * Addition of MT-EDT support indication | * Ericsson, Qualcomm Incorporated, OPPO / Mikael | * 24.301 | * 3332 | * - | * Rel-16 | * B | * TEI16, 5G\_CIoT | * revised |
| * C1-200892 | * Addition of MT-EDT support indication | * Ericsson, Qualcomm Incorporated, OPPO / Mikael | * 24.301 | * 3332 | * 1 | * Rel-16 | * B | * TEI16, 5G\_CIoT | * revised |
| * C1-200976 | * Addition of MT-EDT support indication | * Ericsson, Qualcomm Incorporated, OPPO / Mikael | * 24.301 | * 3332 | * 2 | * Rel-16 | * B | * TEI16, 5G\_CIoT | * revised |
| * C1-201021 | * Addition of MT-EDT support indication | * Ericsson, Qualcomm Incorporated, OPPO / Mikael | * 24.301 | * 3332 | * 3 | * Rel-16 | * B | * TEI16, 5G\_CIoT | * agreed |
| * C1-200476 | * Support of restriction on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * 24.301 | * 3333 | * - | * Rel-16 | * B | * PARLOS | * revised |
| * C1-200814 | * Support of restriction on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * 24.301 | * 3333 | * 1 | * Rel-16 | * B | * PARLOS | * agreed |
| * C1-200479 | * Authentication and security handling for RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * 24.301 | * 3334 | * - | * Rel-16 | * B | * PARLOS | * revised |
| * C1-200817 | * Authentication and security handling for RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * 24.301 | * 3334 | * 1 | * Rel-16 | * B | * PARLOS | * agreed |
| * C1-200666 | * Service gap control timer corrections | * Ericsson /kaj | * 24.301 | * 3335 | * - | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200722 | * UE behaviour upon receipt of a UE radio capability ID deletion indication | * Nokia, Nokia Shanghai Bell | * 24.301 | * 3336 | * - | * Rel-16 | * F | * RACS | * agreed |
| * C1-200727 | * UE radio capability information storage not needed for RACS | * Nokia, Nokia Shanghai Bell | * 24.301 | * 3337 | * - | * Rel-16 | * F | * RACS | * revised |
| * C1-200968 | * UE radio capability information storage not needed for RACS | * Nokia, Nokia Shanghai Bell | * 24.301 | * 3337 | * 1 | * Rel-16 | * F | * RACS | * agreed |
| * C1-200748 | * Detach before RLOS and Emergency Attach | * MediaTek / Marko | * 24.301 | * 3338 | * - | * Rel-16 | * F | * PARLOS | * revised |
| * C1-201029 | * Detach before RLOS and Emergency Attach | * MediaTek / Marko | * 24.301 | * 3338 | * 1 | * Rel-16 | * F | * PARLOS, TEI16 | * agreed |
| * C1-200343 | * Finalizing provisioning of manufacturer-assigned UE radio capability IDs at the UE | * Qualcomm Incorporated / Lena | * 24.368 | * 0045 | * - | * Rel-16 | * C | * RACS | * agreed |
| * C1-200478 | * NAS configuration on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * 24.368 | * 0046 | * - | * Rel-16 | * B | * PARLOS | * revised |
| * C1-200816 | * NAS configuration on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * 24.368 | * 0046 | * 1 | * Rel-16 | * B | * PARLOS | * revised |
| * C1-200987 | * NAS configuration on access to RLOS | * Nokia, Nokia Shanghai Bell /Jennifer | * 24.368 | * 0046 | * 2 | * Rel-16 | * B | * PARLOS | * agreed |
| * C1-200594 | * Adding reference to TS 24.501 for exception data reporting | * Samsung/Mahmoud | * 24.368 | * 0047 | * - | * Rel-16 | * F | * 5G\_CIoT | * merged |
| * C1-200773 | * MO exception data reporting for NB-IoT in 5G | * DOCOMO Communications Lab., Ericsson | * 24.368 | * 0048 | * - | * Rel-16 | * C | * 5G\_CIoT | * revised |
| * C1-200917 | * MO exception data reporting for NB-IoT in 5G | * DOCOMO Communications Lab., Ericsson | * 24.368 | * 0048 | * 1 | * Rel-16 | * C | * 5G\_CIoT | * agreed |
| * C1-200410 | * Automatic group affiliation and deaffiliation based on location or functional alias | * Kontron TransportationS, Nokia, Nokia Shanghai Bell | * 24.379 | * 0541 | * 3 | * Rel-16 | * B | * MONASTERY2 | * agreed |
| * C1-200357 | * Correcting SIP related terminology | * Ericsson / Nevenka | * 24.379 | * 0543 | * - | * Rel-16 | * F | * MCProtoc16 | * agreed |
| * C1-200374 | * Affiliation in a regroup | * FirstNet / Mike | * 24.379 | * 0544 | * - | * Rel-16 | * F | * enh2MCPTT-CT | * revised |
| * C1-200949 | * Affiliation in a regroup | * FirstNet / Mike | * 24.379 | * 0544 | * 1 | * Rel-16 | * F | * enh2MCPTT-CT | * agreed |
| * C1-200375 | * Ambiguity of location information in 6.3.2.1.4 | * FirstNet / Mike | * 24.379 | * 0545 | * - | * Rel-16 | * F | * enh2MCPTT-CT | * withdrawn |
| * C1-200376 | * Calling party location | * FirstNet / Mike | * 24.379 | * 0546 | * - | * Rel-16 | * F | * enh2MCPTT-CT | * withdrawn |
| * C1-200377 | * Check for controlling function identity in 10.1.1.3.1.1 | * FirstNet / Mike | * 24.379 | * 0547 | * - | * Rel-16 | * F | * enh2MCPTT-CT | * revised |
| * C1-200952 | * Check for controlling function identity in 10.1.1.3.1.1 | * FirstNet / Mike | * 24.379 | * 0547 | * 1 | * Rel-16 | * F | * enh2MCPTT-CT | * agreed |
| * C1-200378 | * Check for groups that are already regrouped | * FirstNet / Mike | * 24.379 | * 0548 | * - | * Rel-16 | * F | * enh2MCPTT-CT | * revised |
| * C1-200956 | * Check for groups that are already regrouped | * FirstNet / Mike | * 24.379 | * 0548 | * 1 | * Rel-16 | * F | * enh2MCPTT-CT | * agreed |
| * C1-200379 | * Correct clause reference in 11.1.1.3.1.2 | * FirstNet / Mike | * 24.379 | * 0549 | * - | * Rel-16 | * D | * enh2MCPTT-CT | * revised |
| * C1-200954 | * Correct clause reference in 11.1.1.3.1.2 | * FirstNet / Mike | * 24.379 | * 0549 | * 1 | * Rel-16 | * F | * enh2MCPTT-CT | * agreed |
| * C1-200380 | * Missing client procedures for preconfigured regroup | * FirstNet / Mike | * 24.379 | * 0550 | * - | * Rel-16 | * F | * enh2MCPTT-CT | * revised |
| * C1-200957 | * Missing client procedures for preconfigured regroup | * FirstNet / Mike | * 24.379 | * 0550 | * 1 | * Rel-16 | * F | * enh2MCPTT-CT | * revised |
| * C1-200977 | * Missing client procedures for preconfigured regroup | * FirstNet / Mike | * 24.379 | * 0550 | * 2 | * Rel-16 | * F | * enh2MCPTT-CT | * agreed |
| * C1-200751 | * Support of functional alias in first-to-answer calls | * Nokia, Nokia Shanghai Bell | * 24.379 | * 0551 | * - | * Rel-16 | * B | * MONASTERY2 | * revised |
| * C1-200982 | * Support of functional alias in first-to-answer calls | * Nokia, Nokia Shanghai Bell | * 24.379 | * 0551 | * 1 | * Rel-16 | * B | * MONASTERY2 | * agreed |
| * C1-200753 | * Update service authorization procedures to support limiting the number of authorized clients per MCPTT user | * Nokia, Nokia Shanghai Bell | * 24.379 | * 0552 | * - | * Rel-16 | * B | * MONASTERY2 | * revised |
| * C1-200983 | * Update service authorization procedures to support limiting the number of authorized clients per MCPTT user | * Nokia, Nokia Shanghai Bell | * 24.379 | * 0552 | * 1 | * Rel-16 | * B | * MONASTERY2 | * revised |
| * C1-201056 | * Update service authorization procedures to support limiting the number of authorized clients per MCPTT user | * Nokia, Nokia Shanghai Bell | * 24.379 | * 0552 | * 2 | * Rel-16 | * B | * MONASTERY2 | * agreed |
| * C1-200409 | * Automatic group affiliation and deaffiliation based on location or functional alias | * Kontron Transportation, Nokia, Nokia Shanghai Bell | * 24.483 | * 0064 | * 3 | * Rel-16 | * B | * MONASTERY2 | * agreed |
| * C1-200712 | * Included absolute URI associated with the media storage function of MCData content server | * Samsung | * 24.483 | * 0066 | * - | * Rel-16 | * C | * eMCData2 | * revised |
| * C1-200801 | * Included absolute URI associated with the media storage function of MCData content server | * Samsung | * 24.483 | * 0066 | * 1 | * Rel-16 | * C | * eMCData2 | * agreed |
| * C1-200408 | * Automatic group affiliation and deaffiliation based on location or functional alias | * Kontron Transportation, Nokia, Nokia Shanghai Bell | * 24.484 | * 0132 | * 3 | * Rel-16 | * B | * MONASTERY2 | * revised |
| * C1-200886 | * Automatic group affiliation and deaffiliation based on location or functional alias | * Kontron Transportation, Nokia, Nokia Shanghai Bell | * 24.484 | * 0132 | * 4 | * Rel-16 | * B | * MONASTERY2 | * agreed |
| * C1-200713 | * Included absolute URI associated with the media storage function of MCData content server | * Samsung | * 24.484 | * 0135 | * - | * Rel-16 | * C | * eMCData2 | * revised |
| * C1-200802 | * Included absolute URI associated with the media storage function of MCData content server | * Samsung | * 24.484 | * 0135 | * 1 | * Rel-16 | * C | * eMCData2 | * agreed |
| * C1-200752 | * Update service configuration to support limiting the number of authorized clients per MCPTT user | * Nokia, Nokia Shanghai Bell | * 24.484 | * 0136 | * - | * Rel-16 | * B | * MONASTERY2 | * postponed |
| * C1-200683 | * NW slice authentication and authorization failure and revocation | * Ericsson /kaj | * 24.501 | * 1533 | * 5 | * Rel-16 | * C | * eNS | * revised |
| * C1-201055 | * NW slice authentication and authorization failure and revocation | * Ericsson /kaj | * 24.501 | * 1533 | * 6 | * Rel-16 | * C | * eNS | * agreed |
| * C1-200516 | * Updates for Manual CAG selection | * Huawei, HiSilicon / Vishnu | * 24.501 | * 1554 | * 5 | * Rel-16 | * F | * Vertical\_LAN | * merged |
| * C1-200688 | * CAG information towards the lower layers for paging | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1567 | * 2 | * Rel-16 | * B | * Vertical\_LAN | * agreed |
| * C1-200305 | * PDU session handling for N5CW device | * Motorola Mobility, Lenovo | * 24.501 | * 1641 | * 4 | * Rel-16 | * B | * 5WWC | * revised |
| * C1-200991 | * PDU session handling for N5CW device | * Motorola Mobility, Lenovo | * 24.501 | * 1641 | * 5 | * Rel-16 | * B | * 5WWC | * agreed |
| * C1-200419 | * Handling of user-plane resources for NB-IoT UEs having at least two PDU sessions | * Qualcomm Incorporated, Ericsson / Amer | * 24.501 | * 1672 | * 2 | * Rel-16 | * C | * 5G\_CIoT | * revised |
| * C1-200853 | * Handling of user-plane resources for NB-IoT UEs having at least two PDU sessions | * Qualcomm Incorporated, Ericsson / Amer | * 24.501 | * 1672 | * 3 | * Rel-16 | * C | * 5G\_CIoT | * revised |
| * C1-201054 | * Handling of user-plane resources for NB-IoT UEs having at least two PDU sessions | * Qualcomm Incorporated, Ericsson / Amer | * 24.501 | * 1672 | * 4 | * Rel-16 | * C | * 5G\_CIoT | * agreed |
| * C1-200276 | * Secondary authentication and W-AGF acting on behalf of FN-RG | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.501 | * 1689 | * 2 | * Rel-16 | * C | * 5WWC | * agreed |
| * C1-200495 | * Enhancement on CPSR for CIoT CP data transport | * Huawei, HiSilicon, Vodafone, ZTE, China Mobile, China Telecom, CATT/Lin | * 24.501 | * 1701 | * 2 | * Rel-16 | * C | * 5G\_CIoT | * revised |
| * C1-200893 | * Enhancement on CPSR for CIoT CP data transport | * Huawei, HiSilicon, Vodafone, ZTE, China Mobile, China Telecom, CATT/Lin | * 24.501 | * 1701 | * 3 | * Rel-16 | * C | * 5G\_CIoT | * postponed |
| * C1-200675 | * CIoT user data container in CPSR message not forwarded | * Ericsson /kaj | * 24.501 | * 1743 | * 2 | * Rel-16 | * C | * 5G\_CIoT | * postponed |
| * C1-200332 | * Handling of unsupported SSC mode | * Qualcomm Incorporated / Lena | * 24.501 | * 1794 | * 2 | * Rel-16 | * F | * 5GProtoc16 | * agreed |
| * C1-200515 | * Deletion of the rejected NSSAI for the current registration area | * Huawei, HiSilicon/Lin | * 24.501 | * 1812 | * 2 | * Rel-16 | * F | * 5GProtoc16 | * agreed |
| * C1-200719 | * Corrections in specifying reasons for errors | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1834 | * 2 | * Rel-16 | * D | * 5GProtoc16 | * agreed |
| * C1-200631 | * S-NSSAI as a mandatory parameter to support interworking with 5GS | * MediaTek Inc., Ericsson / JJ | * 24.501 | * 1836 | * 2 | * Rel-16 | * F | * 5GProtoc16 | * agreed |
| * C1-200680 | * Reject non-emergency PDU session request attempt while registered for emergency services | * Ericsson /kaj | * 24.501 | * 1845 | * 2 | * Rel-16 | * F | * 5GProtoc16 | * agreed |
| * C1-200678 | * Service area restrictions, case missing for when UE is out of allowed tracking area list and RA | * Ericsson /kaj | * 24.501 | * 1853 | * 3 | * Rel-16 | * F | * 5GProtoc16 | * agreed |
| * C1-200299 | * 5GSM capabilities for MA PDU session | * Motorola Mobility, Lenovo | * 24.501 | * 1860 | * 1 | * Rel-16 | * F | * ATSSS | * revised |
| * C1-200989 | * 5GSM capabilities for MA PDU session | * Motorola Mobility, Lenovo | * 24.501 | * 1860 | * 2 | * Rel-16 | * F | * ATSSS | * agreed |
| * C1-200301 | * MA PDU session is not supported | * Motorola Mobility, Lenovo | * 24.501 | * 1862 | * 1 | * Rel-16 | * B | * ATSSS | * withdrawn |
| * C1-200303 | * MA PDU session is not supported | * Motorola Mobility, Lenovo | * 24.501 | * 1862 | * 2 | * Rel-16 | * B | * ATSSS | * revised |
| * C1-200990 | * MA PDU session is not supported | * Motorola Mobility, Lenovo | * 24.501 | * 1862 | * 3 | * Rel-16 | * B | * ATSSS | * revised |
| * C1-201044 | * MA PDU session is not supported | * Motorola Mobility, Lenovo | * 24.501 | * 1862 | * 4 | * Rel-16 | * B | * ATSSS | * agreed |
| * C1-200316 | * CAG Information in Registration Reject | * InterDigital / Atle | * 24.501 | * 1868 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200318 | * Cleanups on introduction of pending NSSAI | * InterDigital / Atle | * 24.501 | * 1869 | * 1 | * Rel-16 | * F | * eNS | * revised |
| * C1-200797 | * Cleanups on introduction of pending NSSAI | * InterDigital / Atle | * 24.501 | * 1869 | * 2 | * Rel-16 | * F | * eNS | * agreed |
| * C1-200278 | * SUCI used by W-AGF acting on behalf of FN-RG | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.501 | * 1870 | * - | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200279 | * Resolving editor's note on W-AGF acting on behalf of FN-RG not using the "null integrity protection algorithm" 5G-IA0 | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.501 | * 1871 | * - | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200280 | * Resolving editor's note on service area restrictions in case of FN-BRG | * Ericsson / Ivo | * 24.501 | * 1872 | * - | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200281 | * Resolving editor's note in forbidden wireline access area | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.501 | * 1873 | * - | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200282 | * Wireline 5G access network and wireline 5G access clean up | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.501 | * 1874 | * - | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200283 | * PEI clean up | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.501 | * 1875 | * - | * Rel-16 | * F | * 5WWC | * revised |
| * C1-200925 | * PEI clean up | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.501 | * 1875 | * 1 | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200284 | * Alignment for stop of enforcement of mobility restrictions in 5G-RG and W-AGF acting on behalf of FN-CRG | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.501 | * 1876 | * - | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200285 | * Introduction of GCI and GLI | * Ericsson, Nokia, Nokia Shanghai Bell / Ivo | * 24.501 | * 1877 | * - | * Rel-16 | * B | * 5WWC | * revised |
| * C1-200926 | * Introduction of GCI and GLI | * Ericsson, Nokia, Nokia Shanghai Bell / Ivo | * 24.501 | * 1877 | * 1 | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200290 | * Always-On PDU session and URLLC | * Ericsson / Ivo | * 24.501 | * 1878 | * - | * Rel-16 | * F | * 5G\_URLLC | * revised |
| * C1-200931 | * Always-On PDU session and URLLC | * Ericsson / Ivo | * 24.501 | * 1878 | * 1 | * Rel-16 | * F | * 5G\_URLLC | * agreed |
| * C1-200291 | * CAG information list storage | * Ericsson, NTT Docomo, MediaTek, Nokia, Nokia Shanghai Bell / Ivo | * 24.501 | * 1879 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200932 | * CAG information list storage | * Ericsson, NTT Docomo, MediaTek, Nokia, Nokia Shanghai Bell / Ivo | * 24.501 | * 1879 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200311 | * CAG-ID not provided to lower layers during NAS signalling connection establishment | * Ericsson / Ivo | * 24.501 | * 1880 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200937 | * CAG-ID not provided to lower layers during NAS signalling connection establishment | * Ericsson / Ivo | * 24.501 | * 1880 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200328 | * Removal of EN and additional abnormal case for cause #31 | * Samsung/Anikethan | * 24.501 | * 1881 | * - | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-200862 | * Removal of EN and additional abnormal case for cause #31 | * Samsung/Anikethan | * 24.501 | * 1881 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-201025 | * Removal of EN and additional abnormal case for cause #31 | * Samsung/Anikethan | * 24.501 | * 1881 | * 2 | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200333 | * Removal of Editor’s note on the use of the NOTIFICATION message in SNPNs | * Qualcomm Incorporated / Lena | * 24.501 | * 1882 | * - | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200337 | * Removal of the requirement for NAS to pass the selected CAG-ID to the lower layers | * Qualcomm Incorporated / Lena | * 24.501 | * 1883 | * - | * Rel-16 | * F | * Vertical\_LAN | * merged |
| * C1-200338 | * Including CAG information list in REGISTRATION ACCEPT message | * Qualcomm Incorporated / Lena | * 24.501 | * 1884 | * - | * Rel-16 | * B | * Vertical\_LAN | * revised |
| * C1-200840 | * Including CAG information list in REGISTRATION ACCEPT message | * Qualcomm Incorporated / Lena | * 24.501 | * 1884 | * 1 | * Rel-16 | * B | * Vertical\_LAN | * revised |
| * C1-200985 | * Including CAG information list in REGISTRATION ACCEPT message | * Qualcomm Incorporated / Lena | * 24.501 | * 1884 | * 2 | * Rel-16 | * B | * Vertical\_LAN | * agreed |
| * C1-200339 | * Update of text on time synchronization | * Qualcomm Incorporated / Lena | * 24.501 | * 1885 | * - | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200344 | * Removal of Editor’s note on applicability of RACS to SNPNs | * Qualcomm Incorporated / Lena | * 24.501 | * 1886 | * - | * Rel-16 | * F | * RACS | * agreed |
| * C1-200345 | * Finalizing the encoding of the UE radio capability ID | * Qualcomm Incorporated / Lena | * 24.501 | * 1887 | * - | * Rel-16 | * C | * RACS | * agreed |
| * C1-200346 | * UE radio capability ID deletion upon Version ID change | * Qualcomm Incorporated / Lena | * 24.501 | * 1888 | * - | * Rel-16 | * B | * RACS | * revised |
| * C1-200842 | * UE radio capability ID deletion upon Version ID change | * Qualcomm Incorporated, Nokia, Nokia Shanghai Bell | * 24.501 | * 1888 | * 1 | * Rel-16 | * B | * RACS | * agreed |
| * C1-200352 | * Handling of S-NSSAIs in the pending NSSAI | * LG Electronics / Sunhee | * 24.501 | * 1889 | * - | * Rel-16 | * B | * eNS | * revised |
| * C1-200813 | * Handling of S-NSSAIs in the pending NSSAI | * LG Electronics / Sunhee | * 24.501 | * 1889 | * 1 | * Rel-16 | * B | * eNS | * revised |
| * C1-201042 | * Handling of S-NSSAIs in the pending NSSAI | * LG Electronics / Sunhee | * 24.501 | * 1889 | * 2 | * Rel-16 | * B | * eNS | * agreed |
| * C1-200354 | * Correcting condition for Network Slice-Specific Authentication and Authorization | * Samsung Electronics Polska / Ricky | * 24.501 | * 1890 | * - | * Rel-16 | * F | * eNS | * merged |
| * C1-200383 | * Resolve Editor´s Notes on NB-N1 mode extended NAS timers for CE | * Ericsson / Mikael | * 24.501 | * 1891 | * - | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200384 | * Resolve Editor´s Notes on WB-N1 mode extended NAS timers for CE | * Ericsson / Mikael | * 24.501 | * 1892 | * - | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200392 | * Clarification on HPLMN S-NSSAI | * LG Electronics / Sunhee Kim | * 24.501 | * 1893 | * - | * Rel-16 | * F | * eNS | * revised |
| * C1-200830 | * Clarification on HPLMN S-NSSAI | * LG Electronics / Sunhee Kim | * 24.501 | * 1893 | * 1 | * Rel-16 | * F | * eNS | * agreed |
| * C1-200393 | * Adding NSSAA result indication into Network slicing indication IE of the CONFIGURATION UPDATE COMMAND message | * China Telecommunications | * 24.501 | * 1894 | * - | * Rel-16 | * F | * eNS | * postponed |
| * C1-200394 | * Adding NSSAA failed or revoked to 5GSM and 5GMM cause IE | * China Telecommunications | * 24.501 | * 1895 | * - | * Rel-16 | * F | * eNS | * postponed |
| * C1-200396 | * MA PDU session and one set of QoS parameters | * Ericsson / Ivo | * 24.501 | * 1896 | * - | * Rel-16 | * F | * ATSSS | * revised |
| * C1-200939 | * MA PDU session and one set of QoS parameters | * Ericsson / Ivo | * 24.501 | * 1896 | * 1 | * Rel-16 | * F | * ATSSS | * agreed |
| * C1-200397 | * "MO exception data" access category | * Ericsson / Ivo | * 24.501 | * 1897 | * - | * Rel-16 | * F | * 5G\_CIoT | * merged |
| * C1-200398 | * "CAG information list" preventing selection of any available and allowable PLMN | * Ericsson / Ivo | * 24.501 | * 1898 | * - | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200399 | * Update to registration procedure due to eNS | * vivo / Yanchao | * 24.501 | * 1899 | * - | * Rel-16 | * F | * eNS | * revised |
| * C1-200868 | * Update to registration procedure due to eNS | * vivo / Yanchao | * 24.501 | * 1899 | * 1 | * Rel-16 | * F | * eNS | * agreed |
| * C1-200400 | * Stop T3565 upon connection resumption | * vivo / Yanchao | * 24.501 | * 1900 | * - | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-200831 | * Stop T3565 upon connection resumption | * vivo / Yanchao | * 24.501 | * 1900 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200401 | * Definition of Rejected NSSAI due to the failed and revorked NSSAA | * vivo / Yanchao | * 24.501 | * 1901 | * - | * Rel-16 | * F | * eNS | * merged |
| * C1-200402 | * RACS not apply for non-3GPP access | * vivo / Yanchao | * 24.501 | * 1902 | * - | * Rel-16 | * F | * RACS | * revised |
| * C1-200829 | * RACS not apply for non-3GPP access | * vivo / Yanchao | * 24.501 | * 1902 | * 1 | * Rel-16 | * F | * RACS | * agreed |
| * C1-200404 | * Minor Correction to ATSSS container IE desciption | * China Mobile | * 24.501 | * 1903 | * - | * Rel-16 | * F | * ATSSS | * agreed |
| * C1-200405 | * Updating requirements and descriptions of NS for NSSAA | * China Mobile | * 24.501 | * 1904 | * - | * Rel-16 | * C | * eNS | * revised |
| * C1-201059 | * Updating requirements and descriptions of NS for NSSAA | * China Mobile | * 24.501 | * 1904 | * 1 | * Rel-16 | * C | * eNS | * reserved |
| * C1-200407 | * Clarification of T35xx timer during Network slice-specific authentication and authorization procedure | * LG Electronics / Sunhee Kim | * 24.501 | * 1905 | * - | * Rel-16 | * F | * eNS | * merged |
| * C1-200415 | * Network-requested PDU session release due no longer available S-NSSAI | * Motorola Mobility, Lenovo, China Mobile | * 24.501 | * 1906 | * - | * Rel-16 | * B | * eNS | * postponed |
| * C1-200418 | * Support for the signalling of the capability for receiving WUS assistance information | * Qualcomm Incorporated / Amer | * 24.501 | * 1907 | * - | * Rel-16 | * B | * 5G\_CIoT | * revised |
| * C1-200812 | * Support for the signalling of the capability for receiving WUS assistance information | * Qualcomm Incorporated / Amer | * 24.501 | * 1907 | * 1 | * Rel-16 | * B | * 5G\_CIoT | * revised |
| * C1-201050 | * Support for the signalling of the capability for receiving WUS assistance information | * Qualcomm Incorporated / Amer | * 24.501 | * 1907 | * 2 | * Rel-16 | * B | * 5G\_CIoT | * revised |
| * C1-201058 | * Support for the signalling of the capability for receiving WUS assistance information | * Qualcomm Incorporated / Amer | * 24.501 | * 1907 | * 3 | * Rel-16 | * B | * 5G\_CIoT | * agreed |
| * C1-200420 | * 5GSM congestion timers apply to data transfer over control plane | * Qualcomm Incorporated / Amer | * 24.501 | * 1908 | * - | * Rel-16 | * F | * 5G\_CIoT | * postponed |
| * C1-200421 | * Definition of a new access category for MO exception data | * Qualcomm Incorporated / Amer | * 24.501 | * 1909 | * - | * Rel-16 | * B | * 5G\_CIoT | * merged |
| * C1-200426 | * Enabling mobility with (emergency) sessions/connections between the (trusted) non-3GPP access network connected to the 5GCN and the E-UTRAN | * BlackBerry UK Ltd. | * 24.501 | * 1910 | * - | * Rel-16 | * F | * 5WWC | * revised |
| * C1-200780 | * Enabling mobility with (emergency) sessions/connections between the (trusted) non-3GPP access network connected to the 5GCN and the E-UTRAN | * BlackBerry UK Ltd. | * 24.501 | * 1910 | * 1 | * Rel-16 | * F | * 5WWC | * revised |
| * C1-200837 | * Enabling mobility with (emergency) sessions/connections between the (trusted) non-3GPP access network connected to the 5GCN and the E-UTRAN | * BlackBerry UK Ltd. | * 24.501 | * 1910 | * 2 | * Rel-16 | * F | * 5WWC | * revised |
| * C1-200945 | * Enabling mobility with (emergency) sessions/connections between the (trusted) non-3GPP access network connected to the 5GCN and the E-UTRAN | * BlackBerry UK Ltd. | * 24.501 | * 1910 | * 3 | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200427 | * Use registration message to inform the network when the SRVCC information changes | * BlackBerry UK Ltd. | * 24.501 | * 1911 | * - | * Rel-16 | * B | * 5G\_SRVCC | * revised |
| * C1-200811 | * Use registration message to inform the network when the SRVCC information changes | * BlackBerry UK Ltd. | * 24.501 | * 1911 | * 1 | * Rel-16 | * B | * 5G\_SRVCC | * withdrawn |
| * C1-200429 | * Deleting Editors note regarding indefinite wait at the UE for NSSAA completion | * ZTE | * 24.501 | * 1912 | * - | * Rel-16 | * C | * eNS | * revised |
| * C1-200998 | * Deleting Editors note regarding indefinite wait at the UE for NSSAA completion | * ZTE | * 24.501 | * 1912 | * 1 | * Rel-16 | * C | * eNS | * revised |
| * C1-201051 | * Deleting Editors note regarding indefinite wait at the UE for NSSAA completion | * ZTE | * 24.501 | * 1912 | * 2 | * Rel-16 | * C | * eNS | * postponed |
| * C1-200430 | * UE behaviour for other causes in the rejected NSSAI during deregistration procedure | * ZTE | * 24.501 | * 1913 | * - | * Rel-16 | * C | * eNS | * revised |
| * C1-200794 | * UE behaviour for other causes in the rejected NSSAI during deregistration procedure | * ZTE | * 24.501 | * 1913 | * 1 | * Rel-16 | * C | * eNS | * agreed |
| * C1-200431 | * Pending NSSAI update for the configured NSSAI in the CUC message | * ZTE | * 24.501 | * 1914 | * - | * Rel-16 | * C | * eNS | * revised |
| * C1-200790 | * Pending NSSAI update for the configured NSSAI in the CUC message | * ZTE | * 24.501 | * 1914 | * 1 | * Rel-16 | * C | * eNS | * agreed |
| * C1-200432 | * Cleanup for NSSAA message and coding | * ZTE | * 24.501 | * 1915 | * - | * Rel-16 | * F | * eNS | * revised |
| * C1-200791 | * Cleanup for NSSAA message and coding | * ZTE | * 24.501 | * 1915 | * 1 | * Rel-16 | * F | * eNS | * agreed |
| * C1-200433 | * Rejected NSSAI during the initial registration procedure | * ZTE | * 24.501 | * 1916 | * - | * Rel-16 | * F | * eNS | * revised |
| * C1-200795 | * Rejected NSSAI during the initial registration procedure | * ZTE | * 24.501 | * 1916 | * 1 | * Rel-16 | * F | * eNS | * agreed |
| * C1-200435 | * UE behaviour when T3447 running | * ZTE | * 24.501 | * 1917 | * - | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-200792 | * UE behaviour when T3447 running | * ZTE | * 24.501 | * 1917 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200436 | * PDU session release at the UE side | * ZTE, China Unicom, Ericsson | * 24.501 | * 1918 | * - | * Rel-16 | * C | * 5G\_SRVCC | * revised |
| * C1-200833 | * PDU session release | * ZTE, China Unicom, Ericsson | * 24.501 | * 1918 | * 1 | * Rel-16 | * C | * 5G\_SRVCC | * agreed |
| * C1-200454 | * ACS information via DHCP | * ZTE / Joy | * 24.501 | * 1919 | * - | * Rel-16 | * B | * 5WWC | * agreed |
| * C1-200458 | * Introduction of multi-access PDU connectivity service | * ZTE / Joy | * 24.501 | * 1920 | * - | * Rel-16 | * B | * ATSSS | * postponed |
| * C1-200462 | * Name of the rejected NSSAI cause values | * vivo | * 24.501 | * 1921 | * - | * Rel-16 | * D | * eNS | * revised |
| * C1-200922 | * Name of the rejected NSSAI cause values | * vivo, SHARP | * 24.501 | * 1921 | * 1 | * Rel-16 | * D | * eNS | * agreed |
| * C1-200463 | * Clarification of the cause of start of T3550 | * vivo | * 24.501 | * 1922 | * - | * Rel-16 | * F | * RACS | * agreed |
| * C1-200464 | * Clarification of forbidden TAI lists for SNPN | * vivo | * 24.501 | * 1923 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200834 | * Clarification of forbidden TAI lists for SNPN | * vivo | * 24.501 | * 1923 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200465 | * Deletion of all CAG IDs of a CAG cell for 5GMM cause #76 | * Huawei, HiSilicon / Vishnu | * 24.501 | * 1924 | * - | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200467 | * Removal of the indication of CAG-ID for N1 NAS signalling connection | * Huawei, HiSilicon / Vishnu | * 24.501 | * 1925 | * - | * Rel-16 | * F | * Vertical\_LAN | * merged |
| * C1-200470 | * Clarification of the rejected NSSAI cause value | * vivo | * 24.501 | * 1926 | * - | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200471 | * Removal of term CAG access control | * Huawei, HiSilicon / Vishnu | * 24.501 | * 1927 | * - | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200493 | * Definition alignment for UE-DS-TT residence time | * vivo | * 24.501 | * 1928 | * - | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200494 | * Prevention of indefinite wait for completion of the network slice-specific authentication and authorization procedure | * InterDigital / Atle | * 24.501 | * 1929 | * - | * Rel-16 | * B | * eNS | * withdrawn |
| * C1-200496 | * Ciphering and deciphering handling of CPSR message | * Huawei, HiSilicon/Lin | * 24.501 | * 1930 | * - | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200497 | * UE-requested user-plane resources release in NB-N1 mode | * Huawei, HiSilicon/Lin | * 24.501 | * 1931 | * - | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-200996 | * UE-requested user-plane resources release in NB-N1 mode | * Huawei, HiSilicon/Lin | * 24.501 | * 1931 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * postponed |
| * C1-200501 | * Truncated 5G-S-TMSI over NAS | * Huawei, HiSilicon/Lin | * 24.501 | * 1932 | * - | * Rel-16 | * C | * 5G\_CIoT | * revised |
| * C1-200895 | * Truncated 5G-S-TMSI over NAS | * Huawei, HiSilicon/Lin | * 24.501 | * 1932 | * 1 | * Rel-16 | * C | * 5G\_CIoT | * agreed |
| * C1-200502 | * AMF behavior on stop T3448 | * Huawei, HiSilicon/Lin | * 24.501 | * 1933 | * - | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200503 | * No SMS in payload container IE in CPSR message | * Huawei, HiSilicon/Lin | * 24.501 | * 1934 | * - | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-200894 | * No SMS in payload container IE in CPSR message | * Huawei, HiSilicon/Lin | * 24.501 | * 1934 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200504 | * Correction on 5GMM cause #74/#75 for no touching non-3GPP access | * Huawei, HiSilicon/Lin | * 24.501 | * 1935 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200896 | * Correction on 5GMM cause #74/#75 for no touching non-3GPP access | * Huawei, HiSilicon/Lin | * 24.501 | * 1935 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200505 | * 5GMM cause #72 not used in SNPN | * Huawei, HiSilicon/Lin | * 24.501 | * 1936 | * - | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200506 | * Correction on term "non-3GPP access" used in SNPN | * Huawei, HiSilicon/Lin | * 24.501 | * 1937 | * - | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200508 | * Reset the registration attempt counter for #76 in service reject | * Huawei, HiSilicon/Lin | * 24.501 | * 1938 | * - | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200509 | * Requested NSSAI creation from configured NSSAI excluding pending NSSA | * Huawei, HiSilicon/Lin | * 24.501 | * 1939 | * - | * Rel-16 | * F | * eNS | * not pursued |
| * C1-200510 | * Remove mobility restriction after NSSAA | * Huawei, HiSilicon/Lin | * 24.501 | * 1940 | * - | * Rel-16 | * F | * eNS | * merged |
| * C1-200511 | * ENs resolution for revoked or failed NSSAA | * Huawei, HiSilicon/Lin | * 24.501 | * 1941 | * - | * Rel-16 | * F | * eNS | * revised |
| * C1-200898 | * ENs resolution for revoked or failed NSSAA | * Huawei, HiSilicon/Lin | * 24.501 | * 1941 | * 1 | * Rel-16 | * F | * eNS | * agreed |
| * C1-200512 | * Consistent name for NSSAA | * Huawei, HiSilicon/Lin | * 24.501 | * 1942 | * - | * Rel-16 | * D | * eNS | * agreed |
| * C1-200514 | * No retry in 4G for PDU session type related 5GSM causes | * Huawei, HiSilicon/Lin | * 24.501 | * 1943 | * - | * Rel-16 | * F | * SINE\_5G | * agreed |
| * C1-200547 | * Correction on UE retry restriction on EPLMN | * China Telecom, Huawei, HiSilicon | * 24.501 | * 1944 | * - | * Rel-16 | * F | * SINE\_5G | * agreed |
| * C1-200549 | * Clarification on Public Network Integrated NPN in TS 24.501 | * China Telecom | * 24.501 | * 1945 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-201001 | * Clarification on Public Network Integrated NPN in TS 24.501 | * China Telecom | * 24.501 | * 1945 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200551 | * UE receives CAG information in SNPN access mode | * Huawei, HiSilicon/Cristina | * 24.501 | * 1946 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200999 | * UE receives CAG information in SNPN access mode | * Huawei, HiSilicon/Cristina | * 24.501 | * 1946 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200564 | * Establish PDU session to transfer port management information containers | * Huawei, HiSilicon/Cristina | * 24.501 | * 1947 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200855 | * Establish PDU session to transfer port management information containers | * Huawei, HiSilicon/Cristina | * 24.501 | * 1947 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200993 | * Establish PDU session to transfer port management information containers | * Huawei, HiSilicon/Cristina | * 24.501 | * 1947 | * 2 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200565 | * ATSSS Non-MPTCP traffic support | * Apple | * 24.501 | * 1948 | * - | * Rel-16 | * F | * ATSSS | * revised |
| * C1-200870 | * ATSSS Non-MPTCP traffic support | * Apple | * 24.501 | * 1948 | * 1 | * Rel-16 | * F | * ATSSS | * revised |
| * C1-201008 | * ATSSS Non-MPTCP traffic support | * Apple | * 24.501 | * 1948 | * 2 | * Rel-16 | * F | * ATSSS | * agreed |
| * C1-200571 | * Correction for the wrongly implemented CR1963r1 | * Huawei, HiSilicon/Cristina | * 24.501 | * 1949 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200997 | * Correction for the wrongly implemented CR1963r1 | * Huawei, HiSilicon/Cristina | * 24.501 | * 1949 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200572 | * EPS selection when the UE is deregistered due to NSSAA failure | * Samsung/Kundan | * 24.501 | * 1950 | * - | * Rel-16 | * F | * eNS | * postponed |
| * C1-200574 | * Handling of NSSAA at non suppoting AMF | * Samsung/Kundan | * 24.501 | * 1951 | * - | * Rel-16 | * F | * eNS | * postponed |
| * C1-200575 | * PDN connection establishment and NSSAA | * Samsung/Kundan | * 24.501 | * 1952 | * - | * Rel-16 | * F | * eNS | * postponed |
| * C1-200576 | * NSSAA revocation function | * Samsung/Kundan | * 24.501 | * 1953 | * - | * Rel-16 | * F | * eNS | * agreed |
| * C1-200577 | * Intersystem selection procedure when all allowed S-NSSAI are subject to NSSAA | * Samsung/Kundan | * 24.501 | * 1954 | * - | * Rel-16 | * F | * eNS | * postponed |
| * C1-200579 | * Correction related the rejected NSSAI due to the failed or revoked NSSAA | * SHARP | * 24.501 | * 1955 | * - | * Rel-16 | * F | * eNS | * revised |
| * C1-200883 | * Correction related the rejected NSSAI due to the failed or revoked NSSAA | * SHARP, NEC | * 24.501 | * 1955 | * 1 | * Rel-16 | * F | * eNS | * merged |
| * C1-200580 | * Stopping of T3513 after connection resume for user plane CIoT 5GS optimization | * Samsung/Mahmoud | * 24.501 | * 1956 | * - | * Rel-16 | * C | * 5G\_CIoT | * revised |
| * C1-200852 | * Stopping of T3513 after connection resume for user plane CIoT 5GS optimization | * Samsung/Mahmoud | * 24.501 | * 1956 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200581 | * Handling of manual CAG selection procedure | * Samsung/Kundan | * 24.501 | * 1957 | * - | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200582 | * Correction UE behaviour when the UE recives the pending NSSAI | * SHARP | * 24.501 | * 1958 | * - | * Rel-16 | * F | * eNS | * agreed |
| * C1-200583 | * 5G-GUTI reallocation after resume from 5GMM-IDLE mode with suspend indication due to paging | * Samsung/Mahmoud | * 24.501 | * 1959 | * - | * Rel-16 | * C | * 5G\_CIoT | * revised |
| * C1-200782 | * 5G-GUTI reallocation after resume from 5GMM-IDLE mode with suspend indication due to paging | * Samsung/Mahmoud | * 24.501 | * 1959 | * 1 | * Rel-16 | * C | * 5G\_CIoT | * postponed |
| * C1-200584 | * Correction related the rejected NSSAI | * SHARP | * 24.501 | * 1960 | * - | * Rel-16 | * D | * eNS | * merged |
| * C1-200585 | * Adding an editor’s note for suspend indication due to user plane CIoT 5GS optimization | * Samsung/Mahmoud | * 24.501 | * 1961 | * - | * Rel-16 | * C | * 5G\_CIoT | * revised |
| * C1-200783 | * Adding an editor’s note for suspend indication due to user plane CIoT 5GS optimization | * Samsung/Mahmoud | * 24.501 | * 1961 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200586 | * CAG only UE and Manual PLMN selection | * Samsung/Kundan | * 24.501 | * 1962 | * - | * Rel-16 | * F | * Vertical\_LAN | * merged |
| * C1-200587 | * Correlation of SNPN entry stored in ME and USIM | * Samsung/Kundan | * 24.501 | * 1963 | * - | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200589 | * Handling of a CAG UE at non supporting AMF | * Samsung/Kundan | * 24.501 | * 1964 | * - | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200591 | * Modification of the allowed CAG list | * Samsung/Kundan | * 24.501 | * 1965 | * - | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200592 | * Recovery from fallback for UEs using CP CIoT optimization | * Samsung/Mahmoud | * 24.501 | * 1966 | * - | * Rel-16 | * C | * 5G\_CIoT | * revised |
| * C1-200859 | * Recovery from fallback for UEs using CP CIoT optimization | * Samsung/Mahmoud | * 24.501 | * 1966 | * 1 | * Rel-16 | * C | * 5G\_CIoT | * agreed |
| * C1-200593 | * Service area restrictions for UEs using CIoT 5GS optimization | * Samsung/Mahmoud | * 24.501 | * 1967 | * - | * Rel-16 | * C | * 5G\_CIoT | * postponed |
| * C1-200595 | * Triggering service request procedure for V2X communication over PC5 interface | * LG Electronics / SangMin | * 24.501 | * 1968 | * - | * Rel-16 | * B | * eV2XARC | * agreed |
| * C1-200599 | * Handlig of PLMN specific NID | * Samsung/Kundan | * 24.501 | * 1969 | * - | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200600 | * Handling of LADN infotmation when the UE operating in SNPN access mode | * SHARP | * 24.501 | * 1970 | * - | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200602 | * Removal of the use of Service area list IE during NSSAA | * BEIJING SAMSUNG TELECOM R&D | * 24.501 | * 1971 | * - | * Rel-16 | * C | * eNS | * revised |
| * C1-200778 | * Removal of the use of Service area list IE during NSSAA | * BEIJING SAMSUNG TELECOM R&D | * 24.501 | * 1971 | * 1 | * Rel-16 | * C | * eNS | * agreed |
| * C1-200604 | * Re-initiation of NSSAA for a registered UE | * BEIJING SAMSUNG TELECOM R&D | * 24.501 | * 1972 | * - | * Rel-16 | * C | * eNS | * postponed |
| * C1-200605 | * Additional triggers for deletion of pending S-NSSAI | * Samsung/Anikethan | * 24.501 | * 1973 | * - | * Rel-16 | * F | * eNS | * agreed |
| * C1-200620 | * Dual-registration requirements for EHPLMNs | * Intel, Qualcomm Incorporated / Vivek | * 24.501 | * 1974 | * - | * Rel-16 | * F | * 5GProtoc16 | * postponed |
| * C1-200626 | * Indication of change in the use of enhanced coverage | * BEIJING SAMSUNG TELECOM R&D | * 24.501 | * 1975 | * - | * Rel-16 | * C | * 5G\_CIoT | * revised |
| * C1-200786 | * Indication of change in the use of enhanced coverage | * BEIJING SAMSUNG TELECOM R&D | * 24.501 | * 1975 | * 1 | * Rel-16 | * C | * 5G\_CIoT | * postponed |
| * C1-200627 | * Considering allowed NSSAI when establishing MA PDU session | * MediaTek Inc., ZTE / JJ | * 24.501 | * 1976 | * - | * Rel-16 | * B | * ATSSS | * revised |
| * C1-201012 | * Considering allowed NSSAI when establishing MA PDU session | * MediaTek Inc., ZTE / JJ | * 24.501 | * 1976 | * 1 | * Rel-16 | * B | * ATSSS | * agreed |
| * C1-200628 | * UE Handling upon receipt of PDU session release command | * MediaTek Inc. / JJ | * 24.501 | * 1977 | * - | * Rel-16 | * B | * ATSSS | * revised |
| * C1-201013 | * UE Handling upon receipt of PDU session release command | * MediaTek Inc. / JJ | * 24.501 | * 1977 | * 1 | * Rel-16 | * B | * ATSSS | * agreed |
| * C1-200658 | * Correction to UL CIoT user data container not routable or not allowed to be routed | * Ericsson /kaj | * 24.501 | * 1978 | * - | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-200915 | * Correction to UL CIoT user data container not routable or not allowed to be routed | * Ericsson /kaj | * 24.501 | * 1978 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200661 | * Single downlink data only indication and release of NAS signalling connection | * Ericsson /kaj | * 24.501 | * 1979 | * - | * Rel-16 | * C | * 5G\_CIoT | * revised |
| * C1-201034 | * Single downlink data only indication and release of NAS signalling connection | * Ericsson /kaj | * 24.501 | * 1979 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200663 | * PDU session status with control plane service request message | * Ericsson /KAJ | * 24.501 | * 1980 | * - | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-200914 | * PDU session status with control plane service request message | * Ericsson /KAJ | * 24.501 | * 1980 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-201038 | * PDU session status with control plane service request message | * Ericsson /KAJ | * 24.501 | * 1980 | * 2 | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200669 | * Service gap control, correction when to start service gap control timer in UE and NW | * Ericsson /kaj | * 24.501 | * 1981 | * - | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-200919 | * Service gap control, correction when to start service gap control timer in UE and NW | * Ericsson /kaj | * 24.501 | * 1981 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200672 | * Clarification of control plane service request message options | * Ericsson /kaj | * 24.501 | * 1982 | * - | * Rel-16 | * F | * 5G\_CIoT | * revised |
| * C1-200918 | * Clarification of control plane service request message options | * Ericsson /kaj | * 24.501 | * 1982 | * 1 | * Rel-16 | * F | * 5G\_CIoT | * agreed |
| * C1-200677 | * UAC updates for NB-IoT to include "MO exception data" | * DOCOMO Communications Lab. | * 24.501 | * 1983 | * - | * Rel-16 | * C | * 5G\_CIoT | * revised |
| * C1-200821 | * UAC updates for NB-IoT to include "MO exception data" | * DOCOMO Communications Lab., Ericsson, Qualcomm, Huawei, HiSilicon | * 24.501 | * 1983 | * 1 | * Rel-16 | * C | * 5G\_CIoT | * agreed |
| * C1-200679 | * Clarification on the use of exception data reporting | * DOCOMO Communications Lab. | * 24.501 | * 1984 | * - | * Rel-16 | * B | * 5G\_CIoT | * revised |
| * C1-200916 | * Clarification on the use of exception data reporting | * DOCOMO Communications Lab. | * 24.501 | * 1984 | * 1 | * Rel-16 | * B | * 5G\_CIoT | * agreed |
| * C1-200681 | * Update SNPN key differences | * Intel / Thomas | * 24.501 | * 1985 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200836 | * Update SNPN key differences | * Intel / Thomas | * 24.501 | * 1985 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200923 | * Update SNPN key differences | * Intel / Thomas | * 24.501 | * 1985 | * 2 | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-201010 | * Update SNPN key differences | * Intel / Thomas | * 24.501 | * 1985 | * 3 | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200682 | * MO exception data for NB-IoT in 5G | * DOCOMO Communications Lab., Ericsson | * 24.501 | * 1986 | * - | * Rel-16 | * C | * 5G\_CIoT | * withdrawn |
| * C1-200685 | * Setting the Always-on PDU session indication IE in the PDU SESSION ESTABLISHMENT ACCEPT message | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1987 | * - | * Rel-16 | * F | * 5G\_URLLC | * revised |
| * C1-200962 | * Setting the Always-on PDU session indication IE in the PDU SESSION ESTABLISHMENT ACCEPT message | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1987 | * 1 | * Rel-16 | * F | * 5G\_URLLC | * agreed |
| * C1-200689 | * No default S-NSSAI | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1988 | * - | * Rel-16 | * F | * eNS | * postponed |
| * C1-200690 | * Missing NSSAI storage for rejected NSSAI due to the failed or revoked network slice-specific authentication and authorization | * NEC | * 24.501 | * 1989 | * - | * Rel-16 | * F | * eNS | * merged |
| * C1-200691 | * Updating NSSAI status in AMF | * NEC | * 24.501 | * 1990 | * - | * Rel-16 | * F | * eNS | * postponed |
| * C1-200692 | * AMF updates the UE NSSAI storage after network slice-specific authentication and authorization is completed | * NEC | * 24.501 | * 1991 | * - | * Rel-16 | * F | * eNS | * agreed |
| * C1-200693 | * NSSAI status in AMF | * NEC | * 24.501 | * 1992 | * - | * Rel-16 | * F | * eNS | * postponed |
| * C1-200694 | * NSSAI storage at UE – pending NSSAI | * NEC | * 24.501 | * 1993 | * - | * Rel-16 | * B | * eNS | * postponed |
| * C1-200695 | * Release of PDU sessions due to revocation from AAA server or re-auth failure | * NEC | * 24.501 | * 1994 | * - | * Rel-16 | * B | * eNS | * not pursued |
| * C1-200696 | * Clarification on the S-NSSAI not subject to NSSAA included in allowed NSSAI | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1995 | * - | * Rel-16 | * F | * eNS | * agreed |
| * C1-200697 | * Subscribed S-NSSAI marked as default and NSSAA | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1996 | * - | * Rel-16 | * F | * eNS | * revised |
| * C1-200958 | * Subscribed S-NSSAI marked as default and NSSAA | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1996 | * 1 | * Rel-16 | * F | * eNS | * revised |
| * C1-201049 | * Subscribed S-NSSAI marked as default and NSSAA | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1996 | * 2 | * Rel-16 | * F | * eNS | * agreed |
| * C1-200698 | * Additional conditions to the presence in the subscribed S-NSSAIs | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1997 | * - | * Rel-16 | * F | * eNS | * agreed |
| * C1-200701 | * Triggering mobility registration update due to manual CAG selection | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1998 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200973 | * Triggering mobility registration update due to manual CAG selection | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1998 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200702 | * Definition of pending NSSAI | * Nokia, Nokia Shanghai Bell | * 24.501 | * 1999 | * - | * Rel-16 | * F | * eNS | * merged |
| * C1-200703 | * Emergency PDU session handling after NSSAA failure | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2000 | * - | * Rel-16 | * F | * eNS | * revised |
| * C1-200960 | * Emergency PDU session handling after NSSAA failure | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2000 | * 1 | * Rel-16 | * F | * eNS | * agreed |
| * C1-200704 | * Release of a PDU session due to failure/revocation in NSSAA | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2001 | * - | * Rel-16 | * F | * eNS | * postponed |
| * C1-200720 | * UE behaviour upon receipt of a UE radio capability ID deletion indication | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2002 | * - | * Rel-16 | * F | * RACS | * agreed |
| * C1-200723 | * Format of the UE radio capability ID | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2003 | * - | * Rel-16 | * F | * RACS | * merged |
| * C1-200724 | * Request S-NSSAI pending the NW slice-specific authentication and authorization | * Ericsson /kaj | * 24.501 | * 2004 | * - | * Rel-16 | * C | * eNS | * postponed |
| * C1-200725 | * RACS not applicable for non-3GPP access | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2005 | * - | * Rel-16 | * F | * RACS | * revised |
| * C1-200809 | * Additional condition to change UE radio capability ID during mobility registration update | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2005 | * 1 | * Rel-16 | * F | * RACS | * agreed |
| * C1-200726 | * UE radio capability information storage not needed for RACS | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2006 | * - | * Rel-16 | * F | * RACS | * revised |
| * C1-200966 | * UE radio capability information storage not needed for RACS | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2006 | * 1 | * Rel-16 | * F | * RACS | * agreed |
| * C1-200728 | * Rejection of non-emergency PDU session establishment with 5GMM cause #76 | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2007 | * - | * Rel-16 | * F | * Vertical\_LAN | * withdrawn |
| * C1-200729 | * Handling of a UE with an emergency PDU session in terms of CAG | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2008 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200975 | * Handling of a UE with an emergency PDU session in terms of CAG | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2008 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-201035 | * Handling of a UE with an emergency PDU session in terms of CAG | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2008 | * 2 | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200733 | * Manual CAG selection - providing HRNN | * Ericsson / Ivo | * 24.501 | * 2009 | * - | * Rel-16 | * C | * Vertical\_LAN | * postponed |
| * C1-200735 | * Correction in UE behavior upon receipt of 5GMM cause value #74 or #75 via a non-integrity protected NAS message | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2010 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200970 | * Correction in UE behavior upon receipt of 5GMM cause value #74 or #75 via a non-integrity protected NAS message | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2010 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200737 | * Introduction of SNPN-specific N1 mode attempt counters | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2011 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-201032 | * Introduction of SNPN-specific N1 mode attempt counters | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2011 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200738 | * N1 mode capability disabling and re-enabling for SNPN | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2012 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200969 | * N1 mode capability disabling and re-enabling for SNPN | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2012 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-201031 | * N1 mode capability disabling and re-enabling for SNPN | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2012 | * 2 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200739 | * #72 applicable and #31 not applicable in an SNPN | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2013 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200971 | * #72 applicable and #31 not applicable in an SNPN | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2013 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200740 | * T3245 in an SNPN | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2014 | * - | * Rel-16 | * F | * Vertical\_LAN | * postponed |
| * C1-200741 | * Validity of the USIM for an SNPN and for a specific access type | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2015 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200849 | * Validity of the USIM for an SNPN and for a specific access type | * Nokia, Nokia Shanghai Bell, Ericsson | * 24.501 | * 2015 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200742 | * Handling of 5GMM cause values #62 in an SNPN | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2016 | * - | * Rel-16 | * F | * Vertical\_LAN, eNS | * agreed |
| * C1-200743 | * No mandate to support default configured NSSAI or network slicing indication | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2017 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200921 | * No mandate to support default configured NSSAI or network slicing indication | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2017 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200744 | * SNN coding | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2018 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200850 | * SNN coding | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2018 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200851 | * SNN coding | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2018 | * 2 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200745 | * 5GMM cause value #74 in an SNPN with a globally-unique SNPN identity | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2019 | * - | * Rel-16 | * F | * Vertical\_LAN | * revised |
| * C1-200965 | * 5GMM cause value #74 in an SNPN with a globally-unique SNPN identity | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2019 | * 1 | * Rel-16 | * F | * Vertical\_LAN | * agreed |
| * C1-200754 | * Registration of N5GC devices via wireline access | * Nokia, Nokia Shanghai Bell,Charter Communications | * 24.501 | * 2020 | * - | * Rel-16 | * B | * 5WWC | * revised |
| * C1-200978 | * Registration of N5GC devices via wireline access | * Nokia, Nokia Shanghai Bell,Charter Communications | * 24.501 | * 2020 | * 1 | * Rel-16 | * B | * 5WWC | * agreed |
| * C1-200756 | * Corrections on EUI-64 as PEI | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2021 | * - | * Rel-16 | * F | * 5WWC | * revised |
| * C1-200980 | * Corrections on EUI-64 as PEI | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2021 | * 1 | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200757 | * Corrections on N5CW support | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2022 | * - | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200758 | * Supporting IPTV NAS impacts | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2023 | * - | * Rel-16 | * B | * 5WWC | * withdrawn |
| * C1-200760 | * ATSSS 5GSM capability indication | * Nokia, Nokia Shanghai Bell | * 24.501 | * 2024 | * - | * Rel-16 | * B | * ATSSS | * withdrawn |
| * C1-200763 | * De-registration before initial registration for RLOS and Emergency | * MediaTek / Marko | * 24.501 | * 2025 | * - | * Rel-16 | * F | * PARLOS | * withdrawn |
| * C1-200768 | * handling of PDU session authentication | * Samsung/Grace | * 24.501 | * 2026 | * - | * Rel-16 | * F | * SINE\_5G | * postponed |
| * C1-200277 | * EAP-5G handling and transport of NAS messages for wireline access | * Ericsson, Charter Communications, CableLabs / Ivo | * 24.502 | * 0110 | * 3 | * Rel-16 | * B | * 5WWC | * agreed |
| * C1-200300 | * Additional QoS Information in an untrusted non-3GPP network | * Motorola Mobility, Lenovo | * 24.502 | * 0111 | * 1 | * Rel-16 | * B | * 5WWC | * revised |
| * C1-200984 | * Additional QoS Information in an untrusted non-3GPP network | * Motorola Mobility, Lenovo | * 24.502 | * 0111 | * 2 | * Rel-16 | * B | * 5WWC | * agreed |
| * C1-200302 | * Removal of editor's notes for N5CW device | * Motorola Mobility, Lenovo | * 24.502 | * 0112 | * 1 | * Rel-16 | * F | * 5WWC | * postponed |
| * C1-200304 | * Removal of an editor's note | * Motorola Mobility, Lenovo, BlackBerry UK Ltd. | * 24.502 | * 0113 | * 1 | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200297 | * Removal of editor notes | * BlackBery UK Ltd. Motorola Mobility, Lenovo | * 24.502 | * 0114 | * 1 | * Rel-16 | * F | * 5WWC | * revised |
| * C1-200781 | * Removal of editor notes | * BlackBery UK Ltd. Motorola Mobility, Lenovo | * 24.502 | * 0114 | * 2 | * Rel-16 | * F | * 5WWC | * revised |
| * C1-200784 | * Removal of editor notes | * BlackBery UK Ltd. Motorola Mobility, Lenovo | * 24.502 | * 0114 | * 3 | * Rel-16 | * F | * 5WWC | * postponed |
| * C1-200334 | * Updating length of NID | * Qualcomm Incorporated, Ericsson, Nokia, Nokia Shanghai Bell / Lena | * 24.502 | * 0115 | * - | * Rel-16 | * C | * Vertical\_LAN | * agreed |
| * C1-200755 | * Support of authentication and registration of N5GC devices via wireline access | * Nokia, Nokia Shanghai Bell,Charter Communications | * 24.502 | * 0116 | * - | * Rel-16 | * B | * 5WWC | * revised |
| * C1-200979 | * Support of authentication and registration of N5GC devices via wireline access | * Nokia, Nokia Shanghai Bell,Charter Communications | * 24.502 | * 0116 | * 1 | * Rel-16 | * B | * 5WWC | * agreed |
| * C1-200759 | * Supporting IPTV via wireline access | * Nokia, Nokia Shanghai Bell | * 24.502 | * 0117 | * - | * Rel-16 | * B | * 5WWC | * withdrawn |
| * C1-200761 | * SUPI and SUCI for legacy wireline access | * Nokia, Nokia Shanghai Bell | * 24.502 | * 0118 | * - | * Rel-16 | * B | * 5WWC | * revised |
| * C1-200981 | * SUPI and SUCI for legacy wireline access | * Nokia, Nokia Shanghai Bell | * 24.502 | * 0118 | * 1 | * Rel-16 | * B | * 5WWC | * agreed |
| * C1-200455 | * LADN service does not apply for RG connected to 5GC via wireline access | * ZTE / Joy | * 24.526 | * 0070 | * - | * Rel-16 | * F | * 5WWC | * agreed |
| * C1-200709 | * FEC encoding by the BM-SC | * ENENSYS | * 24.581 | * 0068 | * - | * Rel-16 | * C | * MCProtoc16 | * revised |
| * C1-200838 | * FEC encoding by the BM-SC | * ENENSYS | * 24.581 | * 0068 | * 1 | * Rel-16 | * C | * MCProtoc16 | * agreed |
| * C1-200361 | * Adding interactions with "Multi-Device" and "Multi-Identity" services | * Ericsson / Nevenka | * 24.604 | * 0188 | * - | * Rel-16 | * B | * MuD | * agreed |
| * C1-200362 | * Adding interactions with "Multi-Device" and "Multi-Identity" services | * Ericsson / Nevenka | * 24.605 | * 0028 | * - | * Rel-16 | * B | * MuD | * agreed |
| * C1-200363 | * Adding interactions with "Multi-Device" and "Multi-Identity" services | * Ericsson / Nevenka | * 24.615 | * 0075 | * - | * Rel-16 | * B | * MuD | * revised |
| * C1-200810 | * Adding interactions with "Multi-Device" and "Multi-Identity" services | * Ericsson / Nevenka | * 24.615 | * 0075 | * 1 | * Rel-16 | * B | * MuD | * agreed |
| * C1-200486 | * Providing video announcement at the same time with audio conversation | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.628 | * 0072 | * - | * Rel-16 | * B | * eIMSVideo | * revised |
| * C1-200910 | * Providing video announcement at the same time with audio conversation | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.628 | * 0072 | * 1 | * Rel-16 | * B | * eIMSVideo | * revised |
| * C1-201048 | * Providing video announcement at the same time with audio conversation | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.628 | * 0072 | * 2 | * Rel-16 | * B | * eIMSVideo | * agreed |
| * C1-200492 | * Providing video announcement at the same time with audio conversation | * Huawei,China Telecom,China Unicom,HiSilicon /Hongxia | * 24.628 | * 0073 | * - | * Rel-16 | * B | * eIMSVideo | * withdrawn |
| * C1-200546 | * Condition of providing video announcement | * China Telecom,Huawei, China Unicom, HiSilicon | * 24.628 | * 0074 | * - | * Rel-16 | * C | * eIMSVideo | * revised |
| * C1-200995 | * Condition of providing video announcement | * China Telecom,Huawei, China Unicom, HiSilicon | * 24.628 | * 0074 | * 1 | * Rel-16 | * C | * eIMSVideo | * revised |
| * C1-201057 | * Condition of providing video announcement | * China Telecom,Huawei, China Unicom, HiSilicon | * 24.628 | * 0074 | * 2 | * Rel-16 | * C | * eIMSVideo | * postponed |
| * C1-200364 | * Adding interactions with "Multi-Device" and "Multi-Identity" services | * Ericsson / Nevenka | * 24.629 | * 0039 | * - | * Rel-16 | * B | * MuD | * agreed |
| * C1-200315 | * Alignment of error codes with 3GPP TS 24.501 | * InterDigital / Atle | * 27.007 | * 0683 | * 1 | * Rel-16 | * F | * SINE\_5G, 5GProtoc16, 5WWC | * revised |
| * C1-200320 | * Alignment of error codes with 3GPP TS 24.501 | * InterDigital / Atle | * 27.007 | * 0683 | * 2 | * Rel-16 | * F | * SINE\_5G, 5GProtoc16, 5WWC | * revised |
| * C1-200796 | * Alignment of error codes with 3GPP TS 24.501 | * InterDigital / Atle | * 27.007 | * 0683 | * 3 | * Rel-16 | * F | * SINE\_5G, 5WWC, 5GProtoc16 | * agreed |
| * C1-200298 | * Update of Reading coverage enhancement status +CRCES for Connection to 5G Core Network | * BlackBerry UK Limited | * 27.007 | * 0684 | * 1 | * Rel-16 | * B | * 5G\_CIoT | * agreed |
| * C1-200424 | * Update of +CNMPSD for NR | * BlackBerry UK Ltd. | * 27.007 | * 0685 | * - | * Rel-16 | * B | * 5G\_CIoT | * agreed |

## Annex C: Lists of liaisons

### C1: Incoming liaison statements

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| Document | Original | Title | From | Decision | Reply TDoc |
| * C1-200206 | * C4-195574 | * LS on usage of IMSI during 3GPP based authentication (C4-195574) | * CT4 | * noted | * (none) |
| * C1-200207 | * C6-190468 | * LS on user identity when 5G-AKA or EAP AKA’ is used for SNPN (C6-190468) | * CT6 | * replied to | * C1-200255 |
| * C1-200208 | * CP-193301 | * LS on Proposal to transfer the study on service-based support for SMS in 5GC to CT WGs (CP-193301) | * TSG CT | * postponed | * (none) |
| * C1-200209 | * SP-191362 | * Reply LS to Transfer the study on service-based support for SMS in 5GC to CT WGs (SP-191362) | * TSG SA | * postponed | * (none) |
| * C1-200210 | * LIAISE-353 | * Response to 3GPP S2-1910806 and S2-1912767 on Line ID (LIAISE-353) | * Broadband Forum | * noted | * (none) |
| * C1-200211 | * LIAISE-363 | * General Status of Work (LIAISE-363) | * Broadband Forum | * replied to | * C1-200309 |
| * C1-200212 |  | * LS on Testing and Certification of 3GPP Mission Critical features A GCF-TCCA Joint Approach to Develop and Manage MC Certification ( | * TCCA | * noted | * (none) |
| * C1-200213 | * R2-1916328 | * Reply LS on QoE Measurement Collection (R2-1916328) | * RAN2 | * noted | * (none) |
| * C1-200214 | * R2-1916344 | * Reply LS on NID structure and length (R2-1916344) | * RAN2 | * noted | * (none) |
| * C1-200215 | * R2-1916345 | * CMAS/ETWS and emergency services for SNPNs (R2-1916345) | * RAN2 | * noted | * (none) |
| * C1-200216 | * R2-1916349 | * Reply LS on Sending CAG ID in NAS layer (R2-1916349) | * RAN2 | * noted | * (none) |
| * C1-200217 | * R2-1916368 | * Reply LS on Mobile-terminated Early Data Transmission (R2-1916368) | * RAN2 | * replied to | * C1-201062 |
| * C1-200218 | * R2-1916440 | * Reply LS on assistance indication for WUS (R2-1916440) | * RAN2 | * noted | * (none) |
| * C1-200219 | * R2-1916461 | * Reply LS on PC5S and PC5 RRC unicast message protection (R2-1916461) | * RAN2 | * noted | * (none) |
| * C1-200220 | * R2-1916470 | * LS on dependencies on AS design for mobility management aspects of NTN in 5GS (R2-1916470) | * RAN2 | * noted | * (none) |
| * C1-200221 | * R2-1916530 | * LS on RRC establishment cause value in EPS voice fallback from NR to E-UTRAN (R2-1916530) | * RAN2 | * postponed | * (none) |
| * C1-200222 | * R2-1916600 | * LS on inter-RAT HO from SA to EN-DC (R2-1916600) | * RAN2 | * noted | * (none) |
| * C1-200223 | * R2-1916620 | * LS on LS on system level design assumptions for satellite in 5GS (R2-1916620) | * RAN2 | * noted | * (none) |
| * C1-200224 | * R2-1916623 | * Reply LS on extended NAS timers for CE in 5GS (R2-1916623) | * RAN2 | * replied to | * C1-200717 |
| * C1-200225 | * R3-197591 | * Reply LS on Sending CAG ID in NAS layer (R3-197591) | * RAN3 | * noted | * (none) |
| * C1-200226 | * R3-197749 | * LS on Concurrent Broadcasting for CMAS (R3-197749) | * RAN3 | * postponed | * (none) |
| * C1-200227 | * S1-193592 | * Reply LS on UAC for NB-IOT (S1-193592) | * SA1 | * noted | * (none) |
| * C1-200228 | * S1-193595 | * Reply LS on enhanced access control for IMS signalling (S1-193595) | * SA1 | * noted | * (none) |
| * C1-200229 | * S1-193596 | * Reply LS on NSI requirements (S1-193596) | * SA1 | * noted | * (none) |
| * C1-200230 | * S2-1912002 | * Reply LS on LS on PC5S and PC5 RRC unicast message protection (S2-1912002) | * SA2 | * noted | * (none) |
| * C1-200231 | * S2-1912018 | * Reply LS on Enquiries on eV2XARC (S2-1912018) | * SA2 | * noted | * (none) |
| * C1-200232 | * S2-1912417 | * Reply LS on SUCI computation from an NSI (S2-1912417) | * SA2 | * noted | * (none) |
| * C1-200233 | * S2-1912551 | * LS on PLMN selection solutions for satellite access (S2-1912551) | * SA2 | * postponed | * (none) |
| * C1-200234 | * S2-1912601 | * Reply LS on applicability of the notification procedure in SNPNs (S2-1912601) | * SA2 | * noted | * (none) |
| * C1-200235 | * S2-1912609 | * LS on support of Control Plane CIoT 5GS Optimisation (S2-1912609) | * SA2 | * noted | * (none) |
| * C1-200236 | * S2-1912731 | * Reply LS on sending CAG ID during resume procedure (S2-1912731) | * SA2 | * noted | * (none) |
| * C1-200237 | * S2-1912763 | * Reply LS on Rel-16 NB-IoT enhancements (S2-1912763) | * SA2 | * noted |  |