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

**Meeting Report  
for  
TSG SA WG5  
meeting: 122**

**Spokane, WA, USA, 12/11/2018 to 16/11/2018**

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## 1 Opening of the meeting

The meeting was chaired by the SA5 Chairman, Mr. Thomas Tovinger (Ericsson LM), noting that this meeting was experimentally starting with an opening plenary session rather than immediately breaking into subgroups.

Mr Tovinger would not be available on Friday, and he would be replaced for that day by one of the vice-chairman, Mr Jean Michel Cornily (Orange).

Mr Colby Harper (Pivotal Commware) gave a welcome on behalf of the hosts, NAF.

## 2 Approval of the agenda

**S5-187000 Agenda**

*Type: agenda For: (not specified)  
 Source: WG Chairman*

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

## 3 IPR declaration

**S5-187001 IPR and legal declaration**

*Type: other For: (not specified)  
 Source: WG Chairman*

**Discussion:**

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 can consume excessive bandwidth or cause significant degradation of the performance of the network.

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

## 4 Meetings and activities reports

### 4.1 Last SA5 meeting report

**S5-187002 Report from last SA5 meeting (draft)**

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

**Abstract:**

Draft report of SA5#121 of 2018-11-09 11h35.

**Discussion:**

No changes were proposed.

**Decision:** The document was **revised to S5-187335**.

**S5-187335 Report from last SA5 meeting (final)**

*Type: report For: -  
 Source: MCC*

(Replaces S5-187002)

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

### 4.2 Last SA meeting report

### 4.3 Inter-organizational reports

## 5 Cross-SWG issues

### 5.1 Administrative issues at SA5 level

**S5-187003 Leaders meeting agenda**

*Type: agenda For: (not specified)  
 Source: WG Chairman*

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

**S5-187004 Leaders meeting minutes**

*Type: report For: (not specified)  
 Source: WG Chairman*

**Discussion:**

It was agreed that all new SA5 TRs and TSs should have as the top level title "Management and Orchestration" or "Charging management" as appropriate.

The Chairman believed that some adjustment to the timing of future meetings was desirable - there seemed to be too many early in the year, with a dearth in the autumn. This was for historical reasons stemming from offers of hosting.

A draft of a communications plan to enhance the external visibility of SA5 had been discussed, and a more systematic review of conferences etc would henceforward be instigated.

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

**S5-187005 SA5 Working Procedures**

*Type: other For: (not specified)  
 Source: WG Vice Chair (Huawei)*

**Abstract:**

Version 15.3.0

**Discussion:**

The Secretary noted that some updates were probably needed, and he would work with Christian Toche off line.

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

**S5-187006 SA5 Meeting Facility Requirements**

*Type: other For: (not specified)  
 Source: WG Vice Chair (Orange)*

**Discussion:**

The Secretary would also review this document off line to compare its contents with the general guidelines on the web site, with a view to harmonize the sets of guidelines.

The document would be revised for the next meeting.

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

**S5-187007 Process for management of draft TSs/TRs**

*Type: other For: (not specified)  
 Source: WG Chairman*

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

**S5-187008 CR Quality Check**

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

**Discussion:**

The Chairman proposed to check every CR against this document as the CR was treated.

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

**S5-187009 Status of email approvals**

*Type: other For: (not specified)  
 Source: WG Vice Chair (Orange)*

**Decision:** The document was **not treated**.

### 5.2 Technical issues at SA5 level

### 5.3 Liaison statements at SA5 level

**S5-187036 Resubmitted Reply LS from CT to SA5 on API specification and API version number maintenance**

*Type: LS in For: (not specified)  
 Original outgoing LS: CP-182239, to CT4, CT3, SA, SA5, SA6, cc -  
 Source: TSG CT*

**Abstract:**

CT thanks CT4 for the LS on API specification and API version number maintenance (CP-182196/C4-186602). CT has discussed the recommendations listed in the LS and has reached the following conclusions:

On the recommendation 1:

CT welcomes the proposal to submit a single CR per API to update the API version number. It is up to SA to agree on an update of CR template to include a specific check-box (e.g. "API impacts") on CR cover page.

On the recommendation 2:

CT agrees on a principle to define a specific freezing date for API specifications, as for ASN.1, three months after the deep freeze of the stage 3.

On the recommendation 3:

The need for a separate OpenAPI file containing a copy of the normative annex of the specification has been discussed. CT considers as useful to create separate OpenAPI files, validated by 3GPP, and to store these OpenAPI files in a centralized way. These separate files would be for information and the Annex of each specification containing the OpenAPI description will remain normative. CT kindly asks CT4 to define the details of the associated process.

On the recommendation 4:

CT believes that this recommendation is tightly linked to the recommendation 3. If there is a central storage of OpenAPI files independent of the TS, it seems relevant to include the ExternalDoc field in the OpenAPI.

On the recommendation 5:

CT believes that the proposed process is good and should be applied by WG developing API in 3GPP.

It has to be noted that the current API version number pattern was questioned and there was a proposal to remove the Release indication ("Rn") from the API version number. It would be good to clarify why the current format has been defined as such in the TS 29.501. And this would help to clarify the maintenance of this API version number.

Moreover, it was commented that the recommendations listed in this LS not only apply to the API designed for 5G SBI but also to any API defined by 3GPP. It would be good to have homogeneous handling of the API version number and API specification, especially when some of the APIs are exposed to non-3GPP external networks. It should be considered if some of the recommendations given for API for 5GC can be captured in a document that would be valid for other types of API.

**Discussion:**

The main objective of the tdoc was to ensure that all APIs were treated in the same way. The Secretary outlined the CT4 idea insofar as he understood it, noting that he had not been able to participate in the teleconference on this subject the previous week.

There was some concern over why CT groups would not use the industry-standard github service.

It was noted that the SA5 Charging subgroup was already following the guidelines of 24.501.

The Secretary also mentioned the difficulty of applying 3GP's traditional change control mechanism, which was perhaps not compatible with other groups' methods.

**Decision:** The document was **replied to in S5-187336**.

**S5-187336 Reply to: Resubmitted Reply LS from CT to SA5 on API specification and API version number maintenance**

*Type: LS out For: approval  
 to TSG CT, TSG SA, cc CT4, CT3, SA, SA6  
 Source: SA5 (Ericsson et al)*

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

### 5.4 SA5 meeting calendar

**S5-187010 SA5 Meeting Calendar**

*Type: other For: (not specified)  
 Source: WG Chairman*

**Discussion:**

The Chairman noted that TSG SA had urged WGs to reduce the number of meetings per year if possible. Nevertheless, SA5 might maintain that it was necessary in 2019 to hold six ordinary meetings and up to two ad hocs. Various options were mooted for evening out the meetings, and it had to be born in mind that clashes with SA3. However, there was some reluctance to modify the current plans as given in this tdoc. It was recalled that MCC was not "obliged" to support ad hoc meetings. Some delegates believed that clashes with other WGs (other, that is, than SA3) caused logistical problems for some companies, and too many meetings had obvious financial implications for all organizations.

One option was to "move" the January meeting ghosted by NAF3 to October.

**Decision:** The document was **revised to S5-187366**.

**S5-187366 SA5 Meeting Calendar**

*Type: other For: -  
 Source: WG Chairman*

(Replaces S5-187010)

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

### 5.5 Review of the Work Plan

**S5-187011 3GPP SA5 Work Plan**

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

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

## 6 OAM&P

### 6.1 OAM&P Plenary

**S5-187012 Time Plan for OAM&P**

*Type: other For: (not specified)  
 Source: WG Vice Chair (Huawei)*

**Discussion:**

The Session Chairman presented the document, noting that there were fewer tdocs to be addressed in the session than usual. The Session Chairman noted that late contributions would be address if time permitted at the end of the agenda item. Notwithstanding, rapporteurs should provide a running order for their documents. It was the intention to ensure all contributions would be addressed.

It was noted that some adjustment to the proposed session timing might be required, bearing in mind the late contributions.

**Decision:** The document was **revised to S5-187338**.

**S5-187338 Time Plan for OAM&P**

*Type: other For: -  
 Source: WG Vice Chair (Huawei)*

(Replaces S5-187012)

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

**S5-187013 OAM Executive Report**

*Type: report For: (not specified)  
 Source: WG Vice Chair (Huawei)*

**Discussion:**

Slide 10: it was noted that work item NETSLICE-ADPM5G was in fact 100% (despite its spec being only 80% complete).

**Decision:** The document was **revised to S5-187543**.

**S5-187543 OAM Executive Report**

*Type: report For: -  
 Source: WG Vice Chair (Huawei)*

(Replaces S5-187013)

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

**S5-187014 OAM&P SWG action list**

*Type: other For: (not specified)  
 Source: WG Vice Chair (Huawei)*

**Discussion:**

Christian Toche provided the document.

**Decision:** The document was **revised to S5-187493**.

**S5-187493 OAM&P SWG action list**

*Type: other For: -  
 Source: WG Vice Chair (Huawei)*

(Replaces S5-187014)

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

**S5-187015 Minutes of OAM&P SWG opening session**

*Type: report For: (not specified)  
 Source: WG Vice Chair (Huawei)*

**Discussion:**

My Cornily presented the document.

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

**S5-187037 Reply LS from RAN2 to SA5 on L2 measurements**

*Type: LS in For: (not specified)  
 Original outgoing LS: R2-1816011, to SA5, cc RAN3  
 Source: RAN2*

**Abstract:**

Answer 1 from RAN2: RAN2 is fine with approach. RAN2 would also like to inform SA5 that in Rel-16 there will be a SI to address L2 measurements and RAN2 may further modify what has been temporarily agreed in Rel-15 or add new ones.

RAN2: For both questions, assuming a Rel-16 WI is approved by RAN plenary RAN2 expects to have a new TS to capture all relevant parameters including adding new ones and modification of agreed ones from SA5 in Rel-15. However the progress depends on RAN2 discussions in Rel-16, e.g. RAN2 progresses on the RAN3 led SI RAN-centric Data Collection and Utilization for NR.

**Discussion:**

The document was presented by Huawei. Ericsson noted that SA5 would need to refer to the RAN2 spec in due course. SA5 would not define the triggers, but would refer to the RAN2 definitions. This was "business as usual". Intel was concerned that RAN2 were making slow progress. Ericsson stated that it was up to SA5 to make specific requests. Nokia and Huawei agreed.

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

**S5-187038 Reply LS to SA5 on L2 measurements**

*Type: LS in For: (not specified)  
 Original outgoing LS: R3-186232, to SA5, cc RAN3  
 Source: RAN3*

**Abstract:**

RAN3 thanks SA5 for the reply LS in S5-185560 and provides following answers to SA5’s questions.

3GPP SA5 would like RAN3 to clarify:

- Will RAN3 capture L2 measurements in any normative TS that SA5 can refer to?

- How to handle L2 measurements that needs to be defined by both RAN2 and RAN3?

RAN3 Answer: The L2 measurement that may involve both RAN2 and RAN3 may be discussed and determined in the scope of the “RAN-centric data collection and utilization” SI. Eventually, the L2 measurements may be defined in a normative TS in RAN possibly in a corresponding work item phase of the “RAN-centric data collection and utilization”.

3GPP SA5 would like RAN3 to clarify:

- Is “mapped 5QI” in any RAN specifications?

- Does RAN3 have a plan for lifting the restrictions assumed by this term and address the case when the bearer contains multiple QoS Flows with different 5QIs that cannot be mapped onto a single mapped 5QI because these flows have essentially different QoS properties?

RAN3 Answer: In RAN3 specification, there is no “mapped 5QI” definition. RAN3 has no intention to define it in RAN3 specifications. The intention of the term ‘mapped 5QI’ is to represent the 5QI applied to the DRB. An example can be found in the DRB QoS IE of DRB to Be Setup List in section 9.2.2.1 UE CONTEXT SETUP REQUEST message in TS 38.473. This is in-line with the definition in TS 28.552.

And it is RAN3 understanding that for the QoS flows having different QoS properties the CU may map them on different DRBs.

**Discussion:**

Huawei presented the document. Intel believed that SA5 had a problem which needed to be fixed here. The word "mapped" could be removed: "5QI" was sufficient. Ericsson disagreed, believing that the RAN2 view was correct. SA5 should return to normal activity, requesting RAN2 for each case in turn.

Cisco believed that a bearer could include multiple QoS flows, and each would have the same "mapped 5QI". But it was not clear how to handle the case where several QoS flows were needed.

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

**S5-187039 LS from SA2 to SA5 on QoS Monitoring**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-1811558, to SA5, RAN2, RAN3, cc -  
 Source: SA2*

**Abstract:**

SA2 would like to ask SA5

1. to provide feedback on the study of the QoS Monitoring for URLLC services in SA2.

2. whether QoS monitoring for end-to-end packet delay per UE per QoS Flow can be deduced from the mechanisms defined already in SA5 or they are under the remit of ongoing SA5 work and whether (if needed) these mechanisms can be further extended based on new requirements from SA2 and SA1 (defined in TS 22.261).

**Discussion:**

Huawei presented the document. SA2 put two questions to SA5. Intel believed that SA5 and SA2 needed to work together on the question of latency. Ericsson agreed, but the effect on the RAN was unclear at this stage, and further evaluation was needed. For the second question, uplink measurements were a problem. Nokia thought there was a logistical problem concerning action 2: this was not in the scope of SA5. SA5 could benefit from the SA2 requirements, but the solution was in the hands of RAN.

Huawei returned to the actions requested in the LS. RAN2 had defined six measurements, and SA5 needed to clarify this in its reply. Cisco agreed with what had been said so far. But SA5 could indeed make use of the measurements performed for statistical purposes. Nokia proposed an extension of MDT, where mechanisms could be further extended. Intel agreed. Maybe a new term was needed for MDT, however. Nokia believed that what was approved in this enhancement was an assurance. Cisco stated that end to end measurements were perfectly possible (some were already defined by IETF), and it was possible to analyse on a per packet basis if needed.. Huawei observed that there were two draft replies to this LS in '7293 and '7296.

**Decision:** The document was **replied to in S5-187339**.

**S5-187293 LS reply on QoS monitoring**

*Type: LS out For: Approval  
 to SA2, RAN2, RAN3  
 Source: SA5 (Intel China Ltd.)*

**Abstract:**

SA5 thanks SA2 for the LS on QoS monitoring. As SA2 observed, SA5 has defined the KPI on end to end latency, however the detailed mechanisms to collect the performance measurements to support this KPI are yet to be defined. So far, the SA5 defined mechanisms on performance measurements collection cannot support the monitoring of end-to-end packet delay per UE per QoS Flow. The mechanisms to collect end to end latency measurements are under an ongoing SA5 work item (WI title: Enhancement of performance assurance for 5G networks including network slicing), and SA5 has received contributions discussing the mechanisms, however there is no agreement reached up to now.

SA5 would like to continue working on the mechanisms on end to end QoS monitoring, by operating with SA2, RAN2 and RAN3, to support the requirements from SA2 and SA1 (as defined in TS 22.261).

**Discussion:**

Nokia were not happy with the mechanism described in this draft reply.

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

**S5-187296 Draft LS reply on QoS monitoring**

*Type: LS out For: (not specified)  
 to SA2,RAN2,RAN3  
 Source: SA5 (Huawei Tech.(UK) Co., Ltd)*

**Abstract:**

SA5 thanks SA2 for the LS in S5-187039/S2-1811558. SA5 is currently working on the “End-to-end latency of 5G network” KPI and related measurements definition under the Rel-16 Work item “Assurance data and Performance Management for 5G networks and network slicing“. SA5 has combined the “End-to-end latency” KPI definition in TS 28.554 in SA5#121.

SA5 has discussed the two questions from SA2 and would like to provide the following answers:

Q1: to provide feedback on the study of the QoS Monitoring for URLLC services in SA2.

SA5 understands that “RTT3 “ and “One way delay 3” measurements described in SA2 QoS monitoring represent the UL or DL packet delay between UE and UPF N6 interface for per UE per QoS Flow corresponding to round trip and one way respectively. The KPI defined in SA5 represents the KPI statistics of the end to end packet delay between UE and UPF N6 interface from network point of view. SA5 does not address KPI for per UE per Qos Flow, while SA5 thinks the UL and DL packet delay described in TR 23.725 is related to “End-to-end latency of 5G network” KPI defined in subclause 6.3.1 of TS 28.554.

Q2: whether QoS monitoring for end-to-end packet delay per UE per QoS Flow can be deduced from the mechanisms defined already in SA5 or they are under the remit of ongoing SA5 work and whether (if needed) these mechanisms can be further extended based on new requirements from SA2 and SA1 (defined in TS 22.261).

So far, there is no mechanism defined in SA5 to support the End-to-end latency of 5G network measurement for per UE per QoS Flow.

SA5 is currently working on the “End-to-end latency of 5G network” KPI and related measurements definition in Rel-16. SA5 may utilize the information from SA2, RAN2 and RAN3 to support the SA5 defined KPI “End-to-end latency of 5G network” and related measurements. SA5 is happy to cooperate with SA2, RAN2 and RAN3 and will update the progress on this topic.

**Discussion:**

Nokia believed that the N6 interface was incorrect. Intel agreed that this would need to be revisited. Also, the work item code on the document was incorrect. Ericsson believed the measurements were per packet, not per flow. Nokia greed but noted that this was not in the scope of SA5. After extensive discussions, the topic was taken off line.

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

**S5-187339 Reply to: LS from SA2 to SA5 on QoS Monitoring**

*Type: LS out For: approval  
 to SA2  
 Source: SA5 (Huawei, Intel China)*

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

**S5-187041 Resubmitted LS from ITU-T to SA5 on cooperation on REST-based network management framework**

*Type: LS in For: (not specified)  
 Original outgoing LS: SG2-LS62, to SA5, cc -  
 Source: ITU-T Study Group 2*

**Abstract:**

This document contains the liaison ITU-T SG2 sends to 3GPP, informing them about the creation of two new work items on REST-based management framework, and invite co-operations on this topic. This document also expressed the opinions about URI format of the current 3GPP TS 32.158(V0.1.0).

**Discussion:**

It was noted that this document had been seen at the previous meeting. SA5 had been considering the topic since at least April 2018. Nokia thought that a response needed further work, but a holding response could be made. Ericsson suggested it needed discussion in methods coordination. Nokia questioned the benefits of some aspects of alignment with ITU.

**Decision:** The document was **replied to in S5-187340**.

**S5-187340 Reply to: Resubmitted LS from ITU-T to SA5 on cooperation on REST-based network management framework**

*Type: LS out For: approval  
 to ITU-T Study Group 2  
 Source: SA5 (Ericsson)*

**Discussion:**

Will become available after pCR incorporation in 32.160. Secretary to create v1.0.0 as soon as possible after email agreement of v0.2.0.

**Decision:** The document was **revised to S5-187557**.

**S5-187557 Reply to: Resubmitted LS from ITU-T to SA5 on cooperation on REST-based network management framework**

*Type: LS out For: approval  
 to ITU-T Study Group 2  
 Source: SA5 (Ericsson)*

(Replaces S5-187340)

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

**S5-187042 LS/r from ITU-T to SA5 on Energy Efficiency (reply to 3GPP TSG SA5 - S5-182439)**

*Type: LS in For: (not specified)  
 Original outgoing LS: SG5-LS76, to SA5, cc -  
 Source: ITU-T Study Group 5*

**Abstract:**

This document contains a draft reply to 3GPP TSG SA5 - S5-182439 -E on Energy Efficiency

**Discussion:**

The document was presented by Orange. The nature of the proposed cooperation was a little unclear: did SG5 propose to initiate a WI in 3GPP? Huawei believed that cooperation was important. Perhaps SG5 would offer us a draft text at some time in the future. The LS was rather unclear. It was noted that cooperation with ETSI TC EE might be more appropriate than with SA5. Orange noted that EE was meeting concurrently with the present SA5 meeting. Huawei wondered whether 3GPP should be more proactive on this topic, but Orange noted that 3GPP was contribution driven, and without contributions, there would be little progress.

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

**S5-187043 LS/r from ITU-T ccSA5 on Energy Efficiency (reply to ETSI TC EE - EE(18)053033-E)**

*Type: LS in For: (not specified)  
 Original outgoing LS: SG5-LS81, to ETSI TC EE, cc -  
 Source: ITU-T Study Group 5*

**Abstract:**

ITU-T Study Group 5 would like to thank ETSI TC EE for sending the liaison statement contained in ETSI TC EE - EE(18)053033-E and for inviting ITU-T Study Group 5 to a joint meeting to discuss Energy efficiency for 5G in 2019 in Europe (possibly at the scheduled 3GPP SA5 meeting in Sophia Antipolis).

**Discussion:**

Orange recalled that there was a possibility of a joint meeting with ETSI TC EE on this topic, or perhaps just a conference call. A F2F joint meeting with EE in Sophia Antipolis was preferable. The document would be readdressed at the next meeting.

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

**S5-187294 Outstanding questions from ETSI NFV ISG related to network slicing**

*Type: discussion For: Discussion  
 Source: Ericsson, Nokia, Huawei, ZTE*

**Abstract:**

Heads-up for the incoming LS on behalf of FEAT05 (Network Slicing) feature primes.

**Discussion:**

Nokia presented the document on behalf of the joint authors. Ericsson had had communication from one of the NFV vice-chairmen on this topic, and NFV had proposed a conference call with interested parties to discuss this topic; this was not mentioned in the present tdoc. But Nokia noted that SA5 could not express a WG-agreed position on such a call. Cisco wondered exactly what sort of reply NFV expected. Nokia endeavoured to reply to this, likening their expectations to "42", including prioritization of actions when resources were running low. SA5 had already promised a "simple" response. Cisco doubted that such a simple response would suffice.

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

**S5-187303 JSON Schema related IETF draft reference update**

*Type: discussion For: Discussion  
 Source: Ericsson LM (WG chairman)*

**Abstract:**

Information from CT chair about updated IETF drafts referred to by SA5 specs for JSON schemas

**Discussion:**

Ericsson presented the document, noting that the text came from the IETF Coordinator (aka Chairman of TST CT). It was noted that the spec numbers for SA5 were incorrect.

During the week there was further discussion on several email lists. However, the situation was not yet stable. It would be discussed at CT#82.

**ACTION: Investigate the changes of references needed in SA5 specs.  
 (action on: Chairman / due by: 2018-11-16)**

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

**S5-187341 Preparation of reply to ETSI NFV on network slicing**

*Type: other For: discussion  
 Source: Nokia, Huawei, Ericsson*

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

**S5-187488 Clarifications topics for NFV NS in context of Network Slicing**

*Type: LS in For: Action  
 Original outgoing LS: NFVIFA(18)000844r1, to SA5, cc -  
 Source: ETSI ISG NFV*

**Abstract:**

1) ETSI NFV kindly requests 3GPP SA5 to consider the questions above and to provide us a response at the earliest convenience, as well as to confirm or correct our understanding as appropriate.

2) Please provide use cases that clarify how the priority and tenancy aspects are intended to be used for the NFV NSs in the context of Network Slicing.

3) A joint session (e.g. webconf) between 3GPP SA5 experts and ETSI NFV ISG would be highly desirable to address and present the 3GPP SA5 answers to the ETSI NFV ISG, please provide us a few alternative dates of availability (ideally before the NFV#24 in December).

**Decision:** The document was **replied to in S5-187515**.

**S5-187515 Reply to: Clarifications topics for NFV NS in context of Network Slicing**

*Type: LS out For: approval  
 to ETSI ISG NFV  
 Source: SA5 (Huawei)*

**Decision:** The document was **revised to S5-187516**.

**S5-187516 Reply to: Clarifications topics for NFV NS in context of Network Slicing**

*Type: LS out For: approval  
 to ETSI ISG NFV  
 Source: SA5 (Huawei)*

(Replaces S5-187515)

**Discussion:**

Nokia wished to attach the related use cases to the LS.

**Decision:** The document was **revised to S5-187539**.

**S5-187539 Reply to: Clarifications topics for NFV NS in context of Network Slicing**

*Type: LS out For: approval  
 to ETSI ISG NFV  
 Source: SA5 (Huawei)*

(Replaces S5-187516)

**Decision:** The document was **revised to S5-187544**.

**S5-187544 Reply to: Clarifications topics for NFV NS in context of Network Slicing**

*Type: LS out For: approval  
 to ETSI ISG NFV  
 Source: SA5 (Huawei)*

(Replaces S5-187539)

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

### 6.2 New OAM&P Work Item proposals

**S5-187016 Minutes of New Work Item proposals - OAM&P**

*Type: report For: (not specified)  
 Source: WG Vice Chair (Orange)*

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

**S5-187288 Service Based Trace Management**

*Type: WID new For: (not specified)  
 Source: Nokia Korea*

**Abstract:**

• Quick study phase analysing the situation and potential solutions for trace control

• Normative phase to document identified solutions aligned with SBM

**Discussion:**

Nokia had observed that there was no workable Trace IRP for service-abased trace management. Such studies should result in a TR, and the normative work could be expected to affect the listed TSs.

Intel wondered whether it was really possible to produce the TR by December 2018. Nokia believed that discussions might reveal that no TR was actually needed.

Deutsche Telekom was also concerned about a normative work item requiring a TR. They were concerned about the mechanisms needed, an Nokia responded to how this could be accomplished (a new management service, or modifications to an existing one).

Huawei wondered whether 5G network related trace was also covered by the WID. Nokia replied that this aspect was already covered in other specs, and that there were no dedicated 5G trace specs. Huawei believed that no TR would be necessary.

Nokia invited all interested parties to off line discussion, with a view to completing the WI in as short a time as possible.

NEC was concerned about the list of affected specs, and Nokia sought to clarify that no new SBMA was intended, and no new TS was needed. NEC believed that a study phase was probably needed, and he required further elaboration of the text.

Intel noted the intention to update the trace IRPs. Nokia explained the nature of the changes to the existing specs, and would be happy to generate a new TS if really necessary.

The session chairman believed that a discussion paper would be required on this, or alternatively, to prepare a study item rather than the normative WI at this stage. However Nokia was concerned that the matter was relatively urgent, but it should be easy to complete in Rel-16.

**Decision:** The document was **revised to S5-187342**.

**S5-187496 Study on non-file-based trace reporting**

*Type: SID new For: -  
 Source: Nokia Korea*

**Abstract:**

This contains the study item derived from S5-187288.

**Decision:** The document was **revised to S5-187518**.

**S5-187342 Trace Management in the context of Services Based Management Architecture**

*Type: WID new For: -  
 Source: Nokia Korea*

(Replaces S5-187288)

**Abstract:**

<div>Corrects a few misprints, changes title to separate study aspects (now in S5-187496) and normative aspects (in this document).</div>

**Decision:** The document was **revised to S5-187517**.

**S5-187517 Trace Management in the context of Services Based Management Architecture**

*Type: WID new For: -  
 Source: Nokia Korea*

(Replaces S5-187342)

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

**S5-187518 Study on non-file-based trace reporting**

*Type: SID new For: -  
 Source: Nokia Korea*

(Replaces S5-187496)

**Discussion:**

Nokia said there was no overlap between the WID above and the SID. Work would be undertaken on both in parallel.

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

### 6.3 OAM&P Maintenance and Rel-16 small Enhancements

This agenda item was chaired by Jean-Michel Cornily.

**S5-187017 Minutes of OAM&P Maintenance and Rel-16 small Enhancements**

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

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

**S5-187046 R16 CR 28.541 Add GUtranRelation Class**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0028 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Definition of GUtranRelation class is added and Class diagram Figure 4.2.1.1-1 is updated.

**Discussion:**

Huawei questioned the provisions for handover to a UTAN cell, and wondered whether this was yet supported in RAN3. There was nothing about UTRAN generic cell in the definitions. Intel remarked a typo in the document which needed correction. Ericsson was concerned about the symmetry and relationships of the classes. There was need for architecture alignment. There was contributions from Huawei and others on this topic.

MCC had noticed that the proposed WI code was not appropriate to a Rel-16 CR. A "phase 2" WI was needed. It was pointed out that there was a proposed new work item from the previous meeting but that was still not TSG approved. Alternatively, the CR could be Rel-15.

**Decision:** The document was **not pursued**.

**S5-187047 R16 CR 28.541 Add Beam Class**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0029 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Definitions for Beam class is added and Figure 4.2.1.1-3 is updated

**Discussion:**

The same MCC remarks about invalid WI code or invalid Release applied.

Pivotal Commware was worried about ensuring a harmonised approach with RAN groups relating to SON use cases. The NRM model was still open as far as these issues were concerned.

Cisco assumed that the document related to static or semi-static configuration of beams. How did the switching work?

Intel pointed out that there were already attributes which defined the beams.

For Rel-15, Pivotal Commware suggested that beams were treated as sectors, and this needed improvement for Rel-16.

**Decision:** The document was **revised to S5-187343**.

**S5-187343 R16 CR 28.541 Add Beam Class**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0029 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

(Replaces S5-187047)

**Discussion:**

Huawei thought their comment on layer 1 had not been taken into account.

Ericsson wished to see proper requirements before going into the fine details presented here.

**Decision:** The document was **not pursued**.

**S5-187058 Rel-15 CR 28.530 Fix gap of requirement for Network Slicing priority**

*Type: CR For: Agreement  
 28.530 v15.0.0 CR-0002 Cat: F (Rel-15)  
  
 Source: China Telecom Corporation Ltd.*

**Abstract:**

In addition to “re-allocating” (resource), add “allocating” (resource) to the description of requirement REQ-3GPPMS-CON-08.

**Discussion:**

Ericsson believed it would be better to have separate sentences for allocation and re-allocation.

**Decision:** The document was **revised to S5-187344**.

**S5-187344 Rel-15 CR 28.530 Fix gap of requirement for Network Slicing priority**

*Type: CR For: Agreement  
 28.530 v15.0.0 CR-0002 rev 1 Cat: F (Rel-15)  
  
 Source: China Telecom Corporation Ltd.*

(Replaces S5-187058)

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

**S5-187059 CR Rel-15 28662 on frequency band**

*Type: CR For: Agreement  
 28.662 v15.0.0 CR-0008 Cat: F (Rel-15)  
  
 Source: Ericsson Inc.*

**Abstract:**

Correct he condition upon which a Mandatory qualifier is applied to fqBand and eUTRANFqBands. Correct the description of nRFqBands that is not accurate.

**Discussion:**

Nokia suggested some wording changes.

There was a minor typo on the cover (clauses affected).

**Decision:** The document was **revised to S5-187345**.

**S5-187345 CR Rel-15 28662 on frequency band**

*Type: CR For: Agreement  
 28.662 v15.0.0 CR-0008 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson Inc.*

(Replaces S5-187059)

**Discussion:**

wrong documents uploaded

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

**S5-187541 CR Rel-15 28662 on frequency band**

*Type: CR For: Agreement  
 28.662 v15.0.0 CR-0008 rev 2 Cat: F (Rel-15)  
  
 Source: Ericsson Inc.*

(Replaces S5-187345)

**Abstract:**

Includes S5-186360 from the previous meeting

**Discussion:**

It was noted that the "other comments" should not include S5-187345.

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

**S5-187060 TD on NR cell frequency relation**

*Type: discussion For: Endorsement  
 28.541 v..  
 Source: Ericsson Inc.*

**Abstract:**

Relations between a cell and other cells in the same RAT or another RAT are needed in all mobile network management standards. The relation modelled serves two purposes:

1. Allow the operator to configure parameters or policies related to RAT, frequency and cell relations as well as defining explicit cell relations.

2. Show all system defined and configured cell relations to allow observability.

The new TS 28.541 [2] have not modelled the said relations.

This paper, based on a previous submitted paper [1], proposes one such model satisfying the two objectives above for NR, and at the same time, using similar paradigm as that used by LTE (see [3] and Appendix A) achieving the same-management-look-and-feel for operators.

**Discussion:**

The proposal was to add NRM fragments to several specs. This document was an addition to the proposals from Huawei.

Huawei proposed some corrections relating to the title relating to internal or external frequencies.

Intel asked for a description about the relation between frequencies and cell relations. This had been discussed at the previous meeting. This was to reduce the number of duplicate attributes. But care was needed to maintain backward compatibility.

Nokia did not like the "lazy" UML representation and was concerned about the semantics of the use of different colours and symbols, which was not explained. Was the frequency now a property of the sub-network? (It was pointed out that IETF used this text method for drawing figures.

**Decision:** The document was **revised to S5-187346**.

**S5-187346 TD on NR cell frequency relation**

*Type: discussion For: Endorsement  
 28.541 v..  
 Source: Ericsson,Huawei*

(Replaces S5-187060)

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

**S5-187061 CR Rel-15 TS 28658 view (E-UTRAN) of cell and frequency relations**

*Type: CR For: Agreement  
 28.658 v15.2.0 CR-0034 Cat: F (Rel-15)  
  
 Source: Ericsson Inc.*

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

**S5-187062 CR Rel-15 TS 28541 view (NR) of cell and frequency relation**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0030 Cat: F (Rel-15)  
  
 Source: Ericsson Inc.*

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

**S5-187063 CR Rel-15 TS 28541 Remove the ExternalENBFunction definition**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0031 Cat: F (Rel-15)  
  
 Source: Ericsson Inc.*

**Abstract:**

Remove the ExternalENBFunction definition.

**Discussion:**

Ericsson noted that there was an error in the existing spec relating to an imported definition.

**Decision:** The document was **revised to S5-187347**.

**S5-187347 CR Rel-15 TS 28541 Remove the ExternalENBFunction definition**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0031 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson Inc.*

(Replaces S5-187063)

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

**S5-187064 CR Rel-15 TS 28541 plmnIdList RW**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0032 Cat: F (Rel-15)  
  
 Source: Ericsson Inc.*

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

**S5-187065 CR Rel-15 TS 28541 on ExternalGNBCUCPFunction**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0033 Cat: F (Rel-15)  
  
 Source: Ericsson Inc.*

**Abstract:**

Align the definition of ExternalGNBCUCPFunction with that used for ExternalENBFunction.

**Discussion:**

Huawei did not believe that the changes corresponded to the declared summary of change. There was also a difficultly of the tool used to provide the figure: Papyrus did not handle imports well.

**Decision:** The document was **revised to S5-187348**.

**S5-187348 CR Rel-15 TS 28541 on ExternalGNBCUCPFunction**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0033 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson Inc.*

(Replaces S5-187065)

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

**S5-187066 CR Rel-15 TS 28.622 Generic NRM IS on Measurement Control**

*Type: CR For: Agreement  
 28.622 v15.1.0 CR-0027 Cat: F (Rel-15)  
  
 Source: Ericsson Inc.*

**Abstract:**

Add a new NRM fragment that can be associated with managed function NRM fragment supporting the production and delivery of Measurements.

**Discussion:**

Intel wanted clearer text for the new objects, and there was confusion over consumer and producer roles. Ericsson did not believe this last point to be valid.

Cisco supposed hat the proposal was a replacement for a job-based paradigm, and what was the benefit? Ericsson explained the model at length.

Intel noted that the attributes were repeated, was this really necessary? There was also concern over timers. Again, Ericsson explained the proposals.

The category should have been B not F.

**Decision:** The document was **revised to S5-187349**.

**S5-187349 CR Rel-15 TS 28.622 Generic NRM IS on Measurement Control**

*Type: CR For: Agreement  
 28.622 v15.1.0 CR-0027 rev 1 Cat: B (Rel-15)  
  
 Source: Ericsson Inc.*

(Replaces S5-187066)

**Discussion:**

Huawei questioned the significance of the yellow highlighted text. These would be eliminated at implementation.

Intel proposed changes to the table in §4.3.12.2 which was not aligned with some other TS.

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

**S5-187067 CR Rel-15 TS 32432 on measurement type**

*Type: CR For: Agreement  
 32.432 v15.0.0 CR-0006 Cat: F (Rel-15)  
  
 Source: Ericsson Inc.*

**Abstract:**

Add necessary references to TS.28.552 for measurement Types for managed functions defined by TS 28.541.

**Discussion:**

Intel queried the new text introduced into table 4.1.

It was also remarked that the term "NR" did not stand for "New Radio", and should not be defined as an abbreviation.

The category should have been B not F.

There were also a few typos.

**Decision:** The document was **revised to S5-187350**.

**S5-187350 CR Rel-15 TS 32432 on measurement type**

*Type: CR For: Agreement  
 32.432 v15.0.0 CR-0006 rev 1 Cat: B (Rel-15)  
  
 Source: Ericsson Inc.*

(Replaces S5-187067)

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

**S5-187072 Discussion Paper on the management of disaggregated RAN**

*Type: discussion For: Endorsement  
 Source: Cisco Systems Inc.*

**Abstract:**

Analyse what can be done to provide for management of gNB-CU and gNB-DU that are manufactured by different vendors. One example to consider is setting of the configuredMaxTxPower for the split options where the power settings are executed in the gNB-DU.

**Discussion:**

Nokia agreed that both figures of clause 3.3 were possible, but there was no definition of the functionality of gNB-CU and gNB-DU. The gNB-CU of option 2 did not expose the full RAN. Ericsson believed that the specification did not provide sufficient detail to allow either of these options to be implemented. Ericsson proposed some additional wording relating to management provisioning services. Nokia was worried that NF was not clearly defined, so additional definitions were not useful: the services should define to each MO defined, and no restatement of requirements was needed. Cisco did not agree.

Intel agreed with having both options. But the service was for the NF, not its components: CU and DU were treated as network functions. Indeed some attributes were duplicated, and this needed to be fixed.

**Decision:** The document was **revised to S5-187466**.

**S5-187466 Discussion Paper on the management of disaggregated RAN**

*Type: discussion For: Endorsement  
 Source: Cisco Systems Inc.*

(Replaces S5-187072)

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

**S5-187116 R15 CR TS 28.532 change alarmIRP to FaultSupervision MnS producer**

*Type: CR For: Agreement  
 28.532 v15.0.1 CR-0020 Cat: F (Rel-15)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

1) Replace AlarmIRP with FaultSupervision MnS producer and FSMnSProducer

2) Update the figures

3) Add two abbreviations

**Discussion:**

Huawei had some problems with the terminology surrounding "service", "producer", "consumer", and "capabilities". A discussion on semantics ensued. Intel wished to refer to the legacy terminology.

**Decision:** The document was **revised to S5-187351**.

**S5-187351 R15 CR TS 28.532 change alarmIRP to FaultSupervision MnS producer**

*Type: CR For: Agreement  
 28.532 v15.0.1 CR-0020 rev 1 Cat: F (Rel-15)  
  
 Source: ZTE Wistron Telecom AB*

(Replaces S5-187116)

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

**S5-187141 Rel-15 CR TS 32.450 Add missing EE KPI for E-UTRAN**

*Type: CR For: Agreement  
 32.450 v15.0.0 CR-0018 Cat: F (Rel-15)  
  
 Source: Huawei, Orange*

**Abstract:**

Add the missing EE KPI to align with the corresponding EE performance measurements.

**Discussion:**

Ericsson had some concern over the formula at the end of 6.X.1.1. Most of the energy wastage was in the UK rather than the Node-B. It was noted that the formula had not been invented by SA5. Intel was concerned over the energy at cell level. Some other formula would be needed for this.

It was questioned whether a new WI were needed to cover this particular measurement. Also, was this specification also needed for earlier Releases? Further, the term "efficiency" was not appropriate in this context, since it was not expressed as a percentage. Huawei stated that the objective was to have some agreed way of measuring the KPI. But since the terminology had not been invented by SA5, it was difficult to change. ETSI TC EE and ITU-T SG5 had devised the terminology.

**Decision:** The document was **revised to S5-187352**.

**S5-187352 Rel-15 CR TS 32.450 Add missing EE KPI for E-UTRAN**

*Type: CR For: Agreement  
 32.450 v15.0.0 CR-0018 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Orange*

(Replaces S5-187141)

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

**S5-187142 Rel-15 CR TS 32.451 Add missing EE KPI for E-UTRAN**

*Type: CR For: Agreement  
 32.451 v15.0.0 CR-0005 Cat: F (Rel-15)  
  
 Source: Huawei, Orange*

**Abstract:**

Add the missing EE KPI to align with the corresponding EE performance measurements.

**Discussion:**

Nanjing Ericsson Panda suggested some wording changes and the correction of a typo. ETSI TC EE had done extensive work relating to, for example, subnetworks of base stations.

ZTE was concerned how to make the measurements. Huawei clarified that, for shared RANs, it was currently not possible to determine efficiency on a per-operator basis.

**Decision:** The document was **revised to S5-187353**.

**S5-187353 Rel-15 CR TS 32.451 Add missing EE KPI for E-UTRAN**

*Type: CR For: Agreement  
 32.451 v15.0.0 CR-0005 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Orange*

(Replaces S5-187142)

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

**S5-187143 Rel-15 CR TS 32.425 Update measurements supporting EE KPI**

*Type: CR For: Agreement  
 32.425 v15.1.0 CR-0176 Cat: F (Rel-15)  
  
 Source: Huawei, Orange*

**Abstract:**

Update the usage of the corresponding EE performance measurements supporting EE KPI.

**Discussion:**

Nanjing Ericsson Panda believed some addition was needed. There was some discussion over which base document ([13] or [20]) to use as a reference. The revised wording of point i) was questioned.

**Decision:** The document was **revised to S5-187354**.

**S5-187354 Rel-15 CR TS 32.425 Update measurements supporting EE KPI**

*Type: CR For: Agreement  
 32.425 v15.1.0 CR-0176 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Orange*

(Replaces S5-187143)

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

**S5-187144 Rel-16 CR TS 32.425 Update measurements supporting EE KPI**

*Type: CR For: Agreement  
 32.425 v16.0.0 CR-0177 Cat: F (Rel-16)  
  
 Source: Huawei, Orange*

**Abstract:**

Mirror CR

**Discussion:**

The Category should have been A rather than F.

**Decision:** The document was **revised to S5-187355**.

**S5-187355 Rel-16 CR TS 32.425 Update measurements supporting EE KPI**

*Type: CR For: Agreement  
 32.425 v16.0.0 CR-0177 rev 1 Cat: A (Rel-16)  
  
 Source: Huawei, Orange*

(Replaces S5-187144)

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

**S5-187145 Rel-15 CR TS 28.532 Add stage 2 definition for provisioning management service related notifications**

*Type: CR For: Agreement  
 28.532 v15.0.1 CR-0021 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

Add stage2 definition for provisioning management service related notifications.

**Discussion:**

The session chairman questioned the usefulness of the additional use cases. Nokia questioned whether it was useful to specify requirements for a "toolbox" such as this spec. Cisco questioned the wording of clause 5.1.X.1: was "because" correct? Perhaps the whole sentence was unnecessary. Ericsson considered that the correlatedNotifications was mandatory, not optional, in table 5.1.X.2 - this was a long-standing misunderstanding. It should have been Conditional Mandatory. This implied an extensive CR to correct all such existing cases. Ericsson was concerned over the distinction between MOI and MO. The text needed to be harmonized.

**Decision:** The document was **revised to S5-187356**.

**S5-187356 Rel-15 CR TS 28.532 Add stage 2 definition for provisioning management service related notifications**

*Type: CR For: Agreement  
 28.532 v15.0.1 CR-0021 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces S5-187145)

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

**S5-187146 Rel-15 CR TS 28.532 Correct stage 3 definition for provisioning management service related notifications**

*Type: CR For: Agreement  
 28.532 v15.0.1 CR-0022 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

Correct stage3 definition for provisioning management service related notifications and add corresponding openAPI.

**Discussion:**

The cover sheet had numerous problems.

Nokia identified a number of shortcomings in the structure of the CR. The subscription resource mentioned in the code was not mentioned in the tables. Considerable rework was implied.

**Decision:** The document was **revised to S5-187357**.

**S5-187357 Rel-15 CR TS 28.532 Correct stage 3 definition for provisioning management service related notifications**

*Type: CR For: Agreement  
 28.532 v15.0.1 CR-0022 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell, Huawei*

(Replaces S5-187146)

**Discussion:**

The document would be for email approval. (Olaf to coordinate.)

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

**S5-187147 Rel-15 CR TS 28.531 Correct procedures with reference to TS 28.541**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0006 Cat: F (Rel-15)  
  
 Source: Huawei*

**Discussion:**

Some cover page issues were identified. The removed note needed to be voided, and an additional reference was needed.

**Decision:** The document was **revised to S5-187358**.

**S5-187358 Rel-15 CR TS 28.531 Correct procedures with reference to TS 28.541**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0006 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces S5-187147)

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

**S5-187148 Rel-15 CR TS 28.531 Add use case and requirements for MnS Query**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0007 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

Add use case and requirements for MnS information query.

**Discussion:**

Nokia questioned some wording which seemed to preclude use of any existing stage 3 solutions (clause 5.2.X). Cisco believed it was a good idea to make the management services discoverable, but this CR underestimated the complexity of the issue. The operator might have a multiple vendor network, and might manage different groups of devices. This should be reflected in this CR. The same applied to the CR in '7149. Ericsson thought the requirement was insufficient: what was the goal of the exercise? What was the point of knowing the capabilities of the service provider? Nokia believed a general discussion on how all this should work: was everything to be stored centrally or would a federated approach be better?

The CR was replaced by S5-187360.

**Decision:** The document was **not pursued**.

**S5-187360 Rel-15 CR TS 28.533 Add use case and requirements for MnS Query**

*Type: CR For: Agreement  
 28.533 v15.0.0 CR-0008 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces S5-187148)

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

**S5-187149 Rel-15 CR TS 28.532 Add stage2 definition for MnS Query**

*Type: CR For: Agreement  
 28.532 v15.0.1 CR-0023 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

Add stage 2 definition for MnSQuery operation.

**Discussion:**

Nokia and Ericsson believed it was necessary to which folder language to use. This needed to be decided and documented centrally. Huawei considered it desirable to treat all the related CRs together. NEC thought that this was a very complex issue, and should be dealt with fully at Release 16 rather than dabbling at Release 15. Cisco supported the objectives of this document but wished it to be clarified what information was needed, what the service was to provide.

**Decision:** The document was **revised to S5-187361**.

**S5-187361 Rel-15 CR TS 28.532 Add stage2 definition for MnS Query**

*Type: CR For: Agreement  
 28.532 v15.0.1 CR-0023 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces S5-187149)

**Decision:** The document was **revised to S5-187519**.

**S5-187519 Rel-15 CR TS 28.532 Add stage2 definition for MnS Query**

*Type: draftCR For: Approval  
 28.532 v15.0.1  
 Source: Huawei*

(Replaces S5-187361)

**Abstract:**

Title change.

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

**S5-187150 Rel-15 CR TS 28.532 Add stage3 definition for MnS Query**

*Type: CR For: Agreement  
 28.532 v15.0.1 CR-0024 Cat: F (Rel-15)  
  
 Source: Huawei*

**Decision:** The document was **revised to S5-187362**.

**S5-187362 Rel-15 CR TS 28.532 Add stage3 definition for MnS Query**

*Type: CR For: Agreement  
 28.532 v15.0.1 CR-0024 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces S5-187150)

**Abstract:**

Add stage3 definition for MnSQuery operation.

**Decision:** The document was **revised to S5-187520**.

**S5-187520 Rel-15 CR TS 28.532 Add stage3 definition for MnS Query**

*Type: draftCR For: Approval  
 28.532 v15.0.1  
 Source: Huawei*

(Replaces S5-187362)

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

**S5-187151 Rel-15 CR TS 28.541 Update NR NRM with Cell Relation**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0034 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

Update NR NRM with Cell Relation.

**Discussion:**

Cisco wondered how the proposal would cater for carrier aggregation, so the server would operate on several channels simultaneously. Huawei explained figure 4.2.1.1-X ensured this capability.

Ericsson believed this figure was ok, but was incomplete: the NR frequency relationship had attributes which justified this work. But further reductions were possible to eliminate common functionality. The structure of the classes was satisfactory, but the complete picture was needed.

The session chairman wondered whether this CR could be combined with the ZTE one on the same topic. Ericsson had doubts about the viability of this, especially when Ericsson's views were taken into account. The session chairman believed the discussion paper was the first priority.

**Decision:** The document was **revised to S5-187363**.

**S5-187363 Rel-15 CR TS 28.541 Update NR NRM with Cell Relation**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0034 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Ericsson*

(Replaces S5-187151)

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

**S5-187154 CR Rel-15 TS 28.541 Correction of missing 5G NRM NRSectorCarrier IOC attributes.**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0035 Cat: F (Rel-15)  
  
 Source: Pivotal Commware*

**Abstract:**

Add missing beam-related attributes in NG-RAN 5G NR gNB’s NRSectorCarrier IOC.

**Discussion:**

MCC had detected some errors.

**Decision:** The document was **revised to S5-187337**.

**S5-187337 CR Rel-15 TS 28.541 Correction of missing 5G NRM NRSectorCarrier IOC attributes.**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0035 rev 1 Cat: F (Rel-15)  
  
 Source: Pivotal Commware*

(Replaces S5-187154)

**Abstract:**

This revision was cosmetic in nature, addressing the problems identified by MCC.

**Discussion:**

Pivotal Commware indicated the logic for using phi and theta rather than horizontal and vertical for reasons of alignment of terminology related to beams.

Nokia was pleased to see correct terminology in this revised version. There was some doubt whether there was technical content change compared to the previous version or not.

Ericsson noted the change from O to CM, but the condition was not given. The requirement was too general, so this solution was not really useful: did it actually support the requirement?

Pivotal Commware endeavoured to respond to these remarks.

Ericsson believed it was a big step to change from "monitoring" to "active management". The NRM needed functionality to handle this. The source company believed the market needed monitoring and measuring urgently.

Huawei had some concerns over the four new attributes.

Intel wondered whether the model handled single or multiple beams. Pivotal Commware stated that multiple, dynamic, beams were handled.

A CR to 28.540 was needed to provide a definitive requirement statement.

**Decision:** The document was **revised to S5-187364**.

**S5-187364 CR Rel-15 TS 28.541 Add read-only NRM Info Model definitions for beam IOC and attributes to NRSectorCarrier IOC**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0035 rev 2 Cat: F (Rel-15)  
  
 Source: Pivotal Commware*

(Replaces S5-187337)

**Discussion:**

This could not be discussed until '7542 had been dealt with.

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

**S5-187365 CR Rel-15 TS 28.540 Support read-only mgmt of NR beams in NRM definitions**

*Type: CR For: Agreement  
 28.540 v15.0.0 CR-0001 Cat: B (Rel-15)  
  
 Source: Pivotal Commware*

**Abstract:**

Rel-15 NG-RAN 5G NR utilizes beams that are subject to fault and performance challenges, and for which there are measurements generated in the RAN. To improve the effectiveness, efficiency, and reliability of read-only OA&amp;M systems, including—for illustrative purposes—NR fault and performance monitoring processes, a read-only representation of NR beams needs to be present in the NG-RAN NRM definitions. **Decision:** The document was **revised to S5-187514**.

**S5-187514 CR Rel-15 TS 28.540 Support read-only mgmt of NR beams in NRM definitions**

*Type: CR For: Agreement  
 28.540 v15.0.0 CR-0001 rev 1 Cat: B (Rel-15)  
  
 Source: Pivotal Commware*

(Replaces S5-187365)

**Discussion:**

Ericsson repeated his remarks on the original version. The representation should use the term "class". But these were beam properties.

**Decision:** The document was **revised to S5-187542**.

**S5-187542 CR Rel-15 TS 28.540 Support read-only mgmt of NR beams in NRM definitions**

*Type: CR For: Agreement  
 28.540 v15.0.0 CR-0001 rev 2 Cat: B (Rel-15)  
  
 Source: Pivotal Commware*

(Replaces S5-187514)

**Discussion:**

ZTE wondered what was meant by beam properties. ZTE also proposed to remove the read-only attribute. These points were clarified by several companies.

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

**S5-187189 Discussion paper about network slice priority handling in 3GPP management system**

*Type: discussion For: Discussion  
 Source: Huawei Telecommunication India*

**Abstract:**

The group is asked to endorse the following assumptions how 3GPP management system handles network slice priority and provides support of priority of NFV NS in context of Network Slicing:

- Network slice priority is set and handled in 3GPP management system

- Network slice priority is derived from communication service priority (e.g. emergency communication service)

- ETSI MANO is informed by 3GPP management system about NS and VNF LCM operations severity

**Discussion:**

[Secretary busy, could not record discussion.]

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

**S5-187190 Rel-16 CR Introduce definitions of Network slice management priority and operation severity**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0008 Cat: B (Rel-16)  
  
 Source: Huawei Telecommunication India*

**Abstract:**

New concept on network slice priority is introduced.

New concept on NFV MANO operation severity is introduced.

**Discussion:**

This was a consequence of the preceding discussion paper (which could not be agreed).

Nokia believed that these changed were targeted at the wrong spec. This contribution was not needed.

ZTE believed that MANO was responsible for network services, and some discussion with ETSI was needed.

Deutsche Telekom was also not in favour of this approach.

Cisco thought most of the text was not needed, and anyway the spec could not include an FFS statement.

Telecom Italia questioned the new text to clause 4.3: should this be network slice type?

**Decision:** The document was **not pursued**.

**S5-187367 Rel-16 CR Introduce definitions of Network slice management priority and operation severity**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0008 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei Telecommunication India*

**Discussion:**

No agreement could be arrived at, so this document was not made available.

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

**S5-187191 Rel-16 CR Add network slice management use case with priority**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0009 Cat: B (Rel-16)  
  
 Source: Huawei Telecommunication India*

**Abstract:**

New use case on network slice priority is introduced in this CR.

**Discussion:**

There was some concern over the wording of the pre-conditions. Nokia believed this high level of detail was unnecessary, though general service prioritization was necessary but was the responsibility of SA1. Nanjing Ericsson Panda believed that a comprehensive use case was indeed needed. Deutsche Telekom stated that this was only focused on communication services. This was insufficient.

**Decision:** The document was **revised to S5-187368**.

**S5-187368 Rel-16 CR Add network slice management use case with priority**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0009 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei Telecommunication India*

(Replaces S5-187191)

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

**S5-187192 Rel-16 CR Add network slice management interactions with severity type**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0010 Cat: B (Rel-16)  
  
 Source: Huawei Telecommunication India*

**Abstract:**

A use case added to illustrate management interaction with NFV MANO is about NS and VNF management operation severity sent to NFVO.

**Discussion:**

This was a continuation of the previous contribution. Nokia believed that this contribution was going in the right direction but the text could be clarified and reduced.

Deutsche Telekom did not like mixing severity with priority.

Orange was puzzled by the need to create a 3GPP subnetwork.

**Decision:** The document was **revised to S5-187369**.

**S5-187369 Rel-16 CR Add network slice management interactions with severity type**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0010 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei Telecommunication India*

(Replaces S5-187192)

**Discussion:**

Cover page problems.

**Decision:** The document was **revised to S5-187521**.

**S5-187521 Rel-16 CR Add network slice management interactions with severity type**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0010 rev 2 Cat: B (Rel-16)  
  
 Source: Huawei Telecommunication India*

(Replaces S5-187369)

**Discussion:**

Some check boxes were still not checked on the cover.

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

**S5-187193 Rel-16 CR Change NRM IOCs for network slice priority support**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0036 Cat: B (Rel-16)  
  
 Source: Huawei Telecommunication India*

**Abstract:**

Network slice priority attribute is added to NRM IOCs for network slice.

**Discussion:**

Nokia did not like the approach. It was also indicated that the data type was wrong - it should be an integer. The changes should be perhaps coupled with those of tdoc 7260.

**Decision:** The document was **not pursued**.

**S5-187194 Change NRM IOCs for network slice priority support stage 3**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0037 Cat: B (Rel-16)  
  
 Source: Huawei Telecommunication India*

**Abstract:**

Add NRM IOCs for network slice priority support stage 3

**Decision:** The document was **not pursued**.

**S5-187217 RRM Policy enhancements**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0038 Cat: C (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Add attributes in NRCellCU for network slice specific resource quotas including minimum and maximum quotas with margins. Other network slice users can borrow quota resources from a network slice when the resources would be unused. The margin will ensure that there are always resources for the network slice users for which the quota is reserved.

**Discussion:**

[revised without presentation]

**Decision:** The document was **revised to S5-187251**.

**S5-187251 RRM Policy enhancements**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0038 rev 1 Cat: C (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187217)

**Discussion:**

[revised without presentation]

**Decision:** The document was **revised to S5-187359**.

**S5-187359 RRM Policy enhancements**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0038 rev 2 Cat: C (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187251)

**Discussion:**

Ericsson proposed a wording change, and Huawei supported this. More precision over the meaning of radio resource was needed.

**Decision:** The document was **revised to S5-187426**.

**S5-187426 RRM Policy enhancements**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0038 rev 3 Cat: C (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187359)

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

**S5-187224 Discussion on TAC attributes in 28.541**

*Type: discussion For: Endorsement  
 28.541 v..  
 Source: Ericsson*

**Abstract:**

Based on findings in Rationale, it is proposed:

Proposal1: nRTAC

- Remove nRTAC from TS 28.541(from all places)

Proposal2: nRTACList

- Correct the text so that TAC according to TS 28.413 is used.

- Change the attribute name back to tACList, to make it clear.

Proposal3: coverageAreaTAList

- Align type with the nRTACList attribute

- Align allowed values with nRTACList attribute. This means “TAC (3-octet) as defined in clause 9.3.3.10 of TS 38.413 [5]”.

**Decision:** The document was **revised to S5-187420**.

**S5-187420 Discussion on TAC attributes in 28.541**

*Type: discussion For: Endorsement  
 28.541 v..  
 Source: Ericsson*

(Replaces S5-187224)

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

**S5-187245 Fix containment issue in YANG definition**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0039 Cat: F (Rel-15)  
  
 Source: Nokia Korea*

**Abstract:**

Change container to container list for the contained managed objects in ngran and 5gc

**Discussion:**

Some editorial corrections were needed

**Decision:** The document was **revised to S5-187410**.

**S5-187410 Fix containment issue in YANG definition**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0039 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia Korea*

(Replaces S5-187245)

**Abstract:**

This revision removes the YANG files.

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

**S5-187246 Correction of reference**

*Type: CR For: Agreement  
 32.432 v15.0.0 CR-0007 Cat: F (Rel-15)  
  
 Source: Ericsson Japan K.K.*

**Abstract:**

Implement correction

**Decision:** The document was **revised to S5-187421**.

**S5-187421 Correction of reference**

*Type: CR For: Agreement  
 32.432 v15.0.0 CR-0007 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson Japan K.K.*

(Replaces S5-187246)

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

**S5-187247 Discussion paper on the abbreviation of MF**

*Type: discussion For: Endorsement  
 Source: Ericsson*

**Abstract:**

Update the 28.533 by replacing the abbreviation MF with the words management function and removing MF from the abbreviations list.

Update the 28.530 by replacing the abbreviation MF with managed function.

Update the 28.622 by replacing the abbreviation MF with ManagedFunction.

**Discussion:**

Huawei proposed to introduced a new abbreviation for "management function". A lengthy discussion ensued.

**Decision:** The document was **revised to S5-187422**.

**S5-187422 Discussion paper on the abbreviation of MF**

*Type: discussion For: Endorsement  
 Source: Ericsson*

(Replaces S5-187247)

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

**S5-187248 Rel-15 CR 28.530 Replace MF with managed function**

*Type: CR For: Agreement  
 28.530 v15.0.0 CR-0003 Cat: F (Rel-15)  
  
 Source: Ericsson Limited*

**Abstract:**

Remove the abbreviation MF and replace with managed function

**Decision:** The document was **revised to S5-187423**.

**S5-187423 Rel-15 CR 28.530 Replace MF with managed function**

*Type: CR For: Agreement  
 28.530 v15.0.0 CR-0003 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson Limited*

(Replaces S5-187248)

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

**S5-187249 Rel-15 CR 28.533 Replace MF with management function**

*Type: CR For: Agreement  
 28.533 v15.0.0 CR-0004 Cat: F (Rel-15)  
  
 Source: Ericsson Limited*

**Decision:** The document was **revised to S5-187424**.

**S5-187424 Rel-15 CR 28.533 Replace MF with management function**

*Type: CR For: Agreement  
 28.533 v15.0.0 CR-0004 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson Limited*

(Replaces S5-187249)

**Discussion:**

Rev marks on cover

**Decision:** The document was **revised to S5-187522**.

**S5-187522 Rel-15 CR 28.533 Replace MF with management function**

*Type: CR For: Agreement  
 28.533 v15.0.0 CR-0004 rev 2 Cat: F (Rel-15)  
  
 Source: Ericsson Limited*

(Replaces S5-187424)

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

**S5-187250 Rel-15 CR 28.622 Replace MF with ManagedFunction**

*Type: CR For: Agreement  
 28.622 v15.1.0 CR-0028 Cat: F (Rel-15)  
  
 Source: Ericsson Limited*

**Decision:** The document was **revised to S5-187425**.

**S5-187425 Rel-15 CR 28.622 Replace MF with ManagedFunction**

*Type: CR For: Agreement  
 28.622 v15.1.0 CR-0028 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson Limited*

(Replaces S5-187250)

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

**S5-187260 Update NRM root IOCs to support slice priority**

*Type: CR For: Agreement  
 28.622 v15.1.0 CR-0029 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Add priority attribute in root-level NRM Managed Objects including Subnetwork, Managed Element and Managed Function, which will be inherited by all derived IOCs.

**Discussion:**

The data type was given as decimal, being more versatile than integer. Nokia could accept this.

**Decision:** The document was **revised to S5-187370**.

**S5-187370 Update NRM root IOCs to support slice priority**

*Type: CR For: Agreement  
 28.622 v15.1.0 CR-0029 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187260)

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

**S5-187263 Correct PLMN ID List Type in Solution Set Stage 2**

*Type: CR For: Agreement  
 28.658 v11.6.0 CR-0037 Cat: F (Rel-11)  
  
 Source: Ericsson GmbH, Eurolab*

**Abstract:**

Correct wrong data type specified for plmnidList

**Discussion:**

Huawei suggested a definite type for the parameter rather than referring to allowedValues. A better work item code was found.

**Decision:** The document was **revised to S5-187427**.

**S5-187427 Correct PLMN ID List Type in Solution Set Stage 2**

*Type: CR For: Agreement  
 28.658 v11.6.0 CR-0037 rev 1 Cat: F (Rel-11)  
  
 Source: Ericsson GmbH, Eurolab*

(Replaces S5-187263)

**Discussion:**

It was noted that the data type was not provided. There was a reference to a stage 2 SA2 TS, but that had no definition either. However Ericsson thought that this was common practice, an undefined data type was not standardized.

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

**S5-187265 Correct PLMN ID List Type in Solution Set Stage 2**

*Type: CR For: Agreement  
 28.658 v12.2.0 CR-0038 Cat: A (Rel-12)  
  
 Source: Ericsson GmbH, Eurolab*

**Abstract:**

Mirror CR

**Decision:** The document was **revised to S5-187428**.

**S5-187428 Correct PLMN ID List Type in Solution Set Stage 2**

*Type: CR For: Agreement  
 28.658 v12.2.0 CR-0038 rev 1 Cat: A (Rel-12)  
  
 Source: Ericsson GmbH, Eurolab*

(Replaces S5-187265)

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

**S5-187266 Correct PLMN ID List Type in Solution Set Stage 2**

*Type: CR For: Agreement  
 28.658 v13.1.0 CR-0039 Cat: A (Rel-13)  
  
 Source: Ericsson GmbH, Eurolab*

**Abstract:**

Mirror CR

**Decision:** The document was **revised to S5-187429**.

**S5-187429 Correct PLMN ID List Type in Solution Set Stage 2**

*Type: CR For: Agreement  
 28.658 v13.1.0 CR-0039 rev 1 Cat: A (Rel-13)  
  
 Source: Ericsson GmbH, Eurolab*

(Replaces S5-187266)

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

**S5-187267 Correct PLMN ID List Type in Solution Set Stage 2**

*Type: CR For: Agreement  
 28.658 v14.1.0 CR-0040 Cat: A (Rel-14)  
  
 Source: Ericsson GmbH, Eurolab*

**Abstract:**

Mirror CR

**Decision:** The document was **revised to S5-187430**.

**S5-187430 Correct PLMN ID List Type in Solution Set Stage 2**

*Type: CR For: Agreement  
 28.658 v14.1.0 CR-0040 rev 1 Cat: A (Rel-14)  
  
 Source: Ericsson GmbH, Eurolab*

(Replaces S5-187267)

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

**S5-187268 Correct PLMN ID List Type in Solution Set Stage 2**

*Type: CR For: Agreement  
 28.658 v15.2.0 CR-0041 Cat: A (Rel-15)  
  
 Source: Ericsson GmbH, Eurolab*

**Abstract:**

Mirror CR

**Decision:** The document was **revised to S5-187431**.

**S5-187431 Correct PLMN ID List Type in Solution Set Stage 2**

*Type: CR For: Agreement  
 28.658 v15.2.0 CR-0041 rev 1 Cat: A (Rel-15)  
  
 Source: Ericsson GmbH, Eurolab*

(Replaces S5-187268)

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

**S5-187269 Correct Plmnid Type in Solution Set Stage 3**

*Type: CR For: Agreement  
 28.659 v11.6.0 CR-0028 Cat: F (Rel-11)  
  
 Source: Ericsson GmbH, Eurolab*

**Abstract:**

Correct wrong data type specified for plmn id

**Discussion:**

Nokia and other companies objected to the change of type. The change was not backward compatible.

Ericsson believed that there was a confusion with the original allocations of MCC/MNC values 011 and 11, which were not the same. Two operators were affected.

**Decision:** The document was **revised to S5-187432**.

**S5-187432 Correct Plmnid Type in Solution Set Stage 3**

*Type: CR For: Agreement  
 28.659 v11.6.0 CR-0028 rev 1 Cat: F (Rel-11)  
  
 Source: Ericsson GmbH, Eurolab*

(Replaces S5-187269)

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

**S5-187270 Correct Plmnid Type in Solution Set Stage 3**

*Type: CR For: Agreement  
 28.659 v12.2.0 CR-0029 Cat: A (Rel-12)  
  
 Source: Ericsson GmbH, Eurolab*

**Abstract:**

Mirror CR

**Decision:** The document was **revised to S5-187433**.

**S5-187433 Correct Plmnid Type in Solution Set Stage 3**

*Type: CR For: Agreement  
 28.659 v12.2.0 CR-0029 rev 1 Cat: A (Rel-12)  
  
 Source: Ericsson GmbH, Eurolab*

(Replaces S5-187270)

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

**S5-187271 Correct Plmnid Type in Solution Set Stage 3**

*Type: CR For: Agreement  
 28.659 v13.1.0 CR-0030 Cat: A (Rel-13)  
  
 Source: Ericsson GmbH, Eurolab*

**Abstract:**

Mirror CR

**Decision:** The document was **revised to S5-187434**.

**S5-187434 Correct Plmnid Type in Solution Set Stage 3**

*Type: CR For: Agreement  
 28.659 v13.1.0 CR-0030 rev 1 Cat: A (Rel-13)  
  
 Source: Ericsson GmbH, Eurolab*

(Replaces S5-187271)

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

**S5-187272 Correct Plmnid Type in Solution Set Stage 3**

*Type: CR For: Agreement  
 28.659 v14.2.0 CR-0031 Cat: A (Rel-14)  
  
 Source: Ericsson GmbH, Eurolab*

**Abstract:**

Mirror CR

**Decision:** The document was **revised to S5-187435**.

**S5-187435 Correct Plmnid Type in Solution Set Stage 3**

*Type: CR For: Agreement  
 28.659 v14.2.0 CR-0031 rev 1 Cat: A (Rel-14)  
  
 Source: Ericsson GmbH, Eurolab*

(Replaces S5-187272)

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

**S5-187273 Correct Plmnid Type in Solution Set Stage 3**

*Type: CR For: Agreement  
 28.659 v15.2.0 CR-0032 Cat: A (Rel-15)  
  
 Source: Ericsson GmbH, Eurolab*

**Abstract:**

Mirror CR

**Decision:** The document was **revised to S5-187436**.

**S5-187436 Correct Plmnid Type in Solution Set Stage 3**

*Type: CR For: Agreement  
 28.659 v15.2.0 CR-0032 rev 1 Cat: A (Rel-15)  
  
 Source: Ericsson GmbH, Eurolab*

(Replaces S5-187273)

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

**S5-187274 Rel-15 CR 28.531 Implement minor corrections**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0011 Cat: F (Rel-15)  
  
 Source: Ericsson Limited*

**Decision:** The document was **revised to S5-187437**.

**S5-187437 Rel-16 CR 28.531 Implement minor corrections**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0011 rev 1 Cat: D (Rel-16)  
  
 Source: Ericsson Limited*

(Replaces S5-187274)

**Abstract:**

Change to Cat D and Rel-16.

**Decision:** The document was **revised to S5-187480**.

**S5-187275 Rel-15 CR 28.532 Correct erroneous reference to notification header**

*Type: CR For: Agreement  
 28.532 v15.0.1 CR-0025 Cat: F (Rel-15)  
  
 Source: Ericsson Limited*

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

**S5-187276 Rel-15 CR 28.533 Implement MnS naming agreement**

*Type: CR For: Agreement  
 28.533 v15.0.0 CR-0005 Cat: F (Rel-15)  
  
 Source: Ericsson Limited*

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

**S5-187277 Rel-15 CR 28.541 Implement minor corrections**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0040 Cat: F (Rel-15)  
  
 Source: Ericsson Limited*

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

**S5-187279 Rel-15 CR 32.156 Inconsistent definition of composition**

*Type: CR For: Agreement  
 32.156 v15.0.0 CR-0019 Cat: F (Rel-15)  
  
 Source: Ericsson Limited*

**Decision:** The document was **revised to S5-187438**.

**S5-187438 Rel-15 CR 32.156 Inconsistent definition of composition**

*Type: CR For: Agreement  
 32.156 v15.0.0 CR-0019 rev 1 Cat: D (Rel-16)  
  
 Source: Ericsson Limited*

(Replaces S5-187279)

**Decision:** The document was **revised to S5-187481**.

**S5-187287 Correct stage 3 description of the Provisioning Management Service**

*Type: CR For: (not specified)  
 28.532 v15.0.1 CR-0026 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The stage 3 description of the provisioning management service is corrected and completed.

**Discussion:**

The document was merged with the Huawei CR to become S5-187357.

**Decision:** The document was **merged**.

**S5-187289 Update NRM IRP Solution Set to support slice priority**

*Type: CR For: Agreement  
 28.623 v15.0.0 CR-0018 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

This CR was linked to S5-177260 and '7370.

**Decision:** The document was **revised to S5-187439**.

**S5-187439 Update NRM IRP Solution Set to support slice priority**

*Type: CR For: Agreement  
 28.623 v15.0.0 CR-0018 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187289)

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

**S5-187290 Update Stage 3 NRM for RRM Policy enhancements**

*Type: CR For: Agreement  
 28.541 v15.0.1 CR-0041 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

### 6.4 Rel-15 Operations, Administration, Maintenance and Provisioning (OAM&P)

#### 6.4.1 Assurance data and Performance Management for 5G networks and network slicing

**S5-187126 pCR 28.550 Add solution for performance data streaming**

*Type: pCR For: Approval  
 28.550 v2.1.0  
 Source: Intel, BT*

**Abstract:**

The use cases and requirements on performance data streaming have been defined in TS 28.550 [1], however the solutions are missing.

For performance data streaming, the producer, using a frequency defined by Granularity Period, produces the performance data and sends the performance data to the consumer(s). The volume of the performance data reported by streaming is expected to be small, and the Granularity period of the performance data stream needs to be configurable and is expected to be short (e.g., 1 minute).

Therefore, the solution of performance data streaming needs to take the following into account:

- The overhead of streams needs to be controlled as small as possible;

- The connection between the producer and consumer needs to be reliable, as unreliable connection would cause stream delay or lost.

**Discussion:**

Intel stated that the contribution was supported by additional companies.

Nanjing Ericsson Panda identified some editorial problem with the title of clause 6.1.a.2 and with the text of 6.2.a.2. If the stream was a channel, the data would be captured, and the wording needed clarification.

Nokia liked the proposal but was concerned that the job control and measurement reporting were mixed. It appeared that redundant steps resulted (in, eg, 6.1.a.1. Triggering a job should trigger measurement, but streaming should not. Which entity was responsible for establishing the streaming channel, producer or consumer? (Answer: consumer.) Multiple streams going through the same channel was an unnecessary complication.

Cisco wondered that, in view of contribution '7066, this contribution was somewhat similar. Intel denied this. Nokia agreed with Cisco.

Huawei offered another solution for the job creation, with the provider creating the connection to the consumer.

Ericsson thought the overhead was reasonable, but might be further reduced further by a few bytes. Also, the text was ambiguous: what was the meaning of "reliable"? Greater reliability implied additional overhead: reliable = slow!

**Decision:** The document was **revised to S5-187372**.

**S5-187372 pCR 28.550 Add solution for performance data streaming**

*Type: pCR For: Approval  
 28.550 v2.1.0  
 Source: Intel, BT*

(Replaces S5-187126)

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

**S5-187162 Rel-15 CR TS 28.552 Add the performance measurement of MCS distribution**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0022 Cat: F (Rel-15)  
  
 Source: Huawei*

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

**S5-187163 Rel-15 CR TS 28.552 Add Qos flow related performance measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0023 Cat: F (Rel-15)  
  
 Source: Huawei*

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

**S5-187164 Rel-15 CR TS 28.552 Correction of the Packet loss measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0024 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

Replace the GNBCUUPFunction with NRCellCU in the measurement object class. Change the name of the measurements to make the measurements more clear.

**Discussion:**

Ericsson considered that the current measurement defined in the spec was valid for three split and two split scenarios. The proposed change would support only a two split gNode-B, and this would not be acceptable to all vendors. Either a new measurement needed to be provided, or a measurement for both two and three split could be provided (bullet point f).

ZTE thought UP functions needed to refer to the CU cell, and the Huawei position was acceptable.

Intel considered the Ericsson point was good. In the absence of a model, there was no way to measure at the cell level.

**Decision:** The document was **revised to S5-187373**.

**S5-187373 Rel-15 CR TS 28.552 Correction of the Packet loss measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0024 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces S5-187164)

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

**S5-187165 Rel-15 CR TS 28.552 Add PDCP data volume measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0025 Cat: F (Rel-15)  
  
 Source: Huawei*

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

**S5-187166 Rel-15 CR TS 28.554 Add KPI of QoS flow Retainability**

*Type: CR For: Agreement  
 28.554 v15.0.1 CR-0002 Cat: F (Rel-15)  
  
 Source: Huawei*

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

**S5-187278 Presentation of TS 28.550 for approval**

*Type: TS or TR cover For: Approval  
 28.550 v2.1.0  
 Source: Intel, CMCC*

**Discussion:**

The mapping tables and one solution were missing from the spec, so there was some debate over whether the TS was stable enough for approval. There was also concern that the solution set was not implementable. Nokia was concerned that this was stage 2, but there was no sign of a stage 3 yet in Rel-15. The spec was thought to be 80% complete. But the Chairman noted that the WI was already declared as 100% complete. But in fact SA#81 has downgraded it to 80%, and the work plan needed to be updated. No exception sheet was needed according to SA#81 decision.

**Decision:** The document was **revised to S5-187523**.

**S5-187523 Presentation of TS 28.550 for approval**

*Type: TS or TR cover For: Approval  
 28.550 v2.1.0  
 Source: Intel, CMCC*

(Replaces S5-187278)

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

**S5-187018 Minutes of Assurance data and Performance Management for 5G networks and network slicing**

*Type: report For: (not specified)  
 Source: Rapporteur (Intel)*

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

**S5-187548 TS 28.550 incorporating pCRs approved at SA5#122**

*Type: draft TS For: Approval  
 28.550 v2.2.0  
 Source: Rapporteur: Yizhi Yao*

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

### 6.5 Rel-16 Operations, Administration, Maintenance and Provisioning (OAM&P)

#### 6.5.1 Management of QoE measurement collection

**S5-187114 Revised WID on Management of QoE measurement collection**

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

**Abstract:**

The deliverable dates are updated and the new spec numbers are shown.

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

**S5-187115 pCR R16 28.405-030 Include QoE parameters**

*Type: pCR For: Approval  
 28.405 v0.3.0  
 Source: Ericsson*

**Abstract:**

This proposal specifies parameters that are needed on management and control signalling interfaces.

**Discussion:**

Editorial: the yellowed highlighting would be removed on implementation.

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

**S5-187117 pCR R16 28.405-030 Add forced deactivation**

*Type: pCR For: Approval  
 28.405 v0.3.0  
 Source: Ericsson*

**Discussion:**

Editorial: the yellowed highlighting would be removed on implementation.

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

**S5-187118 pCR R16 28.405-030 Add X2 handover**

*Type: pCR For: Approval  
 28.405 v0.3.0  
 Source: Ericsson*

**Discussion:**

Ericsson stated that some comments had been received off line. The Chairman questioned the (unbulleted) indentations: what was the significance of the indentation? Ericsson stated that this was clear from the text. The Chairman advised that each option should be introduced, and the options numbered.

Huawei questioned the title of the new clause. There was no X2 interface in 3G. Also, it was believed that the RAN specifications already contained such an indication (second paragraph) and so a reference would be needed. Ericsson agreed to check this.

**Decision:** The document was **not pursued**.

**S5-187374 pCR R16 28.405-030 Add X2 handover**

*Type: pCR For: Approval  
 28.405 v0.3.0  
 Source: Ericsson*

(Replaces S5-187118)

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

**S5-187040 Resubmitted Reply LS from SA4 to SA5 on Attributes for QoE measurement collection**

*Type: LS in For: (not specified)  
 Original outgoing LS: S4-180240, to SA5, cc RAN2, RAN3  
 Source: SA4*

**Abstract:**

SA4 thanks SA5 for the analysis of QoE measurement collection, and the detailed comments included in S5-176408. SA4 has added clarifications where needed, in the attached document S4-180238.

SA4 has also revised the XML structure for QoE configurations, and in this process already addressed some of the comments. The revised QoE configuration can be found in clause L.2 in the attached document S4-180173.

**Discussion:**

Ericsson presented the document. There was a document on this topic in the QoS. However, the files in the zip file was wrongly numbered and the SA5 tdoc header was missing. The LS had been seen at an earlier meeting of SA5.

**Decision:** The document was **revised to S5-187375**.

**S5-187375 Resubmitted Reply LS from SA4 to SA5 on Attributes for QoE measurement collection**

*Type: LS in For: -  
 Original outgoing LS: S4-180240, to SA5, cc RAN2, RAN3  
 Source: SA4*

(Replaces S5-187040)

**Abstract:**

Includes the SA5 header.

**Decision:** The document was **replied to in S5-187376**.

**S5-187376 Reply to: Resubmitted Reply LS from SA4 to SA5 on Attributes for QoE measurement collection**

*Type: LS out For: approval  
 to SA4  
 Source: SA5*

**Decision:** The document was **revised to S5-187524**.

**S5-187524 Reply to: Resubmitted Reply LS from SA4 to SA5 on Attributes for QoE measurement collection**

*Type: LS out For: approval  
 to SA4  
 Source: SA5*

(Replaces S5-187376)

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

**S5-187119 pCR R16 28.405-030 Reporting collected data**

*Type: pCR For: Approval  
 28.405 v0.3.0  
 Source: Ericsson*

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

**S5-187019 Minutes of Management of QoE measurement collection**

*Type: report For: (not specified)  
 Source: Rapporteur (Ericsson)*

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

**S5-187547 TS 28.405 incorporating pCRs approved at SA5#122**

*Type: draft TS For: Approval  
 28.405 v0.4.0  
 Source: Rapporteur: Robert Petersen*

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

#### 6.5.2 Energy Efficiency of 5G

**S5-187122 pCR TS 28.310 – Management services**

*Type: pCR For: Approval  
 28.310 v0.1.0  
 Source: Orange*

**Abstract:**

This pCR proposes to add management services.

**Discussion:**

One minor editorial error was detected ("steam" -> "stream", last row of table 4.2-1).

**Decision:** The document was **revised to S5-187377**.

**S5-187377 pCR TS 28.310 – Management services**

*Type: pCR For: Approval  
 28.310 v0.1.0  
 Source: Orange*

(Replaces S5-187122)

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

**S5-187123 pCR TS 28.310 – Use cases and requirements for DV measurement**

*Type: pCR For: Approval  
 28.310 v0.1.0  
 Source: Orange, Huawei*

**Abstract:**

This pCR proposes to add specification-level requirements and use cases for Data Volume measurement.

**Discussion:**

Orange and Nanjing Ericsson Panda discussed the details of the new text at length.

It was agreed that the subclauses should start with "1" not "0".

**Decision:** The document was **revised to S5-187378**.

**S5-187378 pCR TS 28.310 – Use cases and requirements for DV measurement**

*Type: pCR For: Approval  
 28.310 v0.1.0  
 Source: Orange, Huawei*

(Replaces S5-187123)

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

**S5-187124 pCR TS 28.310 – Use cases and requirements for PEE measurement**

*Type: pCR For: Approval  
 28.310 v0.1.0  
 Source: Orange, Huawei*

**Abstract:**

This pCR proposes to add specification-level requirements and use cases for Power, Energy and Environmental parameters measurement.

**Discussion:**

Orange observed that the requirements of PEE measurement control etc were only applicable to physical networks, further study was required for virtual networks.

Nanjing Ericsson Panda wondered if existing use cases for the provisioning services covered PEE. Ericsson proposed an alternative approach for general use cases, and these could go into 5.4.5.

The Chairman spotted a few editorials.

It was agreed that the subclauses should start with "1" not "0".

**Decision:** The document was **revised to S5-187379**.

**S5-187379 pCR TS 28.310 – Use cases and requirements for PEE measurement**

*Type: pCR For: Approval  
 28.310 v0.1.0  
 Source: Orange, Huawei*

(Replaces S5-187124)

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

**S5-187125 Discussion paper on SS Burst set periodicity in NG-RAN**

*Type: discussion For: Endorsement  
 Source: Orange*

**Abstract:**

For the sake of energy saving, it is expected that base stations transmission elements can be switched off when there is no user to serve (no traffic or low traffic). But such periods are limited in time by the necessary signalling that remains for a base station to be made visible to the UEs.

The minimum signalling broadcast on a cell consists of Synchronisation Signal Burst Sets (or SS Burst Set). The periodicity set between SS Bursts gives the maximum time during which a base station may be put to sleep mode.

In E-UTRAN, the SS Burst Set periodicity is set to 5 ms and cannot be increased, limiting thus the sleep mode durations.

In NG-RAN, longer periodicities are supported. The SS Burst Set periodicity is configurable (5ms, 10ms, 20ms, 40ms, 80ms, 160 ms) (cf. [a] – clause 6.3.2 - ServingCellConfigCommon - page 318), with default value being 20 ms. Longer (than 20ms) periodicities are still possible but only for “secondary cells”, i.e. cells that would only be accessible through a “master cell”.

In practice, in NG-RAN, the SS Burst set periodicity can take several values which should be configurable via OA&M on a per cell basis, depending on the traffic load, cell activity, operator policy, etc.

It is proposed that a new attribute ‘sSBurstSetPeriodicity’ be added to IOC ‘NRCellDU’, in TS 28.541 [b]. This attribute should be Writeable and its allowed values should be as defined in [a].

**Discussion:**

Nanjing Ericsson Panda noted that the text had been drafted in the form of a CR, but it was clarified that this was just for the sake of convenience, and it was not intended that this tdoc be considered as a real CR.

Orange clarified that E-UTAN had no need for configuration of the sleep timer, but was a new feature of NG-RAN (advanced sleep mode).

Nanjing Ericsson Panda wondered whether an LS to ITU might be needed if this solution were eventually accepted.

Huawei had detailed comments to the parameters. Should these parameters be set using an on-the-fly approach? The RAN specification implied that just one parameter should be set during the cell setup phase. Orange agreed that this was possible, depending on operator policy. Maybe different values might be used for day time and night time. Maybe an LS to RAN was needed to determine whether a concrete CR would be needed. But Orange had already discussed this internally and believed the solution to be viable.

It was questioned whether support of sSBurstSetPeriodicity might be CM rather than M. In the RAN spec, this was Optional, and there was a default value.

The subject would be pursued at the next meeting.

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

**S5-187020 Minutes of Energy efficiency of 5G**

*Type: report For: (not specified)  
 Source: Rapporteur (ORANGE)*

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

**S5-187545 TS 28.310 incorporating pCRs approved at SA5#122**

*Type: draft TS For: Approval  
 28.310 v0.2.0  
 Source: Rapporteur: Jean Michel Cornil|y*

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

#### 6.5.3 OAM aspects of LTE and WLAN integration

**S5-187131 CR Rel-16 28.658 Add WLANMobilitySet IOC**

*Type: CR For: Agreement  
 28.658 v15.2.0 CR-0035 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

**Abstract:**

Added WLANMobilitySet IOC.

**Discussion:**

It was noted that some elements of new text did not bear revision marks. Also the semantics of the condition needed to be defined. Nanjing Ericsson Panda was concerned about the definition of the new attribute and its provision.

Ericsson noted that the new figure related to eNode-B management functions. Intel disagreed, but this needed to be checked.

Nokia noted that the type of the new attribute was "string", but its structure was rather complex: it was in fact a list of functions realing to the WLAN, and a simple string was a lazy way of defining it. It needed a new type definition. Also, what was the meaning of not applicable?

**Decision:** The document was **revised to S5-187380**.

**S5-187380 CR Rel-16 28.658 Add WLANMobilitySet IOC**

*Type: CR For: Agreement  
 28.658 v15.2.0 CR-0035 rev 1 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

(Replaces S5-187131)

**Discussion:**

Ericsson proposed an editorial correction.

**Decision:** The document was **revised to S5-187525**.

**S5-187525 CR Rel-16 28.658 Add WLANMobilitySet IOC**

*Type: CR For: Agreement  
 28.658 v15.2.0 CR-0035 rev 2 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

(Replaces S5-187380)

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

**S5-187132 CR Rel-16 28.659 Add WLANMobilitySet IOC**

*Type: CR For: Agreement  
 28.658 v15.2.0 CR-0036 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

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

**S5-187133 CR Rel-16 28.659 Add WLANMobilitySet IOC**

*Type: CR For: Agreement  
 28.659 v15.2.0 CR-0027 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

**Abstract:**

Added WLANMobilitySet IOC.

**Discussion:**

Nokia proposed a structural change. (Stage 2/3 alignments.)

**Decision:** The document was **revised to S5-187381**.

**S5-187381 CR Rel-16 28.659 Add WLANMobilitySet IOC**

*Type: CR For: Agreement  
 28.659 v15.2.0 CR-0027 rev 1 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

(Replaces S5-187133)

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

**S5-187134 CR Rel-16 32.425 Add measurements related to user data transmission on Xw interface for non-collocated LWA**

*Type: CR For: Agreement  
 32.425 v16.0.0 CR-0173 rev 2 Cat: B (Rel-16)  
  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-186236)

**Abstract:**

Added measurements related to volume of DL LWA PDUs on Xw interface, number of UEs associated with WLAN, and number of UEs with DL LWA PDUs

**Discussion:**

Nanjing Ericsson Panda and others proposed some editorial improvements.

**Decision:** The document was **revised to S5-187382**.

**S5-187382 CR Rel-16 32.425 Add measurements related to user data transmission on Xw interface for non-collocated LWA**

*Type: CR For: Agreement  
 32.425 v16.0.0 CR-0173 rev 3 Cat: B (Rel-16)  
  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187134)

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

**S5-187135 CR Rel-16 32.425 Add measurements related to XwAP procedures for non-collocated LWA**

*Type: CR For: Agreement  
 32.425 v16.0.0 CR-0174 rev 2 Cat: B (Rel-16)  
  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-186238)

**Abstract:**

Added measurements related to WT Configuration Update, WLAN Status Reporting and LTE-WLAN Aggregation procedures.

**Discussion:**

Nokia was concerned about the clause title - number of "attempted" WG configuration updates. What were the criteria for success or failure? Why was it necessary to count them? - the decision is performed by the eNode-B. Measurement 2 was difficult - this (counting messages received from the WT at the end point) was a wrong approach. Intel sought to justify the approach they had taken. Nanjing Ericsson Panda had similar concerns to those of Nokia. Maybe an alarm was needed. Nokia believed a deeper review of the intentions and requirements was needed.

**Decision:** The document was **revised to S5-187383**.

**S5-187383 CR Rel-16 32.425 Add measurements related to XwAP procedures for non-collocated LWA**

*Type: CR For: Agreement  
 32.425 v16.0.0 CR-0174 rev 3 Cat: B (Rel-16)  
  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187135)

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

**S5-187136 CR Rel-16 32.425 Add measurements related to RRC procedures for LWA**

*Type: CR For: Agreement  
 32.425 v16.0.0 CR-0175 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

**Abstract:**

Added measurements related to RRC procedures for LWA.

**Discussion:**

Nokia questioned the measured object: was the measurement per set or per member of the set? Intel replied that it was per set. Nokia was satisfied by this.

Nokia observed that this CR was one of a set, and it were necessary to agree all or none of them.

**Decision:** The document was **revised to S5-187384**.

**S5-187384 CR Rel-16 32.425 Add measurements related to RRC procedures for LWA**

*Type: CR For: Agreement  
 32.425 v16.0.0 CR-0175 rev 1 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

(Replaces S5-187136)

**Abstract:**

The dependency is indicated on the cover page.

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

**S5-187021 Minutes of Study on OAM aspects of LTE and WLAN integration**

*Type: report For: (not specified)  
 Source: Rapporteur (Ericsson)*

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

#### 6.5.4 Network policy management for mobile networks based on NFV scenarios

**S5-187175 Add Policy management architecture**

*Type: pCR For: Approval  
 28.311 v0.1.0  
 Source: China Mobile*

**Abstract:**

Add policy management architecture text to the skeleton.

**Discussion:**

Nokia questioned the meaning of NM and EM. How did this pertain to 5G architecture? China mobile indicated that the scope of this was only LTE. Orange noted that the draft 28.311 was clearly covering 5G.

Cisco believed the NM / EM model was not applicable to virtualized architecture. Nanjing Ericsson Panda shared these concerns: were 3GPP requirements different from those specified by ETSI? The work item scope was for NFV.

Orange did not consider that the figure was an NFV policy as suggested by the immediately preceding text. The interfaces [reference points] should be explicitly named.

Ericsson did not consider this document to cover policy on NFV, rather it was a behavioural description. The document's scope was unclear.

Deutsche Telekom was puzzled by the diagram and its title: no reference points were indicated.

Nokia believed there was a lot of unclarity over the scope of the contribution.

A few minor editorials were noticed.

The secretary noticed that this document, and many other pCRs, gave no indication of which (draft) spec was concerned, and not even an indication of the work item concerned, which could only be inferred from the title of the agenda item. The Chairman agreed that this aspect could be improved and encouraged contributors to explicitly mention the spec and, if necessary, the work item in the tdocs themselves..

**Decision:** The document was **revised to S5-187385**.

**S5-187385 Add Policy management architecture**

*Type: pCR For: Approval  
 28.311 v0.1.0  
 Source: China Mobile*

(Replaces S5-187175)

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

**S5-187174 Add Business level requirements**

*Type: pCR For: Approval  
 28.311 v0.1.0  
 Source: China Mobile*

**Discussion:**

[…] Cisco understood that this document referred only to NFV policies, and this term should be used rather than the wider interpretation of "network" policies.

In reference to the first element, Orange noted that the term OSS was not defined (although there was a definition in ETSI). There were several cases of unclear text.

Deutsche Telekom struggled with requirement 3. What was the underlying use case? China Mobile agreed that this could be clarified.

Some minor editorial matters were noticed.

**Decision:** The document was **revised to S5-187386**.

**S5-187386 Add Business level requirements**

*Type: pCR For: Approval  
 28.311 v0.1.0  
 Source: China Mobile*

(Replaces S5-187174)

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

**S5-187022 Minutes of Network policy management for mobile networks based on NFV scenarios**

*Type: report For: (not specified)  
 Source: Rapporteur (China Mobile)*

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

**S5-187546 TS 28.311 incorporating pCRs approved at SA5#122**

*Type: draft TS For: Approval  
 28.311 v0.2.0  
 Source: Rapporteur: Hao Zhang*

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

#### 6.5.5 Methodology for 5G management specifications

**S5-187068 TD YANG solution style guide**

*Type: discussion For: Endorsement  
 32.157 v..  
 Source: Ericsson Inc.*

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

**S5-187069 TD YANG solution style guide**

*Type: discussion For: Endorsement  
 32.160 v..  
 Source: Ericsson Inc.*

**Abstract:**

As 3GPP starts to define YANG Solution Sets it is needed that the solution sets and any included YANG modules follow common design principles and a common style. Commonality makes reading the modules easier and will serve as a guideline for future YANG Module designers and reviewers making their job easier. It will also make implementing these YANG models simpler.

Commonality should include areas like documentation rules, style, naming conventions, YANG constructs to be used or avoided, addressing principles, naming rules for modelling items like YANG Module names, namespaces and prefixes.

**Discussion:**

[It was noted that this was a late document.]

Ericsson indicated that the document covered the modelling rules, but the wording in the contribution was not directly appropriate for inclusion in a TS. The need was to map the UML to the protocol. YANG was itself a modelling tool, and some discussion on the style guide was needed. Nokia had already made several pertinent points.

Nokia wondered what was the document's relation to REST and JSON. Both of these had similar concepts, eg inheritance. Could these things be coupled fo make migration easier. YANG was not a long term solution. What were the filtering capabilities? Cf NetConf.

Ericsson apologised for the late appearance, and urged delegates to examine clauses 6.2, 5.1.4 and 5.3.1.2: these were very important and needed to be reviewed in depth.

In view of the late availability of the document, no final position could be reached at the present meeting. Delegates were urged to review it as requested by Ericsson and be prepared to discuss it at the next meeting. Discussion should start on the OEM email exploder.

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

**S5-187218 add rules for Stage 2 to YANG mapping in NRM**

*Type: pCR For: Agreement  
 32.160 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

According to agreement in SA#121 meeting (refer to endorsed discussion paper S5-186336 TD NRM Stage 3 definition rules), we need to investigate and formalize the rules for NRM stage 3 definition. UML to YANG mapping was one of topics in the discussion paper.

This document proposed a guideline for State 2 to YANG mapping to ensure the artefact defined in stage 3 YANG are consistent and aligned to industry best practice.

**Discussion:**

Nokia sought delegates' views on the form of the presentation in the tables. The document was more detailed than a similar one from Ericsson. It was clarified that this text was a new annex to the draft spec [which one?! - 32.160].

Ericsson questioned whether the first two lines of the table in A.X.2 were really necessary.

The author indicated that "supper" was meant to indicate the parent (superior) class.

The Chairman wondered whether the final TS would include both of the options, and Nokia clarified that this was the case.

The Chairman proposed to remove the word enhancement, and this was agreed.

Ericsson questioned the difference between rule and template. Further improvement of the Scope clause was needed, and maybe even the title of the spec itself. Would the spec also cover the protocols? In view of the title of the spec, which covered stages 2 and 3, then probably yes. Further wording changes were suggested.

**Decision:** The document was **revised to S5-187387**.

**S5-187387 add rules for Stage 2 to YANG mapping in NRM**

*Type: pCR For: Agreement  
 32.160 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187218)

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

**S5-187219 add rules for generic JSON and YANG NRM definition**

*Type: pCR For: Agreement  
 32.160 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

According to agreement in SA#121 meeting (refer to endorsed discussion paper S5-186336 TD NRM Stage 3 definition rules), we need to investigate and formalize the rules for NRM stage 3 definition. generic JSON and YANG NRM definition was one of topics in the discussion paper.

This document proposed a guideline for generic NRM definition for JSON and YANG solution.

**Discussion:**

Ericsson asked what was meant by "root". It was clarified that this could be a subnet. The title of A.x.1.1 was felt to be confusing: Generic or root IOC. One or the other should suffice. Nokia stated that this was the consequence of different terminology in use in IOC and YANG. The term "root" was preferred.

It was further clarified that this was a pCR to 28.160 (generic guidelines) but if accepted, there would also need to be an inclusion in 28.623.

**Decision:** The document was **revised to S5-187408**.

**S5-187408 add rules for generic JSON and YANG NRM definition**

*Type: pCR For: Agreement  
 32.160 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187219)

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

**S5-187220 add modulization rules in YANG NRM definition**

*Type: pCR For: Agreement  
 32.160 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

According to agreement in SA#121 meeting (refer to endorsed discussion paper S5-186336 TD NRM Stage 3 definition rules), we need to investigate and formalize the rules for NRM stage 3 definition. Modulization rules was one of topics in the discussion paper.

This document proposed a guideline for modulization of YANG solution.

**Discussion:**

Huawei was puzzled by the clause numbering. They were in fact just bullet points rather than clause titles. Ericsson wondered whether it was implied that the sequence of steps was important. Nokia replied that the order was not important. Text could be added to indicate this. Ericsson also believed there was confusion over classes and managed objects. There was further confusing terminology.

Ericsson further believed that A.X.2 was not independent: the stage 3 author had to decide which object was intended. There was evidently confusion over what was meant by an "independent" managed object.

In A.X.6, how was the date to be determined? This was the date of upload of the spec (the cover of the spec showed year and month).

**Decision:** The document was **revised to S5-187409**.

**S5-187409 add modulization rules in YANG NRM definition**

*Type: pCR For: Agreement  
 32.160 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187220)

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

**S5-187221 add rules for Stage 3 NRM packing and change tracking**

*Type: pCR For: Agreement  
 32.160 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

According to agreement in SA#121 meeting (refer to endorsed discussion paper S5-186336 TD NRM Stage 3 definition rules), we need to investigate and formalize the rules for NRM stage 3 definition. Stage 3 definition change control and track was one of topics in the discussion paper.

Currently, the stage 3 YANG, JSON and XML solutions are directly defined in TS 28.541 and other SA5 NRM specifications. It’s difficult to validate the definition, track the change of the definition, and export the definition to other SDO or opensource for reusing. Also it’s error prone to manually change the stage 3 definition in word document directly.

Now there’re many tools supporting YANG, JSON and XML edit and validation, it’s easier to standardization specialist and other engineers to define the solution sets with tool, generate related files and associate the files to 3GPP specification. 3GPP CT4 and ETSI NFV created separated yaml files for stage 3 definition and attached those files to specification package while copy the content to the word document of the specification.

This document proposed a method for stage 3 definition files organization and definition changes tracking.

**Discussion:**

An example could be found in S5-187245.

Huawei was worried about inconsistency between two copies of the code. Nokia agreed that this needed to be decided. The session chairman believed that CT4 already had a solution to this question. Huawei sought clarification on the tool needed.

ZTE had further questions on the identification of the version.

Ericsson thought the check is just to check the implementation of the CR, but did not check the syntax of the overall code. Why could the tool not do this? Nokia explained that the changes would be made on the YANG file. But Ericsson considered that this was the responsibility of MCC. How was the checking to be done?

The secretary described the method proposed by CT4.

Nokia believed that the current methods were error-prone.

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

**S5-187253 pCR 32.160 Insert guidelines and examples in NRM template**

*Type: pCR For: Approval  
 32.160 v0.0.0  
 Source: Ericsson Limited*

**Abstract:**

The templates defined in the different clauses are not self-explanatory for an author of management service specifications. It is therefore proposed to add some guiding text and examples in the template. The guiding text and example shall be removed when using the template for a specification. The guiding text in the template is in italic. The source text is from [1] and adapted to the management service terminology described in [2].

**Discussion:**

Nokia asked why 4.1.2 needed the new entity. Ericsson replied that the information had been taken from the existing specifications, or rather the template. Intel agreed with Ericsson's explanation.

Nokia proposed to make an abbreviation for "support qualifier". This would make the table layout much more elegant (and indeed had already used it in some contributions). Ericsson thought this would need a separate contribution for the template and this would be a major revision to introduce everywhere.

Huawei referred to the attributes, questioning how the table could fulfil all requirements of all different users.

Ericsson was concerned that there was a danger of introducing untestable requirements into the stage 3. A standardized mechanism was needed.

The secretary noticed that the verb "can" appeared in many places.

**Decision:** The document was **revised to S5-187411**.

**S5-187411 pCR 32.160 Insert guidelines and examples in NRM template**

*Type: pCR For: Approval  
 32.160 v0.0.0  
 Source: Ericsson Limited*

(Replaces S5-187253)

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

**S5-187255 pCR 32.160 Add stage 1 template**

*Type: pCR For: Approval  
 32.160 v0.0.0  
 Source: Ericsson Limited*

**Abstract:**

At the last meeting the group agreed on the clauses that are to be used in stage 2 specifications of Management Services (MnS). One of the inputs for stage 2 work are the specification level use cases and requirements [3].

It is proposed to add the specification level use case and requirements template, stage 1, to the 32.160.

Stage 1 comes before stage 2, therefore the content of current clause 4 (stage 2) needs to move to a new clause 5 and clause 4 needs to be populated with requirements template which is taken from [3] and updated to MnS terminology [2].

**Discussion:**

Ericsson pointed out the optionality offered by the last sentence of the first paragraph of 4.1.

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

**S5-187256 pCR 32.160 Insert guidelines and examples in template for operations and notifications**

*Type: pCR For: Approval  
 32.160 v0.0.0  
 Source: Ericsson Limited*

**Abstract:**

The templates defined in the different clauses are not self-explanatory for an author of management service specifications. It is therefore proposed to add some guiding text and examples in the template. The guiding text and example shall be removed when using the template for a specification. The guiding text in the template is in italic. The source text is from [1] and adapted to the management service terminology described in [2].

**Discussion:**

There was some confusion over what had been agreed at the previous meeting concerning precondition and postcondition.

Nokia wished to remove the old CORBA concept of exceptions. Ericsson defended their retention. Nokia preferred "error", but the concept needed to be retained.

**Decision:** The document was **revised to S5-187412**.

**S5-187412 pCR 32.160 Insert guidelines and examples in template for operations and notifications**

*Type: pCR For: Approval  
 32.160 v0.0.0  
 Source: Ericsson Limited*

(Replaces S5-187256)

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

**S5-187280 Rel-16 CR 32.156 Make the use of association roles optional**

*Type: CR For: Agreement  
 32.156 v15.0.0 CR-0020 Cat: C (Rel-16)  
  
 Source: Ericsson Limited*

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

**S5-187476 Rel-16 CR 32.156 Make the use of association roles optional**

*Type: CR For: Agreement  
 32.156 v15.0.0 CR-0020 rev 1 Cat: C (Rel-16)  
  
 Source: Ericsson Limited*

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

**S5-187480 Rel-16 CR 28.531 Implement minor corrections**

*Type: CR For: Agreement  
 28.531 v15.0.0 CR-0011 rev 2 Cat: D (Rel-16)  
  
 Source: Ericsson Limited*

(Replaces S5-187437)

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

**S5-187481 Rel-16 CR 32.156 Inconsistent definition of composition**

*Type: CR For: Agreement  
 32.156 v15.0.0 CR-0019 rev 2 Cat: D (Rel-16)  
  
 Source: Ericsson Limited*

(Replaces S5-187438)

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

**S5-187281 Rel-16 CR 32.156 Make the use of the visibility symbol optional**

*Type: CR For: Agreement  
 32.156 v15.0.0 CR-0021 Cat: C (Rel-16)  
  
 Source: Ericsson Limited*

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

**S5-187477 Rel-16 CR 32.156 Make the use of the visibility symbol optional**

*Type: CR For: Agreement  
 32.156 v15.0.0 CR-0021 rev 1 Cat: C (Rel-16)  
  
 Source: Ericsson Limited*

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

**S5-187295 Presentation of TS 32.160 to SA for information**

*Type: TS or TR cover For: Approval  
 32.160 v0.1.0  
 Source: Ericsson LM*

**Abstract:**

The present document contains the templates to be used for the production of Management service component specifications type A, type B and type C.

**Discussion:**

It was hoped that following the present meeting, the document would be sufficiently mature to present to TSG for information.

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

**S5-187023 Minutes of Methodology for 5G management specifications**

*Type: report For: (not specified)  
 Source: Rapporteur (Ericsson)*

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

**S5-187555 TS 32.160 incorporating pCRs approved at SA5#122**

*Type: draft TS For: Approval  
 32.160 v0.2.0  
 Source: Rapporteur: Jan Groenendijk*

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

#### 6.5.6 Intent driven management service for mobile networks

**S5-187155 pCR 28.812 Add concept for utilization of intent**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei*

**Abstract:**

This contribution proposes to add concept for utilization intent.

**Discussion:**

Cisco asked how the figure would be standardized. Huawei replied that the intent was to standardize the intent. First it was necessary to recognize the scenarios. Cisco believed it was very complex to formulate such language.

Intel believed that the figure represented a typical service. Huawei gave the example of handling five million smart meters.

Orange believed the concept of intent was useful when two communicating entities did not have the same level of knowledge, for example rows in 28.530.

Nokia agreed. The present document was not aligned with 28.530. The document did not discuss the level of detail of communication. He believed the text was lacking in substance. Huawei understood the problem but had difficulty in expressing the intentions in appropriate language.

Ericsson thought some of the language was too vague, and repeated the arguments he had offered at the previous meeting. The scope of the TR was very wide. The scope of "intent" should be limited to avoid ambiguity.

Deutsche Telekom wished to know if there was a definition of "communication service" and management of same. The study TR was as yet only a skeleton.

Huawei understood that the last paragraph implied that one network could be consumer of information provided by another. This gave a very detailed intent.

**Decision:** The document was **revised to S5-187413**.

**S5-187413 pCR 28.812 Add concept for utilization of intent**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei*

(Replaces S5-187155)

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

**S5-187156 pCR 28.812 Update the figures for area cell load balance and cell rehome scenario**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei*

**Abstract:**

This contribution proposes to update the Figures in clause 5.2 Scenario: Cell Relation and clause 5.3 Scranrio 3: Area load balance to make it more clear what’s is intent and how intent simply the management interface.

**Discussion:**

The only change was the replacement of the figure.

NEC thought there was an assumption that all the mechanisms in the network would be triggered by the intent. But these mechanisms are run in the network to optimize performance. Maybe the use cases could be more explicit to avoid this confusion. Huawei sought to clarify the meaning.

Nokia thought that things like ANR standardized many years ago, but it seemed from this text that these mechanisms no longer worked and needed to be replaced by "intent". Nokia believed that this contribution was re-inventing the wheel. Legacy products already did what was being described here. Huawei stated that the document only provided examples.

Cisco was concerned with the whole approach which was difficult to use in practice: how could network optimization be expressed in terms of intent? Optimization was extremely complex, and had to balance multiple conflicting targets. Compromise and trade-off would always be needed.

Orange agreed. There was no need for the concept of "intent".

Ericsson proposed to add a note to distinguish this new approach from traditional SON. Was intent-based specification a higher level concept compared to the traditional approach. But there was nothing new here unless there was a mechanism to automatically translate natural language into operational rules. The proposed note would indicate that the distinction was FFS. Huawei cited the example of roaming, and how this was currently handled. Ericsson replied that of course roaming was already adequately handled by existing methods.

Intel thought that there might be cases where target setting could be viewed as "intent". If no solution as to how "intent" was to be realized was offered, there was limited value in the Huawei proposal. Huawei stated that the intention was not to replace existing mechanisms by "intent", it was just a better way to express goals.

Ericsson supported the inclusion of the note mentioned above if it could be very concrete. But there was little interest in standardizing this concept. For each well-known use case there was no interest in intent. Huawei believed their approach would simplify use cases by providing a generic approach. Ericsson still believed this was a solution looking for a problem.

**Decision:** The document was **revised to S5-187414**.

**S5-187414 pCR 28.812 Update the figures for area cell load balance and cell rehome scenario**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei*

(Replaces S5-187156)

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

**S5-187157 pCR 28.812 Add intent driven instant cell deletion scenario**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei*

**Abstract:**

Due to network planning (e.g. reduce the capacity can be provided by certain RAN node), the operator wants to delete an existing Cell. In order to fulfil deleting a cell, operator needs to trigger lots of request to the RAN Management System except delete the specified Cell, for example, operator needs to request the RAN Management system to delete all associated CellRelaton(s) and ExternalCell(s). So this contribution proposes to add intent-driven instant cell deletion scenario to make the cell deletion procedure effectively.

**Discussion:**

Huawei noted that the remarks made on '7156 would apply to this one.

**Decision:** The document was **revised to S5-187415**.

**S5-187415 pCR 28.812 Add intent driven instant cell deletion scenario**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei*

(Replaces S5-187157)

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

**S5-187158 pCR 28.812 Add intent driven network optimization scenario**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei*

**Abstract:**

The network becomes more complex to satisfy the service diversity and ensure user experience (e.g. user experienced data rate) of mobile service is very important, which will bring big challenge to the network management and operation. What network consumer care is the user experience improvement instead of how to optimize network.

For example, how to ensure lower percentage of users with low user experienced data rate is the key factor for business, because users may change to use another network for the reason of bottom data rate. Weak coverage, handover frequently and other network issues can be the causes for low user experienced data rate, so it is not easy for the consumer to specify which network optimization (e.g. CCO, HO, machine learning) technologies to be used. So as network consumer, it can use IDM service to express his intent that the percentage of users with low experienced data rate (e.g. <5M) should be less than certain value (e.g. 1%). To fulfil the received intent, the network provider considers to use one or more network optimization method (e.g. CCO, HO, machine learning), derives the requirements (e.g. network configuration parameters, policy) for the selected network optimization methods, and configure the network to ensure the specified percentage of low experienced data rate.

This contribution proposes to add intent driven utilizing user experience information for network optimization scenario.

**Discussion:**

Ericsson thought the previous tdoc's comments also applied here. The content of the document looked very much like SON and should be part of that study rather than this one. How did "intent" SON differ from traditional SON? Intel shared these concerns.

Orange thought that in this case, perhaps it was human driven rather than automated. The consumer was a human.

**Decision:** The document was **revised to S5-187416**.

**S5-187416 pCR 28.812 Add intent driven network optimization scenario**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei*

(Replaces S5-187158)

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

**S5-187160 pCR 28.812 Update network provisioning scenario**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei*

**Abstract:**

There is an ongoing work in GSMA NEST group to capture vertical industries use cases and requirements in a form of Generic Slice Template (GST) document. The final output of this GSMA work is expected to provide a GST with common set of attributes; used by verticals to provide their intention of ordering a network slice with specific characteristics, used by operator’s to fulfil verticals intention (e.g. by deploying one or more network slice instances). Once the vertical industry customer and the operator agrees on the subset of GST attributes, values are added to the attributes and a new file is created, Network Slice Type (NEST), that may or may not be mapped to Slice Service Types (SSTs), define by 3GPP.

The created NEST file should be associated with Network Slice Template(s) in the network slice preparation phase, where network planning information is added and Network Slice Template (NST) is being designed for network slice instantiation. This scenario consist of multiple manual data mapping steps and repeated actions captured in NEST files for different network slice consumers or vertical industry, so it should be a good candidate for Intent Driven Management Service (IDMS) scenario.

For example, some specific network characteristics provided in NEST may include information of geographic area, DL/UL throughput per UE and/or per slice, user density, UE speed, etc. The operator is expected to analysis the vertical industry customer intent to fulfil these characteristics. IDMS can translate the customer’s intent expression into network management intent that further translates into configuration parameters for network provisioning. These configuration parameters can be related to, for example, cell list, TA list, cell coverage, DL/UL throughput per cell, handover related parameters and other configurations related to radio access network or capacity, memory and other deployment related NF configuration of the core network.

**Discussion:**

Nokia questioned that GSMA NEST had done all the work and 3GPP just had to rubber-stamp it? Huawei said no, because NEST had not yet been successful in having their ideas widely adopted. Nokia preferred to rely on traditional SA1 requirements. It was not useful to use the GSMA example in the document.

Orange proposed to use the same role names as used in 28.520.

Intel questioned the meaning of the existing wording at the end of 5.1.2.

**Decision:** The document was **revised to S5-187417**.

**S5-187417 pCR 28.812 Update network provisioning scenario**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei*

(Replaces S5-187160)

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

**S5-187167 pCR 28.812 NSI resource utilization optimization**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei Tech.(UK) Co., Ltd*

**Abstract:**

IDM improves automation by allowing the customer to present high level intents to obtain complex network management services. One of the key issues of TR 28.812 is to determine scenarios related to IDM.

**Discussion:**

Nokia wondered how this differed from SON configuration. There was no need for "intent". Huawei replied that this was a higher level than SON. This was a concern to Nokia: SON was not "legacy" technology, it was still applicable to 5G, and could be considered at both high and low levels. Huawei stated that there was no intention to make SON obsolete. This wold enable the network provider to optimize services, but the exact means of doing so was not yet specified.

Huawei wished to concentrate on the meaning of "intent" but not go into fine details at this stage. It could be used to define a himan interface.

Cisco had encountered the view that this sort of functionality could be standardized, but believed that this was not so due to the complexity and the number of parameters and trade-offs to be resolved. Even the definition of terms was difficult to standardize from one network provider or vendor to another. For example what did the intention "optimize network utilization" imply?

Huawei understood the problem of complexity. The precondition was an attempt to limit the scope of the problem.

Deutsche Telekom wished to understand what was the target. Was it a question of refinement of high level desires?

**Decision:** The document was **revised to S5-187418**.

**S5-187418 pCR 28.812 NSI resource utilization optimization**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei Tech.(UK) Co., Ltd*

(Replaces S5-187167)

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

**S5-187178 pCR 28.812 Add introduction for Intent Expression**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei Tech.(UK) Co., Ltd*

**Abstract:**

It is important to specify the intent expression, so that the intents are understood between the IDM service (IDMS) consumers and providers.

**Discussion:**

Nokia did not believe that this was a good example of an intent. The intent would be better expressed as "ensure telecommunications along highway 417 between points X and Y".

ZTE thought an operator needed to have an intention to provide any service. Everything was an intent! Huawei thought that was too narrow an interpretation.

Ericsson asked if the intent expression was to be standardized. If not, it was not at all clear what the topic intended. Huawei stated that this was explained by the second sentence in the first paragraph. Ericsson disagreed: what was the standardized language? Huawei recalled that the goal of standardizing expression was mentioned in the scope of the TR.

Cisco understood that clause 4.1.2 intended to provide a solution in terms of a standardized language and syntax. Also, the example given was good insofar as it was incomplete. It should also describe the potential compromises in terms of, for example, QoS in the case where adequate network resources were not available. Huawei agreed on the complexity issue, but here was just an example of what information might be included in the intent. There was no plan to include semantics or syntax at this point.

Deutsche Telekom proposed a top down approach, and the example was just that, only an example. But the target was not well expressed. What was it intended to standardize at the end of the day? It was only possible to standardize input and output.

NEC believed that the idea here was to translate from high level language to low level language. But was it the intention to provide some algorithm to carry out this operation? Huawei stated that the translation part would not be standardized. How the translation was performed (eg to the configuration of a cell) was not within the scope of the TR.

**Decision:** The document was **revised to S5-187419**.

**S5-187419 pCR 28.812 Add introduction for Intent Expression**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei Tech.(UK) Co., Ltd*

(Replaces S5-187178)

**Discussion:**

Ericsson proposed some clarification of the text.

**Decision:** The document was **revised to S5-187526**.

**S5-187526 pCR 28.812 Add introduction for Intent Expression**

*Type: pCR For: Approval  
 28.812 v0.1.0  
 Source: Huawei Tech.(UK) Co., Ltd*

(Replaces S5-187419)

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

**S5-187024 Minutes of Intent driven management service for mobile networks**

*Type: report For: (not specified)  
 Source: Rapporteur (Huawei)*

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

**S5-187552 TR 28.812 incorporating pCRs approved at SA5#122**

*Type: draft TR For: Approval  
 28.812 v0.2.0  
 Source: Rapporteur: Lan Zou*

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

#### 6.5.7 Enhancement of performance assurance for 5G networks including network slicing

**S5-187048 R16 CR 28.552 Add CQI measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0006 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Definitions of wideband CQI distribution in non-PMI mode and average CQI in PMI mode are respectively added.

**Discussion:**

Huawei had a related contribution. Meanwhile, why was it necessary to differentiate non-PMI and PMI? Also why were the one-port and multiple-port cases distinguished?

For information, China Mobile made the CQI calculation in both PMI and non-PMI modes.

Ericsson wondered who was the receiver of this information. Ericsson also agreed with Huawei on the PMI separation question.

Cisco believed that there was no definition of PMI or non-PMI mode, but the reason for change on this CR was helpful and might usefully be included in the text of the TS. ZTE agreed with this idea, bearing in mind the requirement of China Mobile.

**Decision:** The document was **revised to S5-187440**.

**S5-187440 R16 CR 28.552 Add CQI measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0006 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

(Replaces S5-187048)

**Decision:** The document was **not pursued**.

**S5-187049 R16 CR 28.552 Add RSRP measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0007 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Definitions of beam based RSRP distribution is added.

**Discussion:**

Cisco wondered how the bins could be configured. ZTE said that the answer could be found in TS 38.214, but the solution was vendor-dependent. Intel agreed that there was no standardized solution. However, Ericsson stated that RAN had no measurement for NRCellDU.Beam.

Huawei thought that the overall coverage measurements could not use this parameter (which was needed for handover). ZTE thought that coverage was used not only for handover, but for general statistics gathering such as coverage quality. Ericsson agreed.

**Decision:** The document was **revised to S5-187442**.

**S5-187442 R16 CR 28.552 Add RSRP measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0007 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

(Replaces S5-187049)

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

**S5-187050 R16 CR 28.552 Add Flow Setup measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0008 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Add the following measurements:

- number of QoS flows attempted to setup

- number of QoS flows successfully established

- number of QoS flows failed to setup

**Discussion:**

Huawei had a similar document in S5-187209, and ZTE document S5-187051 was also related.

Merged to S5-187443.

**Decision:** The document was **merged**.

**S5-187051 R16 CR 28.552 Add Flow release measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0009 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Add the following measurements:

- number of QoS flows attempted to release

- Number of QoS flows attempted to release per cause

**Discussion:**

Merged to S5-187443.

**Decision:** The document was **merged**.

**S5-187209 Rel-16 CR TS 28.552 Add Qos flow related performance measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0032 Cat: B (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Add the performance measurement of MCS distribution in TS 28.552.

**Discussion:**

This document was considered with SP-187050 & '7051 from ZTE.

Cisco wondered if there were definitions of bursty and continuous flow.

Ericsson agreed with the idea to merge this with the two ZTE CRs, using remote mapped only. Ericsson also wanted sub counters in all cases. It was also noted that the E1 protocol (related to flow activity) was not yet available from RAN.

Intel had a question on QCI, was this to support option 3? The NR cell CU could not be used here.

Merged to S5-187443.

**Decision:** The document was **merged**.

**S5-187443 QoS flow related measurements**

*Type: other For: Approval  
 28.552 v15.0.0 CR-0035 Cat: - (Rel-16)  
  
 Source: Huawei, ZTE, Ericsson*

**Abstract:**

Combines tdocs S5-187050, '7051 and '7209.

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

**S5-187052 R16 CR 28.552 Add MCS Distribution measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0010 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Definitions of measurement for PDSCH/PUSCH MCS distribution are added.

**Discussion:**

Huawei noticed that rank had not been considered, and this could have an impact on the outcome. The CQI case was similar. Huawei feared this would cost a lot of memory.

Huawei also had a contribution on MCS distribution.

Ericsson noticed that there was a similar measurement in S5-187208. Meanwhile it was noted that in point I there was no family or group.

Intel wished to see a reference to the stack.

Nokia proposed an editorial modification.

**Decision:** The document was **revised to S5-187491**.

**S5-187491 R16 CR 28.552 Add MCS Distribution measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0010 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE, Huawei*

(Replaces S5-187052)

**Discussion:**

The combination of the ZTE and Huawei contributions needed further refinement.

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

**S5-187208 Rel-16 CR TS 28.552 Add the performance measurement of MCS distribution**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0031 Cat: B (Rel-16)  
  
 Source: Huawei*

**Discussion:**

This CR was considered alongside that in S5-187052. ZTE believed it would be difficult to merge the two. Huawei believed statistics on only one dimension as proposed by ZTE was not workable.

Intel could support either two separate counters or a combination of the two. Ericsson believed that one counter was preferable. Huawei preferred separate counters as being clearer. ZTE and Huawei could not agree on the better approach.

Cisco stated that in 5G there could be simultaneous transmission based on different tables, and the Huawei contribution assumed always one table. Concerning the ove vs two dimension question, it should be possible to use the same index, thus solving the problem of dimensions. Huawei stated that for the three tables of their contribution, this would not be possible. ZTE believed merging was not possible, separate tables and indexes were needed.

The document was merged into S5-187491.

**Decision:** The document was **merged**.

**S5-187459 Rel-16 CR TS 28.552 Add the performance measurement of MCS distribution**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0031 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei*

(Replaces S5-187208)

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

**S5-187053 R16 CR 28.552 Add TB related measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0011 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Use case and definitions of TB related is added.

**Discussion:**

Huawei asked why 16- and 64-QAM counters were not considered. Also, in clause 5.1.1.X.3 , how would this work? What was the difference between 5.1.1.X.4 and the X.file. ZTE believed that MU-MIMO would need a lot of layers.

Ericsson point d of 5.1.1.X.4 should indicate a set of integer values rather than a single one. In 5.1.1.X.5 the existing layer could not handle the transmission properly. It was not clear. For the uplink cases eg clause 5.1.1.X.8, was SU-MIMO excluded? ZTE explained the situation for residential TBs.

Intel wondered whether the sub value should need a separate counter. ZTE referred to point g of 5.1.1.X.8 .

**Decision:** The document was **revised to S5-187444**.

**S5-187444 R16 CR 28.552 Add TB related measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0011 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

(Replaces S5-187053)

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

**S5-187054 R16 CR 28.552 Add RLC data volume measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0012 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Definitions of RLC SDU Volume are respectively added.

**Discussion:**

Intel agreed that measuring the data volume was useful. But for 5G, the protocol level needed to be considered. ZTE responded that different core network configurations could be expected, so the highest layer had been chosen to be common across all networks.

Huawei had similar comments to that on the previous document. For example, point e of 5.1.1.X.1 was not implementable, it was difficult to see how the calculation could be performed. RLC level was not necessary, and for PDPC splitting, Huawei proposed a different approach. ZTE explained their approach in detail.

Ericsson, at a previous meeting SA5 had asked RAN2 to define such measurements, so it was up to RAN2. The proposed measurement was not possible in a dual bearer configuration. There was a Huawei contribution on this in S5-187210.

Orange wondered which criteria allowed measurement to be defined by RAN2 as opposed to SA5. Ericsson suggested that radio parameters were the province of RAN2. Intel said that the LTE approach was to distinguish between MAC layer and layer 2. But for LTE RRC there was no need to consult RAN2. Ericsson recalled that there was a long-standing agreement along these lines. RAN2 should detail the measurements in their own specs. Orange had noted that the LS which SA5 had sent to RAN2 had simply been noted and not taken any action. Ericsson indicated that RAN2 had been too busy to do this, so had allowed SA5 to do it.

**Decision:** The document was **revised to S5-187445**.

**S5-187445 R16 CR 28.552 Add RLC data volume measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0012 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

(Replaces S5-187054)

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

**S5-187055 R16 CR 28.552 Add PDCP data volume measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0013 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Definitions of PDCP PDU Volume are respectively added.

**Discussion:**

Huawei's comments on the previous document applied here. The solution might not be implementable. Ericsson agreed. SA5 should wait for a response from RAN2. Meanwhile, the data volume was defined by cell so was applicable only to two-split measurements, and this was not appropriate. But this could be solved.

Cisco noted that the contribution referred of bits, but the management objects, whereas the data transfer was in fact between GNDU and GNCU.

Intel believed that the comment from Ericsson was very important. It would then be possible to perform measurements down to cell level. The model should support this.

Huawei suggested to examine the use case, using the LTE method. RAN2 should be consulted. Intel recalled that RAN2 was only consulted on layer 2 matters. Layer1 and layer 3 could be done by SA2. It seemed necessary to arrive at an agreed principle. Ericsson suggested toing back to the wording of the original agreement.

Finally it was agreed to merge S5-187055 and '7210.

**Decision:** The document was **merged**.

**S5-187210 Rel-16 CR TS 28.552 Add PDCP data volume measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0033 Cat: B (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Add PDCP data volume related measurements in TS 28.552.

**Discussion:**

ZTE believed the CR mixed different concepts. Huawei insisted that their approach was valid. Ericsson preferred the Huawei approach.

It might be desirable to merge this contribution with S5-187055. ZTE and Huawei could not agree with each other on the better way forward. Cisco believed that a merger was possible if the meeting concentrated on the common elements, with a view to extension in the future.

Finally it was agreed to merge S5-187055 and '7210.

**Decision:** The document was **merged**.

**S5-187456 R16 CR 28.552 Add PDCP data volume measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0036 Cat: B (Rel-16)  
  
 Source: Huawei, ZTE Wistron Telecom AB*

(Replaces S5-187055)

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

**S5-187056 R16 CR 28.552 Add PDCP throughput measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0014 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Definitions of PDCP throughput are respectively added.

**Discussion:**

Ericsson believed RAN2 should look into this with a view to improving it. Intel and Huawei agreed. This should be included in the LS to RAN2.

**Decision:** The document was **not pursued**.

**S5-187057 R16 CR 28.552 Add TA related measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0015 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

Definitions of UE Rx – Tx time difference related measurements and use case are added.

**Discussion:**

Ericsson believed this CR was premature because the measurement had not yet been defined. Intel thought there was a possible way forward. Huawei feared the contents of the measurements might be too large and this might be an issue for operators. Some disagreement remained at the end of a discussion on this point.

Cisco believed it would be able to judge how many mobiles were close to / far from the base station, and this was an important measurement.

Ericsson observed that the place where one measured could also be useful.

Huawei referred to the LTE case, where the statistics were based on the cell.

**Decision:** The document was **revised to S5-187457**.

**S5-187457 R16 CR 28.552 Add TA related measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0015 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

(Replaces S5-187057)

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

**S5-187071 DP on PM terms for NSI and NSSI**

*Type: discussion For: Discussion  
 Source: Cisco Systems Inc.*

**Abstract:**

There is certain terminology problem in categorization of the network and slicing related performance indicators

For example, in the TS 28.552 same thing is called “KPI” and, another time, “measurement”.

The confusion apparently is caused by the fact that the latency can be computed, based on the latency measurements collected from several NFs. The fact that the network latency is computed, makes it similar to KPIs. On the other hand, existing latency indicators, e.g. in RAN, are measured rather than computed and reported by the network node.

So the network latency is similar, but not identical to both “measurements” and “KPIs”. Same problem was identified in the SA5 discussions on the NSI/NSSI performance indicators.

The conclusion is that for such performance indicators, we need to create a new category. The name proposed for this category, in case of NSIs, is “NSI Performance Indicators” or NSPIs. Similarly NSSPI stands for “NSSI Performance Indicators”. These names are associated with “NSI/NSSI performance data” in the TS 28.550. In other cases e.g. for the whole network it can be “network performance indicators” or NPIs.

See the CR S5-187070.

**Discussion:**

The discussion paper was by way of justification for S5-187070.

Intel wondered whether the new term NPI wholly replaced KPIs. Cisco replied that this was not the intention.

Ericsson believed the original "confusion" over "KP"I and "measurement" was really just editorial. Was a new term really necessary, could not the objective be met by redefining the term KPI? Cisco stressed that different terms were needed for different concepts. End to end measurements were quite different from measurements made at a given point. It was important to avoid confusion over terminology.

China Mobile wished for examples of different measurements. End to end KPIs were a different kettle of fish. Cisco that this only emphasised the need for well understood terms to be used.

Huawei's main comment was that for the subnetwork and slice, new terms might be needed. The difference between performance measurements and KPIs was not always evident, and sometimes were used interchangeably. This was obviously wrong: KPIs were "key" whereas not all sundry measurements could be so described. But maybe the new NPIs concept was in fact equivalent to KPIs. Cisco partially agreed, but noted that some KPIs comprised combinations of several measurements.

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

**S5-187070 PM terms for NSI and NSSI**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0016 Cat: F (Rel-16)  
  
 Source: Cisco Systems Belgium*

**Abstract:**

It is proposed to define new categories of performance indicators: for NSI, NSSI and the network.

**Discussion:**

Nokia gave some detailed feedback and wondered whether there was really a need for the new term NPI. This could lead to some simplification of the text. Cisco feared over simplification, and was adamant that an agreed vocabulary was needed.

Intel understood that performance indicators might be an aggregate of measurements.

Intel claimed that it was possible to have a generic definition: it was necessary to clearly indicate the trigger and how the aggregation was performed.

Huawei supported the idea, but some more discussion on NPI was needed. Text could be taken from the preceding discussion paper. Huawei was against the simplification of the initial text proposed by Nokia. Nokia agreed that it would be good to update the template to provide examples of different types of performance indicator.

**Decision:** The document was **revised to S5-187458**.

**S5-187458 PM terms for NSI and NSSI**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0016 rev 1 Cat: F (Rel-16)  
  
 Source: Cisco Systems Belgium*

(Replaces S5-187070)

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

**S5-187127 CR Rel-16 28.552 Add PDU Session Modification related measurements for SMF**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0017 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

**Abstract:**

Added measurements related to requested, successful and failed PDU session modifications;

Added measurements related to number of QoS flows in the PDU session modifications.

**Discussion:**

Ericsson thought there were too many use cases in the CR, some of which were rather similar. Intel explained that there were UE-initiated and SMF-initiated tests since performance could differ between these. Also there were measures of success and failure for each parameter. Ericsson questioned whether all use cases were really QoS related.

**Decision:** The document was **revised to S5-187474**.

**S5-187474 CR Rel-16 28.552 Add PDU Session Modification related measurements for SMF**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0017 rev 1 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

(Replaces S5-187127)

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

**S5-187128 CR Rel-16 28.552 Add PDU Session Release related measurements for SMF**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0018 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

**Abstract:**

Added measurements related to PDU session release initiated by AMF.

**Discussion:**

In this case, only release requests initiated by the AMF were thought useful to measure.

Ericsson had detailed remarks to be discussed off line.

**Decision:** The document was **revised to S5-187475**.

**S5-187475 CR Rel-16 28.552 Add PDU Session Release related measurements for SMF**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0018 rev 1 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

(Replaces S5-187128)

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

**S5-187129 CR Rel-16 28.552 Add N4 Session Establishment related measurements for UPF**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0019 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

**Abstract:**

Added measurements related to requested and failed N4 session establishments for UPF.

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

**S5-187130 CR Rel-16 28.552 Add NF performance measurements related to VR**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0020 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

**Abstract:**

In case the NF is virtualized, the performance of an NF may be impacted by the underlying VRs (i.e., virtual CPUs, virtual memories and virtual storages). To enable the operator to analyse the impact of the VRs to the performance of the NF, the performance of the virtual compute, virtual memory and virtual disk also needs to be monitored.

This pCR is to add VR related measurements for NFs.

**Discussion:**

Nokia observed that the measurements were at the function level, but there was not a 1:1 mapping to VRs. Intel had considered this point, and the derivation algorithm was vendor-specific. Nokia believed the detail in the CR limited an implementor's algorithm. And ultimately, what use would an operator make of these measurements?

ZTE thought that it was necessary to differentiate the core network and network functions. Intel disagreed.

Ericsson recalled discussions that had taken place on virtualization. If the measurements were to be split into all the different functions, MANO would provide values, but some software would be necessary in user applications. How should the vendor-specific combinations be achieved? Intel replied that the producer knew how to do this. Ericsson thought that the overall VNF operation was of interest, not the individual parameters.

**Decision:** The document was **revised to S5-187460**.

**S5-187460 CR Rel-16 28.552 Add NF performance measurements related to VR**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0020 rev 1 Cat: B (Rel-16)  
  
 Source: Intel China Ltd.*

(Replaces S5-187130)

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

**S5-187161 Rel-16 CR TS 28.552 Add the performance measurement of CQI distribution**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0021 Cat: B (Rel-15)  
  
 Source: Huawei*

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

**S5-187202 Rel-16 CR TS 28.552 Add the performance measurement of CQI distribution**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0026 Cat: F (Rel-15)  
  
 Source: Huawei*

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

**S5-187203 Rel-16 CR TS 28.552 Add the performance measurement of MCS distribution**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0027 Cat: F (Rel-15)  
  
 Source: Huawei*

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

**S5-187204 Rel-16 CR TS 28.552 Add Qos flow related performance measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0028 Cat: F (Rel-15)  
  
 Source: Huawei*

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

**S5-187205 Rel-16 CR TS 28.552 Add PDCP data volume measurements**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0029 Cat: F (Rel-15)  
  
 Source: Huawei*

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

**S5-187206 Rel-16 CR TS 28.554 Add KPI of QoS flow Retainability**

*Type: CR For: Agreement  
 28.554 v15.0.1 CR-0003 Cat: F (Rel-15)  
  
 Source: Huawei*

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

**S5-187207 Rel-16 CR TS 28.552 Add the performance measurement of CQI distribution**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0030 Cat: B (Rel-16)  
  
 Source: Huawei*

**Discussion:**

This CR was discussed in conjunction with that in S5-187048. ZTE believed that the measurements were different. The result would vary according to the different resources used.

Ericsson thought the spectral efficiency information was not clear. The two CRs were not equivalent. SA5 had not much discussed beamforming, and it was perhaps premature to discuss that at this point.

Cisco noted that which table should be used depending on the configuration, but the exact choice was not clear. Huawei agreed that the text was a little confusing and sought to clarify.

**Decision:** The document was **revised to S5-187441**.

**S5-187441 Rel-16 CR TS 28.552 Add the performance measurement of CQI distribution**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0030 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei*

(Replaces S5-187207)

**Decision:** The document was **not pursued**.

**S5-187211 Rel-16 CR TS 28.554 Add KPI of QoS flow Retainability**

*Type: CR For: Agreement  
 28.554 v15.0.1 CR-0004 Cat: B (Rel-16)  
  
 Source: Huawei*

**Abstract:**

In 5GS, QoS flow retainability is a key performance indicator that shows how often an end-user abnormally loses an QoS flow during the time the QoS flow is used.

**Discussion:**

ZTE believed the active number could not yet be calculated, and Huawei agreed. Ericsson agreed it would be necessary to wait until the measurements had been defined, but this KPI would be very useful for operators.

Intel suggested a an editorial improvement.

Nokia thought point d read like a discussion paper. The methodology of the template had not been followed, and there would seem to be a choice of methods here.

The CR would be readdressed at the next meeting.

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

**S5-187212 Draft LS on the slicing terminology and the role of S-NSSAI parameter**

*Type: LS out For: Approval  
 to SA2, RAN2, cc RAN3  
 Source: SA5 (Cisco Systems Belgium)*

**Abstract:**

SA2 and RAN2 are asked to clarify the issues identified.

**Discussion:**

Nokia concluded that within RAN space or core space, there could be multiple instances of NSSI. It would be better to ask this question directly. The difference between a slice and a slice instance was cosmetic. The question posed in the LS was not clear.

Intel described their understanding of selecting a slice instance.

A long discussion on the semantics ensued.

**Decision:** The document was **revised to S5-187461**.

**S5-187461 Draft LS on the slicing terminology and the role of S-NSSAI parameter**

*Type: LS out For: Approval  
 to SA2, RAN2, cc RAN3  
 Source: SA5 (Cisco Systems Belgium)*

(Replaces S5-187212)

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

**S5-187222 CR Rel-15 28.552 Add DRB setup related measurements and UC for gNB**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0034 Cat: F (Rel-15)  
  
 Source: Ericsson GmbH, Eurolab*

**Abstract:**

In providing end-user services to end-users, the first step is to get access to the service. First after access to the service has been performed, the service can be used.

The service provided by NG-RAN for this KPI is the DRB. For the DRB to be successfully setup it is also necessary to setup an RRC connection and an NG signalling connection.

A definition of DRB accessibility KPI is needed to be able to monitor the end-users service accessibility, but currently missing.

**Discussion:**

Intel thought point c would be better served using the air interface, requesting the UE to set up the DRB. Ericsson was not sure this would be possible. Cisco thought this implied two different counters. A lengthy discussion ensued. QoA and DRB measurements were in some way similar, but Ericsson preferred DRB. Both were required, and this would not represent an excessively large number of counters.

**Decision:** The document was **revised to S5-187462**.

**S5-187462 CR Rel-15 28.552 Add DRB setup related measurements and UC for gNB**

*Type: CR For: Agreement  
 28.552 v15.0.0 CR-0034 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson GmbH, Eurolab*

(Replaces S5-187222)

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

**S5-187223 CR R-15 28.554 Add DRB Accessibility KPI and Use Case**

*Type: draftCR For: Approval  
 28.554 v15.0.1  
 Source: Ericsson GmbH, Eurolab*

**Abstract:**

<div><font face=Arial size=2>In providing end-user services to end-users, the first step is to get access to the service. First after access to the service has been performed, the service can be used.</font></div>

<div>&nbsp;</div>

<div><font face=Arial size=2>The service provided by NG-RAN for this KPI is the DRB. For the DRB to be successfully setup it is also necessary to setup an RRC connection and an NG signalling connection.</font></div>

<div>&nbsp;</div>

<div><font face=Arial size=2>A definition of DRB accessibility KPI is needed to be able to monitor the end-users service accessibility, but currently missing.</font></div>

**Discussion:**

The intention was to complete this draft at the next meeting. Two of the missing measurements should have been submitted by the time of the next meeting.

Intel asked whether sufficient connections had been available. Ericsson said no, this would be established earlier.

Huawei believed all related CRs should be approved as a package, not individually. Some further clarifications were also needed.

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

**S5-187025 Minutes of Enhancement of performance assurance for 5G networks including network slicing**

*Type: report For: (not specified)  
 Source: Rapporteur (Intel)*

**Discussion:**

Intel thought a downward revision of the completion level was needed.

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

#### 6.5.8 Management service discovery in 5G network management (Preliminary work before SA approval)

**S5-187176 Rel-16 draftCR TS 28.531 Add use case and requirements for MnS Registration**

*Type: draftCR For: Approval  
 28.531 v15.0.0  
 Source: Huawei*

**Abstract:**

Add use case and requirements for MnS registration.

**Discussion:**

Ericsson did not understand the relationship between this use case and Release 15. There seemed to be a different solution from that of Rel-15. Huawei explained that this had been discussed at the previous meeting.

Nokia was confused by the post-conditions. The implication was that both services had to be produced by the same entity, and this was faulty logic. The granularity of services needed to be considered.

Huawei suggested to replace "service" with "management capability" to address this problem.

The CR was replaced by that in S5-187463.

**Decision:** The document was **not pursued**.

**S5-187463 Rel-16 draftCR TS 28.533 Add use case and requirements for MnS Registration**

*Type: draftCR For: Approval  
 28.533 v15.0.0  
 Source: Huawei*

(Replaces S5-187176)

**Discussion:**

Nokia objected to this contribution stating that this was not required and was polluting the TS with useless use cases. NEC and Huawei supported the draft CR. Intel agreed with Nokia.

Huawei wished to establish the correct technical requirements, but a second step was into which spec to put it. Maybe a new TS was implied.

In the end, it was proposed to update 28.531 instead of 28.533.

**Decision:** The document was **revised to S5-187530**.

**S5-187530 Rel-16 draftCR TS 28.533 Add use case and requirements for MnS Registration**

*Type: draftCR For: Approval  
 28.531 v15.0.0  
 Source: Huawei*

(Replaces S5-187463)

**Abstract:**

Change of spec.

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

**S5-187195 Rel-16 DraftCR Update scope of TS 28.xxx**

*Type: draftCR For: Approval  
 28.531 v15.0.0  
 Source: Huawei Telecommunication India*

**Abstract:**

The scope of specification 28.531 needs to be updated according to the new work item on discovery of management services in 5G.

**Discussion:**

Nokia did not believe this change was necessary. No extension of the scope was needed. It was suggested to put such a change into 28.530 or 28.533.

The clauses affected box needed correction.

The document was replaced by S5-187464.

**Decision:** The document was **not pursued**.

**S5-187196 Rel-16 DraftCR Add general information for discovery of MnS**

*Type: draftCR For: Approval  
 28.531 v15.0.0  
 Source: Huawei Telecommunication India*

**Abstract:**

Add general description of management services in 5G.

**Discussion:**

[Claimed WI code = "5GMSD"]

Nokia believed the change was misplaced.

Cisco believed that discovery would yield the answer none, one, or some other number. The requester did not know how many responses would result.

Ericsson believed that the request had to be specific, but use of the MnS provider was not appropriate: better would be to use the name of the service.

NEC agreed that this was very basic, but it was really needed. Perhaps too much information was trying to be put into this one clause.

**Decision:** The document was **not pursued**.

**S5-187464 Rel-16 DraftCR Add general information for discovery of MnS**

*Type: draftCR For: Approval  
 28.533 v15.0.0  
 Source: Huawei Telecommunication India*

(Replaces S5-187196)

**Discussion:**

[Claimed WI code = "5GMSD"]

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

**S5-187197 Revised WID on management service discovery in 5G network management**

*Type: WID new For: Approval  
 Source: Huawei Telecommunication India*

**Abstract:**

Minor update.

**Discussion:**

Minor typos were noted.

**Decision:** The document was **revised to S5-187465**.

**S5-187465 Revised WID on management service discovery in 5G network management**

*Type: WID new For: Approval  
 Source: Huawei Telecommunication India*

(Replaces S5-187197)

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

**S5-187291 Minutes of Management service discovery in 5G networks**

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

**Discussion:**

This new WI was declared to be 10% complete.

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

#### 6.5.9 NRM enhancements (Preliminary work before SA approval)

**S5-187292 Minutes of NRM enhancements**

*Type: report For: (not specified)  
 Source: Rapporteur (Nokia)*

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

### 6.6 OAM&P Studies

#### 6.6.1 Study on system and functional aspects of Energy Efficiency in 5G networks

**S5-187121 Presentation of TR 32.972 to SA for Approval**

*Type: TS or TR cover For: Approval  
 32.972 v1.1.0  
 Source: Orange*

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

**S5-187026 Minutes for Study on system and functional aspects of Energy Efficiency in 5G networks**

*Type: report For: (not specified)  
 Source: Rapporteur (ORANGE)*

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

#### 6.6.2 Study on integration of ONAP DCAE and 3GPP management architecture

**S5-187159 pCR 28.900 Add example of 3GPP MnS Provider using interfaces provided by ONAP DCAE**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: Huawei*

**Discussion:**

Nanjing Ericsson Panda was not sure that ONAP DCAE had in fact provided an interface. Had this proposal been considered by RAN3?

Nokia believed that ONAP did indeed provide services, and the interface was well documented. But did SA5 wish to endorse it. Further, concerning the data flow, DCAD supported plug-ins. Did 3GPP wish to endorse DNAP?

Huawei wondered if other interfaces might be available.

Nokia believed that the figure was disconnected from the text. Huawei responded that the change was still under development, and not everything had yet been decided.

Nokia reported that the example interfaces did not in fact exist.

Orange had similar comments. The figure was very general. Was it the intention to add this figure to the ONAP definition? DCAE interfaces were internal to ONAP, but once they were exposed to the outside, they became accessible. All ONAP components should be present.

Nanjing Ericsson Panda thought a global picture would be needed, how to provide data to the outside.

Cisco did not think the text agreed with the figure. The MDAS provider's services were not shown. The figure needed to have more detail. Analytics should be defined as part of a general scheme.

**Decision:** The document was **revised to S5-187467**.

**S5-187467 pCR 28.900 Add example of 3GPP MnS Provider using interfaces provided by ONAP DCAE**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: Huawei*

(Replaces S5-187159)

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

**S5-187236 pCR 28.900 Example of a notification header**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: Ericsson Japan K.K.*

**Discussion:**

Cisco observed that the text looked like that which should appear in a TS not a TR. Orange observed that the table looked very like a stage 2 spec.

Nokia wondered whether the stage 2 of ONAP was similar to that of 3GPP. Was it the intention to compare the stages 3.

The discussion ranged rather wider than the changes being offered in the contribution, which was simply providing a concrete example.

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

**S5-187254 Discussion Paper on options for mapping 3GPP 5G alarm notifications on ONAP VES JSON Collector API**

*Type: discussion For: Endorsement  
 Source: AT&T, Deutsche Telekom, Orange*

**Abstract:**

This discussion paper describes two options for mapping 3GPP 5G alarm notifications, as defined in [b], on ONAP R3 DCAE VES JSON API.

The first option describes a way in which 3GPP notification parameters from TS 28.532 might be mapped into existing DCAE VES JSON API event and fault fields. This is not a perfect one-to-one mapping, so some 3GPP notification parameters will need to be conveyed as name-value pairs in the DCAE VES JSON API optional field ‘alarmAdditionalInformation’.

The second option is for 3GPP to request that ONAP add a new type of event to the existing types of events, i.e. a new possible value to the field ‘domain’ to contain all the 3GPP alarm notification parameters. The authors believe this is a more elegant and extensible approach, and it is proposed that this option be endorsed by SA5.

It is proposed that the chosen option will be included in TR 28.900 in clause 5.2.2.3.

**Discussion:**

Orange believed that option 2 in the paper was preferred.

Nokia asked for a clarification of the differences between columns 3 and 4 of the table in 5.2.2.3.1. It was suggested to delete the middle column.

Nanjing Ericsson Panda tried to understand the two options. It seems there was a big difference between 3GPP and ONAP. Into which ONAP Release did SA5 wish to incorporate this?

Orange stressed that this was still very much a study, and no normative work was yet contemplated. Nokia stated that the ONAP Release targeted would be that which was current when 3GPP arrived at the normative phase.

Huawei asked for clarification of option 2. Orange stated that the header already had a Domain field, and a new value was proposed for this.

**Decision:** The document was **revised to S5-187468**.

**S5-187468 Discussion Paper on options for mapping 3GPP 5G alarm notifications on ONAP VES JSON Collector API**

*Type: discussion For: Endorsement  
 Source: AT&T, Deutsche Telekom, Orange*

(Replaces S5-187254)

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

**S5-187257 pCR TS 28.900 – Options for mapping 3GPP 5G alarm notifications on ONAP VES JSON Collector API**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: AT&T, Deutsche Telekom, Orange*

**Abstract:**

This pCR proposes to document, in [a], a recommendation for mapping 3GPP 5G alarm notifications, as defined in [b], on ONAP R3 DCAE VES JSON API.

**Discussion:**

This was the pCR arising from the previous discussion document.

Nokia was unsure whether changes to ONAP or 3GPP were targeted.

**Decision:** The document was **revised to S5-187469**.

**S5-187469 pCR TS 28.900 – Options for mapping 3GPP 5G alarm notifications on ONAP VES JSON Collector API**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: AT&T, Deutsche Telekom, Orange*

(Replaces S5-187257)

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

**S5-187258 pCR TS 28.900 – Mapping 3GPP 5G PM data reporting on ONAP VES JSON Collector API**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: AT&T, Deutsche Telekom, Orange*

**Abstract:**

This pCR proposes to document, in [a], a possible mapping of 3GPP 5G performance management data reporting notifications, as defined in [b], on ONAP R3 DCAE VES JSON API.

**Discussion:**

Nanjing Ericsson Panda

**Decision:** The document was **revised to S5-187470**.

**S5-187470 pCR TS 28.900 – Mapping 3GPP 5G PM data reporting on ONAP VES JSON Collector API**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: AT&T, Deutsche Telekom, Orange*

(Replaces S5-187258)

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

**S5-187259 pCR TS 28.900 – ONAP Heartbeat and Event Throttling**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: AT&T, Deutsche Telekom, Orange*

**Abstract:**

This pCR proposes to document, in [a], a possible mapping of ONAP R3 DCAE VES JSON collector heartbeat and event throttling capabilities on 3GPP 5G management framework.

**Discussion:**

Nanjing Ericsson Panda put a number of questions for clarification, to which Orange responded.

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

**S5-187261 pCR TS 28.900 – 3GPP Fault Supervision operations**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: AT&T, Deutsche Telekom, Orange*

**Abstract:**

This pCR proposes to document, in [a], how 3GPP fault supervision operations could be covered by ONAP.

**Discussion:**

Nanjing Ericsson Panda put a number of questions for clarification, to which Orange responded.

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

**S5-187262 Revised SID on integration of ONAP DCAE and 3GPP management architecture**

*Type: SID revised For: Agreement  
 Source: AT&T, Orange*

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

**S5-187264 Presentation of TR 28.900 for Information to SA#82**

*Type: TS or TR cover For: Agreement  
 28.900 v0.6.0  
 Source: AT&T, Orange*

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

**S5-187027 Minutes of Study on integration of ONAP DCAE and 3GPP management architecture**

*Type: report For: (not specified)  
 Source: Rapporteur ORANGE)*

**Discussion:**

TR 28.900 (under its new number) would be sent to SA for information.

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

**S5-187554 TR 28.900 incorporating pCRs approved at SA5#122**

*Type: draft TR For: Approval  
 28.900 v0.7.0  
 Source: Rapporteur: Jean Michel Cornily*

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

#### 6.6.3 Study on integration of ONAP and 3GPP configuration management services for 5G networks

**S5-187045 Revised SID on integration of ONAP and 3GPP configuration management services for 5G networks**

*Type: SID revised For: Agreement  
 Source: Nanjing Ericsson Panda Com Ltd*

**Decision:** The document was **revised to S5-187471**.

**S5-187471 Revised SID on integration of ONAP and 3GPP configuration management services for 5G networks**

*Type: SID revised For: Agreement  
 Source: Nanjing Ericsson Panda Com Ltd*

(Replaces S5-187045)

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

**S5-187152 pCR 28.900 Add example of 3GPP MnS Provider using interfaces provided by ONAP VF-C**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: China Mobile*

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

**S5-187153 pCR 28.900 Add example of 3GPP MnS Provider using interfaces provided by ONAP VF-C**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: China Mobile*

**Abstract:**

In TS 28.531, the following aspects describes the interaction between 3GPP MnS Provider and MANO (i.e. NFVO and VNFM):

- In Clause 7.3 Procedure of Network Slice Subnet Instance Allocation, if the NSSI to be created contains virtualisation part (i.e. VNF or VL). NSSMS\_P invokes the NS instantiation request to MANO.

- In Clause 7.10 Procedure of NF instance creation, If NF instance to be created contains virtualized part, The NFMS\_P invokes VNF lifecycle management with requirements for VNF instance to MANO.

So, in service based management architecture, the 3GPP MnS Provider (i.e. Management Function) needs to use the interface provided by management system (e.g. MANO) which is responsible for virtualization management.

In ONAP architecture, Virtual Function Controller (VF-C) leverages ETSI NFV MANO architecture and information model as a reference, and implements full life cycle management and FCAPS of VNF and NS.

So the 3GPP MnS Provider may need to consumer the interface provided by VF-C for lifecycle management of VNF and NS.

This contribution proposes to add an example of 3GPP MnS Provider using interface provided by ONAP VF-C.

**Discussion:**

Nanjing Ericsson Panda thought the title of 6.3.X could be improved. It was a question of ONAP's exposing VF-C on the northbound interface.

Nokia disagreed with some of those remarks. VF-C was already accessible in ONAP release 3. But VF-C did not expose services per se. The lollipops and chicken feet were not a good way of showing the intention in the figure. Nokia drew attention to the MANO stack of ONAP.

Orange provided some improved wording to describe the interfaces.

**Decision:** The document was **revised to S5-187472**.

**S5-187472 pCR 28.900 Add example of 3GPP MnS Provider using interfaces provided by ONAP VF-C**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: China Mobile, Huawei*

(Replaces S5-187153)

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

**S5-187213 pCR 28.900 ONAP controllers and 3GPP provisioning service for CM purpose**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: Nanjing Ericsson Panda Com Ltd*

**Abstract:**

This contribution proposes to add ONAP controllers and 3GPP provisioning service for CM purposes.

**Discussion:**

Nokia did not believe that VF-C was a controller.

Orange proposed to remove the architecture figure from the document. Nanjing Ericsson Panda thought it was useful because of the differences between 3GPP and ONAP.

Huawei wondered about 6.1.1.a para 2: what was this about. Also what was the intention of the second sentence in the penultimate paragraph of 6.1.1.c.

Cisco asked about the second line of 6.1.1.d and FCAPS. There was also a question on the title. What were the relations between the entities?

Orange explained the structure of the document: 3GPP, ONAP, then comparison.

Some cosmetic aspects were discussed (imported copyrighted figures, hanging paragraphs).

**Decision:** The document was **revised to S5-187473**.

**S5-187473 pCR 28.900 ONAP controllers and 3GPP provisioning service for CM purpose**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: Nanjing Ericsson Panda Com Ltd*

(Replaces S5-187213)

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

**S5-187214 pCR 28.900 update References for CM purposes**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: Nanjing Ericsson Panda Com Ltd*

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

**S5-187215 pCR 28.900 add description for positioning**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: Nanjing Ericsson Panda Com Ltd*

**Discussion:**

A lot of comments had been received prior to presenting this document.

Orange sought more clarity for the new text, and Nanjing Ericsson Panda stated that they would already make changes to the new text to remove two of the sentences.

PI Works also sought changes to the existing text.

**Decision:** The document was **revised to S5-187478**.

**S5-187478 pCR 28.900 add description for positioning**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: Nanjing Ericsson Panda Com Ltd*

(Replaces S5-187215)

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

**S5-187216 pCR 28.900 comparative analysis for CM purposes**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: Nanjing Ericsson Panda Com Ltd*

**Discussion:**

Nanjing Ericsson Panda Com proposed to simplify the contribution in a revision.

Orange drew attention to the second sentence of the second paragraph of 6.2.z.1. Surely a decision was already to use YANG? But evidently NETCONF required something more.

Nokia thought there was a misunderstanding at 6.2.1 between services and controllers. The present text was misleading. It had not been agreed that 3GPP would introduce NETCONF.

Ericsson asked if there was a requirement for ONAP, and an expectation from vendors and operators. Orange believed that there were some requirement mentioned in a contribution. But Nokia disagreed that these were requirements. Evidently further analysis of the gap was needed, to see if there was a requirement from ONAP.

**Decision:** The document was **revised to S5-187479**.

**S5-187479 pCR 28.900 comparative analysis for CM purposes**

*Type: pCR For: Approval  
 28.900 v0.6.0  
 Source: Nanjing Ericsson Panda Com Ltd*

(Replaces S5-187216)

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

**S5-187028 Minutes of Study on integration of ONAP and 3GPP configuration management services for 5G networks**

*Type: report For: (not specified)  
 Source: Rapporteur (Ericsson)*

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

#### 6.6.4 Study on protocol enhancement for real time communication

**S5-187029 Minutes of Study on protocol enhancement for real time communication**

*Type: report For: (not specified)  
 Source: Rapporteur(Nokia)*

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

#### 6.6.5 Study on management aspects of edge computing

**S5-187235 pCR 28.803 edge computing network**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

**Abstract:**

SON function/algorithm can be located in NF or in management system, or in both. Based on the location of the SON algorithm, SON is categorized into centralized SON, distributed SON and hybrid SON. For different scenarios (centralized SON, distributed SON and hybrid SON), the management system and NF(s) take different responsibilities. The concepts of centralized SON, distributed SON and hybrid SON have been defined for LTE. For 5G SON, these concepts are still applicable, but need to take the following aspects into account: - 5G SON includes SON for 5GC; - In 5G management SBA, the NM and EM are not (normatively) defined. This pCR is to add the concepts for centralized SON, distributed SON and hybrid SON for 5G, and describe the responsibilities of the management system and NF(s) for each scenario.

**Discussion:**

It was agreed to spell out "DN" in full as "data network" to avoid confusion with existing SA5 terminology.

There was a discussion on application routeing vs network routeing.

Telecom Italia questioned the use of UPF in the figure. Was this really what was meant?

Nokia sought clarification over what was the objective of the whole thing. Samsung explained the meaning of "local data network".

**Decision:** The document was **revised to S5-187482**.

**S5-187482 pCR 28.803 edge computing network**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187235)

**Discussion:**

Nokia noted that rather than clarify the controversial text, Intel had removed it.

**Decision:** The document was **revised to S5-187531**.

**S5-187531 pCR 28.803 edge computing network**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187482)

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

**S5-187237 pCR 28.803 edge computing deployment scenarios**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

**Abstract:**

<div>Clause 5.13 in TS 23.501 describes that UPF should be close to UE or NR cells to which UEs are connected. This contributions proposed a couple scenarios to show that the location of UPF or local DN should be taken into account during the edge computing deployment in order to meet the end-to-end QoS requirements.</div>

**Discussion:**

The same remarks concerning "DN" applied. There was also a hanging paragraph.

Nokia believed that this was just a description of a deployment scenario specified elsewhere. But where? Intel stated that edge computing was defined elsewhere, but OSS was confusing. This claim proved somewhat contentious and a lengthy discussion involving Intel, Cisco, Nokia, Samsung and others ensued. It was recalled that the mobile edge computing environment had end-to-end objectives, and most (non-IMS) services did not have end-to-end control, but here was described a mechanism for achieving ultra-reliable, low-latency goals via E2E control. It had to be decided what mechanism was to be used for this. Intel agreed, and Nokia also subscribed to this goal, but believed that there was no existing E2E OSS. Intel accepted that this was a valid concern. It was necessary to have a name for this E2E OSS concept. Ericsson agreed with the foregoing, but wondered what was so special about NR cells? Cisco believed the contribution was not helpful. Samsung clarified that the objective was to deliver QoS using whatever information was available.

**Decision:** The document was **revised to S5-187483**.

**S5-187483 pCR 28.803 edge computing deployment scenarios**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187237)

**Abstract:**

Removal of subclause

**Discussion:**

Ericsson took issue with the term Node-B, since this was not 3G.

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

**S5-187238 pCR 28.803 use cases for UPF instantiation and termination**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

**Abstract:**

Clause 5.13 in TS 23.501 [2] describes that SMF needs to be configured when the UPF is instantiated or removed. This contribution proposes the use cases of UPF LCM to support edge computing, including the configuration of SMF after the LCM operation.

**Discussion:**

Cisco was concerned over the maintenance of the UPF list. Nokia was worried that there was too much unnecessary text in this use case. There should be no importation from other groups' specifications in this document. Ericsson thought it was useful to indicate the context of the use case. Nokia then wondered what would remain when all the superfluity was removed. Ericsson believed that the application was pure software, and the pre-condition details were missing.

**Decision:** The document was **revised to S5-187484**.

**S5-187484 pCR 28.803 use cases for UPF instantiation and termination**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187238)

**Discussion:**

Some further wording improvements were discussed by Nokia, Cisco and Intel, repeating some of the arguments on the original document.

**Decision:** The document was **revised to S5-187532**.

**S5-187532 pCR 28.803 use cases for UPF instantiation and termination**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187484)

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

**S5-187239 pCR 28.803 use cases for local DN deployment**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

**Discussion:**

Nokia believed that the N6 was inappropriate. The use of "local DN" was not appropriate (same comment as previous documents). Cisco was puzzled by some unclear wording. The whole use case was of limited interest. Samsung agreed: the objective was not to define how to construct a data network. The use case should describe what was needed, not how. Huawei had similar comments, and there was no need for this use case. Intel defended it with reference to the work item description, and used the concept of the local data network defined by SA2. Telecom Italia asked whether the local data network was a DNF (Intel said yes), and a UPF could be configured to point to elements outside the scope of a 3GPP network.

**Decision:** The document was **revised to S5-187485**.

**S5-187485 pCR 28.803 use cases for local DN deployment**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187239)

**Discussion:**

Further changes were proposed by Nokia.

**Decision:** The document was **revised to S5-187533**.

**S5-187533 pCR 28.803 use cases for local DN deployment**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187485)

**Decision:** The document was **revised to S5-187535**.

**S5-187535 pCR 28.803 use cases for local DN deployment**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187533)

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

**S5-187241 pCR 28.803 add use case for E2E OSS deployment scenario**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

**Discussion:**

Cisco believed that everything should start from the use case, but this was not easy to agree with. Similar comments applied as had done for the previous use case documents. The terminology was unclear. Ericsson agreed that better definitions were needed, citing management systems defined by other organizations. Intel responded that network operators had complex environments. Cisco was in favour of end to end management systems, but there was no need to dramatically change the architecture or service model. It could be accepted that there were external components which needed to be communicated with. 3GPP should concentrate on its own management system. Samsung thought that management interfaces were already being considered, eg with ONAP, MEC, … A horizontal approach should be taken. Intel appreciated these comments, and agreed with the ideas put forward. This contribution sought to cover both cases (3GPP and external management systems) using a service-based approach, and seeking to avoid any unnecessary limitations.

**Decision:** The document was **revised to S5-187486**.

**S5-187486 pCR 28.803 add use case for E2E OSS deployment scenario**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187241)

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

**S5-187243 pCR 28.803 add use case for RAN condition data**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

**Discussion:**

Cisco believed that vehicles would be controlled by distributed systems, so did not think this use case was realistic. But it was a good aim to have RAN condition data available, but applied to a different use case. Ericsson wondered where this requirement had come from. Intel said that they had proposed the use case. Huawei observed there were four conditions which could be reported by the RAN, and wondered how the application would differentiate: surely the information was all important, and its reliability. Intel elaborated on the different conditions. Ericsson stressed that it was always important to know how the information received was to be treated. Telecom Italia focussed on the requirement: if APIs were exposed, any external user could make use of them. What was new about this use case? Samsung stated that the RAN already had to provide QoS: there was no need for this use case. Cisco suggested that a new application be defined to justify the use case.

**Decision:** The document was **revised to S5-187487**.

**S5-187487 pCR 28.803 add use case for RAN condition data**

*Type: pCR For: Approval  
 28.803 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187243)

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

**S5-187030 Minutes of Study on management aspects of edge computing**

*Type: report For: (not specified)  
 Source: Rapporteur (Intel)*

**Discussion:**

The work item was agreed to be 20% complete.

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

**S5-187549 TR 28.803 incorporating pCRs approved at SA5#122**

*Type: draft TR For: Approval  
 28.803 v0.2.0  
 Source: Rapporteur: Joey Chou*

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

#### 6.6.6 Study on tenancy concept in 5G networks and network slicing management

**S5-187201 pCR Concept of MnS consumed by tenant**

*Type: pCR For: Approval  
 28.804 v0.1.0  
 Source: Huawei Telecommunication India*

**Abstract:**

This contribution will consider that a tenant in 3GPP management system should be able to consume MnS (management service) produced in 3GPP management system. As MnS may be produced by NF management function, NSSMF or NSMF, the 3GPP defined MnS exposed to tenant will be defined by operator’s policy of exposure governance.

**Decision:** The document was **revised to S5-187489**.

**S5-187489 pCR Concept of MnS consumed by tenant**

*Type: pCR For: Approval  
 28.804 v0.1.0  
 Source: Huawei Telecommunication India*

(Replaces S5-187201)

**Discussion:**

Nokia queried the first paragraph. Were 3GPP management services consumed directly by a third party?. Apparently this was aligned with 28.530.

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

**S5-187198 pCR 28.804 Corrections of existing tenancy concept**

*Type: pCR For: Approval  
 28.804 v0.1.0  
 Source: Huawei Telecommunication India*

**Abstract:**

The approved contribution about the concept of sharing of MnS instance for different tenants, has inconsistency between the text and the figure.

This contribution provides corrections of those inconsistencies and adds multiple options of the same concept.

**Discussion:**

[…]

Some cosmetic improvements were identified.

**Decision:** The document was **revised to S5-187490**.

**S5-187490 pCR 28.804 Corrections of existing tenancy concept**

*Type: pCR For: Approval  
 28.804 v0.1.0  
 Source: Huawei Telecommunication India*

(Replaces S5-187198)

**Discussion:**

The changes were not tracked.

**Decision:** The document was **revised to S5-187534**.

**S5-187534 pCR 28.804 Corrections of existing tenancy concept**

*Type: pCR For: Approval  
 28.804 v0.1.0  
 Source: Huawei Telecommunication India*

(Replaces S5-187490)

**Abstract:**

Adds revision marks.

**Discussion:**

Huawei explained the difference between the two figures.

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

**S5-187199 pCR 28.804 Concept of multiple exposure of same MnS**

*Type: pCR For: Approval  
 28.804 v0.1.0  
 Source: Huawei Telecommunication India*

**Discussion:**

This was a continuation of S5-187198.

Nokia questioned what was meant by management services. Huawei clarified that this was what would be exposed for external use. Huawei clarified also that MnS Providers were not necessarily (other) network operators. Nokia thought that what was presented was nothing new. Huawei stated that the requirement could be met by either of the two architectural options presented; most secure was option 2, which had complete isolation via a dedicated MnS Consumer. Huawei believed that an operator would never offer CM data to tenants, so this was a poor example that Nokia had taken. PM data had to be isolated. This needed to be clarified.

Cisco thought the use case should provide examples of producers, tenants (business entities), and data descriptions. The use case as presented was too generic.

**Decision:** The document was **revised to S5-187492**.

**S5-187492 pCR 28.804 Concept of multiple exposure of same MnS**

*Type: pCR For: Approval  
 28.804 v0.1.0  
 Source: Huawei Telecommunication India*

(Replaces S5-187199)

**Abstract:**

Includes new clause.

**Discussion:**

An editor's note had been added.

Nokia maintained that the sequence of events was still wrong. What did figure 4.2.X indicate? What was it the intention to isolate? The solution was ahead of the problem!

TNO, on the contrary, felt that the discussion had been clear enough, and supported this contribution. Further elaboration could be brought to the next meeting.

Ericsson agreed with the problems repeatedly expressed by Nokia. A TR was to record the results of study, and there was only reasonable way of achieving this goal.

**Decision:** The document was **not pursued**.

**S5-187031 Minutes of Study on tenancy concept in 5G networks and network slicing management**

*Type: report For: (not specified)  
 Source: Rapporteur (Huawei)*

**Discussion:**

The WI was agreed to be 20% complete.

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

**S5-187550 TR 28.804 incorporating pCRs approved at SA5#122**

*Type: draft TR For: Approval  
 28.804 v0.2.0  
 Source: Rapporteur: Lei Zhu*

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

#### 6.6.7 Study on management aspects of communication services

**S5-187371 Study on management aspects of communication services**

*Type: other For: discussion  
 Source: Rapporteur (Jan Groenendijk)*

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

**S5-187169 pCR 28.805 Add requirements of MDA-Assisted network provision contributing to SLA assurance**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei*

**Discussion:**

It was questioned what was the value added by this document. Surely this was SA5 business as usual? Huawei responded that this use case might solicit real requirements.

Cisco sought clarification on the first requirement, as did Intel on the function of the MDAF in requirement 1. Telecom Italia drew attention to the existing text, but noted that MDAF did not directly give topology..

**Decision:** The document was **revised to S5-187494**.

**S5-187494 pCR 28.805 Add requirements of MDA-Assisted network provision contributing to SLA assurance**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei*

(Replaces S5-187169)

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

**S5-187172 pCR 28.805 Add UC and requirements for multi-degree SLA assurance**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei*

**Abstract:**

For SLA assurance of a network slice, there are at least two parts which would add much uncertainty, the radio access network and the network outside of the mobile operator.

In the radio access network, spectrum is the most precious resource. QoS of user traffics and cell KPIs may be degraded due to many factors such as congestion, coverage issues, interference, shortage of radio resources etc. One hundred percent E2E SLAs of one or more network slices may be difficult or even impossible to be achieved with degraded cell performance in some cases.

The networks outside of the 3GPP operators are out of control of the operators and may be exceptional for the SLA negotiation, e.g. the outside transport networks or DCs of third parties and the applications etc.

It is important to apply higher priority on radio resource allocation for network slices and users with more strict SLAs, so that SLAs for lower priority network slices and users may be sacrificed. Therefore, it is reasonable for CSPs to provide multi-degree SLAs to CSCs, e.g. SLA will be on what percentage of users and/or what percentage of coverage/time duration. Different charging policy can be considered for different SLA degrees.

**Discussion:**

Cisco liked the idea, but the title hinted at some other solution, noting that it was possible to have multiple SLAs, with manged degradation (eg of video).

Ericsson believed that in practice, SLAs would be managed at BSS level, translated into service requirements which needed to be assure. Operators would have hundreds of SLAs. Should network elements be aware of these? And if not, where would the translation be performed?

Deutsche Telekom noted there were several options, eg end to end via several domains, or levels within a single domain. The word "multi-degree" was misleading. At present there were operation level agreements. Clarification was needed.

**Decision:** The document was **revised to S5-187495**.

**S5-187495 pCR 28.805 Add UC and requirements for multi-degree SLA assurance**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei*

(Replaces S5-187172)

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

**S5-187173 pCR 28.805 Add UC and requirements for SLA monitoring and assurance for network slicing**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei*

**Abstract:**

After the network slice provisioning, the CSP and/or CSC may need to monitor the SLA status of the NSI to make sure whether its service requirements are achieved. In the service based management architecture, subscribe-notify and request-response style interactions between the CSMF and NSMF can be utilized. NSMF reports the SLA related network slice level KPIs and end user traffic level QoS/QoE parameters. The reporting can be periodic or event based. CSMF may also invoke the SLA monitoring related APIs provided by the NSMF. NSMF collects network slice domain specific operating data from the constituent NSSMFs. Aggregating, analysing and processing the data into E2E network slice level operating parameters and presents them to the CSMF.

The SLA monitoring function also communicates with the SLA assurance function to form the close loop operating system. Based on the monitored NSI status, the SLA assurance function of the CSMF, which may act as a consumer of MDAF, provides adjustment instructions or indications to the NSMF to manage the lifecycle of the corresponding NSIs.

Interactions between SLA monitoring function and SLA assurance function in the inner close loop operating within the CSMF can have multiple automation levels, full automation, partial automation or manually. The multi-level automation also applies to the interactions between the CSMF and NSMF in the outer close loop.

**Discussion:**

Intel supported the intention of the document, but asked for separation of the different services in the figure of the rationale.

Concerning requirement 2, Deutsche Telekom wondered what would be the outcome. It was too general.

Nokia asked not to use any normative language in this TR.

**Decision:** The document was **revised to S5-187497**.

**S5-187497 pCR 28.805 Add UC and requirements for SLA monitoring and assurance for network slicing**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei*

(Replaces S5-187173)

**Abstract:**

The part related to "assurance" are removed, retaining only the "monitoring" part.

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

**S5-187170 pCR 28.805 Add UC and requirements for creation of communication service instance**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei*

**Discussion:**

Ericsson wondered what is meant by "subscribed [to] the communication service". Huawei explained the concept of subscription to a communication service. Ericsson described this concept in a very different manner. On the requirements, the language could be improved.

Telecom Italia wondered whether, in requirement 1, it was the operator or the service provider? Huawei confirmed that the text did indeed mean operator. Telecom Italia also proposed that the communication service provider also have this capability.

PI Works thought that the words "have the capability" implies autonomous ability to configure, and this limited the scope of the capabilities.

Orange returned to the first requirement. This was the responsibility of the communication service provider, rather than the operator.

Deutsche Telekom questioned the need for a separate requirement 3.

Some editorials were identified.

This document was merged into S5-157504.

**Decision:** The document was **merged**.

**S5-187498 pCR 28.805 Add UC and requirements for creation of communication service instance**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei*

(Replaces S5-187170)

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

**S5-187171 pCR 28.805 Add UC and requirements for termination of communication service instance**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei*

**Discussion:**

This was related to the previous contribution (S5-187170).

Ericsson had a contribution with a similar title which was somewhat aligned, but some wording could be improved. The sequence of objectives could be improved.

Deutsche Telekom made a similar comment about the first requirement as had been made for the previous document. It was not understood why it should be necessary to terminate the NSI, because an NSI might serve several users.

PI Works aimed to allow control to the vertical users of the network. The proposal raised security concerns.

Orange stressed that the operator really did manage the slices.

**Decision:** The document was **revised to S5-187499**.

**S5-187499 pCR 28.805 Add UC and requirements for termination of communication service instance**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei, Ericsson*

(Replaces S5-187171)

**Decision:** The document was **revised to S5-187527**.

**S5-187527 pCR 28.805 Add UC and requirements for termination of communication service instance**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei, Ericsson, Deutsche Telekom*

(Replaces S5-187499)

**Discussion:**

Nokia proposed two minor editorial changes. Huawei proposed to correct it in a later pCR.

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

**S5-187168 pCR 28.805 Add definition of communication service**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei*

**Discussion:**

Ericsson thought that although the newly defined terms were in widespread use, there was as yet no formal definition.

Nokia thought that a note to explain the context of the first definition would be useful The term CSI should be avoided!

Cisco noted that currently there was no definition of a communication class, and it was not necessary to define an instance.

Orange drew attention to the use of "users" which tended to imply human users. This was inappropriate.

Deutsche Telekom wished to clarify the first definition: what was a communication requirement.

Nokia and Telekom Italia thought the term "communication service" could be improved. There was a danger of a circular definition.

Some editorial matters were proposed.

**Decision:** The document was **revised to S5-187500**.

**S5-187500 pCR 28.805 Add definition of communication service**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei, Ericsson*

(Replaces S5-187168)

**Decision:** The document was **revised to S5-187528**.

**S5-187528 pCR 28.805 Add definition of communication service**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Huawei, Ericsson,Deutsche Telekom*

(Replaces S5-187500)

**Discussion:**

Nokia queried the term "offered". Was "provided" not a better word?

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

**S5-187252 pCR 28.805 Move key topics to Annex**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Ericsson Limited*

**Abstract:**

During the study period a list of key topics is maintained, this list was introduced and discussed at the last meeting. Currently the key topics list is included in clause 4, to not mix up the temporary key topics list with the permanent content it is proposed to move the key topics list to an Annex.

**Discussion:**

The text in question would be removed from the final version of the TR. The editor's note had, however, been modified, and there was some discussion over this. However, it was clear that the text in question could not remain in the final version of the TR, since it was a list of intended topics to cover, at when the TR was complete, these topics would either have been dealt with, or not. But some aspects of the text might be captured in the scope or in the conclusion of the final TR. Huawei strongly wished to eliminate the intention to delete the annex.

**Decision:** The document was **revised to S5-187501**.

**S5-187501 pCR 28.805 Move key topics to Annex**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Ericsson Limited*

(Replaces S5-187252)

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

**S5-187282 Discussion paper on communication service management concept**

*Type: discussion For: Endorsement  
 28.805 v..  
 Source: Ericsson Limited*

**Discussion:**

In option C, the CSMF had elements in both the BSS and the OSS. Huawei wondered which entity would take responsibility for it? Ericsson confirmed it would be the TMF.

Deutsche Telekom found the first figure rather confusing. For the figure under Role of CSMF, surely the arrows should have been shown bidirectional. The OSS aspect were beyond the scope of SA5. Elements taken from Wikipedia were not appropriate for a 3GPP paper. Finally, there was no definition of communication services. Ericsson thought that, in this early stage document, it was ok to leave things slightly vague. Ericsson said that they had used the network slice because this was a well-known concept.

Cisco asked why it was necessary to decide whether an element belonged to either BSS or OSS.

Ericsson recommended option C and had a pCR on this.

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

**S5-187283 pCR 28.805 Add description of communication service concept to background and concepts**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Ericsson Limited*

**Abstract:**

Corresponds to option C in S5-187282.

**Discussion:**

[Wrong tdoc number shown on cover]

Cisco asked what services were intended to be standardized. Was it really necessary to split the CSMF into two parts, unless it was intended to have an interface between the MSS part and the OSS part.

Telecom Italia spoke further on interfaces: the reason for the split was surely to define what was the responsibility of 3GPP (SA5) and what was not.

**Decision:** The document was **revised to S5-187502**.

**S5-187502 pCR 28.805 Add description of communication service concept to background and concepts**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Ericsson Limited, Deutsche Telekom*

(Replaces S5-187283)

**Discussion:**

Cisco still did not understand why the figure showed a split. Ericsson referred to the text by way of explanation, but Cisco was not convinced.

Deutsche Telekom observed that the terms OSS and BSS were being excised, but the concepts of provider and consumer / customer were better.

**Decision:** The document was **revised to S5-187536**.

**S5-187536 pCR 28.805 Add description of communication service concept to background and concepts**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Ericsson Limited*

(Replaces S5-187502)

**Decision:** The document was **revised to S5-187540**.

**S5-187540 pCR 28.805 Add description of communication service concept to background and concepts**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Ericsson Limited*

(Replaces S5-187536)

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

**S5-187284 pCR 28.805 Use case to realize a communication service in a single network slice**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Ericsson Limited*

**Discussion:**

Deutsche Telekom said requirements 2 and 3 were not focused on communication services.

Orange found that requirement 1 was a PSS function. In addition, the established terminology should be used.

Huawei wondered how the split of the CSMF mapped to this scenario. This could be clarified. Ericsson responded that the text was neutral with respect to this. What was the -x2 requirement? - there seemed to be two options there.

Deutsche Telekom also recommended to remove the term "enterprise": it could be a user, or requestor.

Orange recommended to have a communication service instance.

**Decision:** The document was **revised to S5-187503**.

**S5-187503 pCR 28.805 Use case to realize a communication service in a single network slice**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Ericsson Limited*

(Replaces S5-187284)

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

**S5-187285 pCR 28.805 Use case to realize multiple communication services in a single network slice**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Ericsson Limited*

**Discussion:**

Deutsche Telekom proposed to clarify the requirements: what did the verb "maintain" mean, similarly "declare the result". There were overlapping requirements with other Ericsson documents.

**Decision:** The document was **revised to S5-187504**.

**S5-187504 pCR 28.805 Use case to realize multiple communication services in a single network slice**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Ericsson, Huawei, DT*

(Replaces S5-187285)

**Abstract:**

Revision of S5-187285, 284 and 170'

**Discussion:**

Cisco questioned the terminology. Nokia proposed the inclusion of an editor's note as a place holder for "service instance". Orange objected to this. Huawei drew attention to the notes added for CSI; a similar approach could be taken.

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

**S5-187286 pCR 28.805 Use case to remove a communication service from a network slice**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Ericsson Limited*

**Discussion:**

Deutsche Telekom's previous remarks also pertained here.

Huawei said that the definition of terms would have an effect on the wording used.

Orange spotted a few editorial matters.

**Decision:** The document was **revised to S5-187505**.

**S5-187505 pCR 28.805 Use case to remove a communication service from a network slice**

*Type: pCR For: Approval  
 28.805 v0.1.0  
 Source: Ericsson Limited*

(Replaces S5-187286)

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

**S5-187032 Minutes of Study on management aspects of communication services**

*Type: report For: (not specified)  
 Source: Rapporteur (Ericsson)*

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

**S5-187551 TR 28.805 incorporating pCRs approved at SA5#122**

*Type: draft TR For: Approval  
 28.805 v0.2.0  
 Source: Rapporteur: Jan Groenendijk*

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

#### 6.6.8 Study on Self-Organizing Networks (SON) for 5G

**S5-187302 Sequence of pCR discussion**

*Type: other For: Discussion  
 Source: Intel Corporation (UK) Ltd*

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

**S5-187225 pCR 28.861 Add SON concepts**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

**Abstract:**

This pCR is to add the concepts for centralized SON, distributed SON and hybrid SON for 5G, and describe the responsibilities of the management system and NF(s) for each scenario.

**Discussion:**

Nokia suggested there could be higher-level control loops. The hybrid SON view was slightly misleading because the coordination needed to be shown.

Cisco opposed the contribution for many reasons: the methodology proposed was not helpful. Distributed SON was not the business of SA5. There was no longer a reference model in the 5G era.

Huawei believed that a similar diagram had been seen at the previous meeting; SA5 should use similar figures across the documents. Further it was not necessary to completely redefine things which had already been adequately defined elsewhere.

Deutsche Telekom made reference to the open loop definition which had been used for LTE, which implied human intervention.

Orange noted the NFs in the diagrams: these could be replaced by some management services. Intel saw the point, but wished to maintain a general level of description. Orange also suggested showing more detail.

**Decision:** The document was **revised to S5-187506**.

**S5-187506 pCR 28.861 Add SON concepts**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187225)

**Discussion:**

There was a discussion on terminology relating to SON. Huawei cited the LS exchanged with SA2. The figures needed to be aligned with the common terminology.

**Decision:** The document was **revised to S5-187538**.

**S5-187538 pCR 28.861 Add SON concepts**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187506)

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

**S5-187226 pCR 28.861 Add key issues overview for 5G SON study**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

**Discussion:**

Cisco opposed the contribution for many reasons: the methodology proposed was not helpful. The use case should include the goal but also includes a statement of the resources and the sequence of steps. This contribution gathered too many complex ideas to be sensibly treated together. It should be split into separate tdocs. Intel responded that use cases should be categorized to give better readability. Some of the aspects had been copied over from LTE.

Nokia commented on the self-establishment topic. The network function could not establish itself, so the wording was confusing. Intel stated that this had already been defined for LTE.

Ericsson was puzzled that these elements were called "key issues". The information in this document should be recast into the structure proposed in a separate document by Ericsson. Intel had intended to give an overview of all the issues and wished to work with others on the structure.

Orange maintained that automatic creation of NSSIs was not SON. Intel accepted this.

The document was merged with several others into S5-187509.

**Decision:** The document was **merged**.

**S5-187073 pCR to 28.861 ANR SON function**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Cisco Systems Inc.*

**Abstract:**

Add Use Case for Automatic Neighbour Relations (ANR) SON function, particularly in view of the TR 28.802, clause 5.5.2. The use case was adjusted to recent developments such as the concept of management services.

**Discussion:**

Intel thought this was more about automatic ANR optimization (black list, white list, etc). But this was beyond ANR. Cisco agreed and proposed to change the name.

Nokia agreed that this was a new concept for ANR, and this should not preclude other ANR use cases. Nokia recalled the D-SON / C-SON discussions of the past.

Cisco agreed but this was not the only possible scenario.

IP Works was concerned with what kind of optimization of measurements would be made. Cisco said it was not related necessarily to MRO because "mobility" was mentioned. IP Works thought further deliberation time was needed.

Ericsson wished for the name to be changed, but maybe it would be good to give an indication of the relation between "traditional" ANR and this new concept. Ericsson and Nokia discussed the nature of open loop management for some minutes.

Huawei had seen many different management systems mentioned in the document. What was the relation between these and the ANR function? Cisco said that the goal was not quite accurate as presently stated. Huawei referred to the second paragraph of the pre-conditions. Was the ANR function a subscriber to the NR-RAN provisioning management service? Cisco believed that the answer to this would be too detailed for this document. Thirdly Huawei saw that all measurements would be monitored and then action taken. There was no differentiation between steps, would this reuse the provisioning service. Cisco said yes.

Finally, the document was merged with others into S5-187509.

**Decision:** The document was **merged**.

**S5-187507 pCR to 28.861 ANR SON function**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Cisco Systems Inc.*

(Replaces S5-187073)

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

**S5-187074 pCR to 28.861 CCO SON function**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Cisco Systems Inc.*

**Abstract:**

Add use case and requirements on the Coverage and Capacity Optimization (CCO).

The SON WID points to “optimization of RAN, CN, network slicing, and of the end-to-end service quality”, so the CCO function can be using performance indicators and touching configuration not only of the NG-RAN, but also of the 5GC.

**Discussion:**

Intel questioned the rationale. There was no mention of 5GC in the proposed new text relating to the steps. Secondly, in the precondition, there was a need to cooperate with the charging group. There was a need to include steps. The requirements were rather too general and should relate more to the SON perspective. Cisco replied that SON did not require anything beyond performance measurement and configuration capability. Requirements were expressed in terms of performance indicators. A detailed discussion between Intel and Cisco ensued.

Huawei recalled the case of NDEF in Rel-15. How did this fit into the scenario? Cisco thought there was a need for some general text relating to all use cases, and this would be the place to mention the analytics arising from NDEF. Intel thought that Huawei's point was good.

Finally, the document was merged with others into S5-187509.

**Decision:** The document was **merged**.

**S5-187304 pCR 28.861 Legacy SON functions**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Ericsson, Verizon*

**Abstract:**

This contribution proposes a structure for legacy functions in the TR 28.861.

The proposed order to specify the legacy SON functions is:

1. Getting the nodes operational (O&M connection, security, synchronization, NG-C connection)

2. Automatic basic radio network config (neighbours, PCIs)

3. Robustness (MRO, self-healing, covOpt)

4. Performance (RACH opt, interference)

5. Energy (Cell sleep)

6. Capacity (Load balancing, capOpt)

**Discussion:**

Cisco liked this contribution but there were a number of contributions for this TR and there would be a clash of structure. Therefore it would be advisable to combine everything relating to legacy into a single contribution.

Intel asked what was meant by "legacy", Ericsson stated that this meant LTE (or earlier).

Intel also liked the contribution.

Huawei referred to 4.x.5 and 4.x.19; these were essentially the same. Huawei also recommended to remove "distributed architecture" from the clause titles. Intel and others agreed.

Orange wondered what "synchronization" implied in the rationale. Ericsson replied. Nokia believed that this was time synchronization.

The discussion proposed to merge S5-187226, 073, 074, 113, 304.

**Decision:** The document was **revised to S5-187509**.

**S5-187509 pCR 28.861 Legacy SON functions**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Ericsson, Verizon, Intel, Cisco*

(Replaces S5-187304)

**Abstract:**

This was a merger of merge S5-187226, 073, 074, 113, 304.

**Discussion:**

Intel noted that the numbering would need to be adjusted by the rapporteur at implementation.

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

**S5-187508 pCR to 28.861 CCO SON function**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Cisco Systems Inc.*

(Replaces S5-187074)

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

**S5-187113 Self-configuration for NG-RAN and 5GC**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Cisco Systems Belgium*

**Discussion:**

Orange noted that sometimes self-configuration was a function and sometimes a service. Cisco responded that the distinction was deliberate. Nokia agreed, but the text was not very clear. There was also a debate as to use self-configuration or self-establishment. Intel believed that self-configuration was a superset of self-establishment.

IP Works tried to interpret some wording [… off line]

Finally, the document was merged with others into S5-187509.

**Decision:** The document was **merged**.

**S5-187112 pCR to 28.861 E2E Service Quality Optimization**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Cisco Systems Belgium*

**Abstract:**

Add a Use Case for E2E service quality optimization, in view of the SON WID “5G SON … may cover optimization of RAN, CN, network slicing, and of the end-to-end service quality”

**Discussion:**

Nokia was uncomfortable about generalization in the case of E2E and would like a concrete example because optimization criteria might differ from case to case.

[…]

NEC was provisioning management service now taken care of by SON? Was this a new algorithm or a cooperation amongst algorithms. Cisco replied that the algorithm was beyond the scope of 3GPP.

**Decision:** The document was **revised to S5-187510**.

**S5-187510 pCR to 28.861 E2E Service Quality Optimization**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Cisco Systems Belgium*

(Replaces S5-187112)

**Discussion:**

China Mobile felt that most their comments had not been addressed. Cisco denied this. Huawei believed this needed to be captured in 28.805. Again Cisco did not agree. Intel clarified that this was not an E3 service.

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

**S5-187177 pCR 28.861 NSI resource utilization performance optimization**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Huawei Tech.(UK) Co., Ltd*

**Abstract:**

One of the most important benefits of utilizing SON for mobile networks is that it facilitates performance and SLA assurance. Note that, mobile networks with slicing has unique challenges due to the need to manage multiple network slice instances with potentially multiple SLAs associated with each of them. In this environment, SON for mobile networks can enhance efficient usage of network resources such that SLA guarantees can be provided to operators’ customers.

SON services can be particularly important to satisfy end-to-end KPIs as described in 3GPP TS 28.554 [1]. Therefore, this contribution proposes to add the following end-to-end SON scenario to 3GPP TR 28.861 [2].

**Discussion:**

Intel was distressed by the table format.

Intel thought it would be better not to mention MDAS specifically. Also step 1 should be optional, and improvements were identified to several other steps. Acknowledgements were not needed at every step.

Nokia agreed with Intel, and proposed some minor wording modifications.

Cisco the resources mentioned should be included all entities mentioned below. Many small but essential elements needed to be corrected - for example, which policies were meant?

The document was merged with S5-187227 to produce S5-187511.

**Decision:** The document was **merged**.

**S5-187227 pCR 28.861 add use case for eMBB, URLLC, and mMTC network slice**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

**Discussion:**

[…]

Nokia believed the contribution needed extensive revision.

The document was merged with S5-187177 to produce S5-187511.

**Decision:** The document was **merged**.

**S5-187511 pCR 28.861 NSI resource utilization performance optimization**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Huawei Tech.(UK) Co., Ltd, Intel Corporation (UK)*

(Replaces S5-187177)

**Decision:** The document was **revised to S5-187529**.

**S5-187512 pCR 28.861 add use case for eMBB, URLLC, and mMTC network slice**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187227)

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

**S5-187529 pCR 28.861 NSI resource utilization performance optimization**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Huawei Tech.(UK) Co., Ltd, Intel Corporation (UK)*

(Replaces S5-187511)

**Decision:** The document was **revised to S5-187537**.

**S5-187537 pCR 28.861 NSI resource utilization performance optimization**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Huawei Tech.(UK) Co., Ltd, Intel Corporation (UK)*

(Replaces S5-187529)

**Discussion:**

It was noted that the tdoc number was wrong on the cover page. The revision included Intel's contribution.

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

**S5-187228 pCR 28.861 add use case for beam coverage and capacity optimization**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

**Discussion:**

Nokia believed that the requirements were wrong. In the introduction, the text should not denigrate LTE.

Huawei questioned the method of writing the use cases. For LTE, it was done in more detail. The beam-based scenario described for NR RAN was not as good.

Intel cited another, Cisco, contribution on the subject. Huawei though the use case was the same as for LTE, but the solutions could use the enhanced features of NR.

Nokia agreed wholeheartedly. Also, the text and the figure did not agree with each other.

**Decision:** The document was **revised to S5-187513**.

**S5-187513 pCR 28.861 add use case for beam coverage and capacity optimization**

*Type: pCR For: Approval  
 28.861 v0.1.0  
 Source: Intel Corporation (UK) Ltd*

(Replaces S5-187228)

**Discussion:**

Nokia thought the text, and the diagram, implied static beams. It mixed beams and sectors. Beams did not fix coverage problems, beams were dynamic. This was a radio use case.

Intel defended it as relating to cells. Pivotal Commware agreed the diagram was inadequate, but beams could indeed be used to fill coverage holes.

**Decision:** The document was **not pursued**.

**S5-187033 Minutes of Study on Self-Organizing Networks (SON) for 5G**

*Type: report For: (not specified)  
 Source: Rapporteur (Intel)*

**Discussion:**

The WI was considered to be 10% complete.

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

**S5-187553 TR 28.861 incorporating pCRs approved at SA5#122**

*Type: draft TR For: Approval  
 28.861 v0.2.0  
 Source: Rapporteur: Joey Chou*

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

## 7 Charging

This agenda item was chaired by Maryse Gardella (Nokia).

**S5-187453 (reserved)**

*Type: other For: discussion  
 Source: (charging subgroup)*

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

**S5-187454 (reserved)**

*Type: other For: discussion  
 Source: (charging subgroup)*

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

**S5-187455 (reserved)**

*Type: other For: discussion  
 Source: (charging subgroup)*

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

### 7.1 Charging Plenary

**S5-187034 CH Agenda and Time Plan**

*Type: agenda For: (not specified)  
 Source: CH SWG Chair*

**Decision:** The document was **revised to S5-187305**.

**S5-187305 CH Agenda and Time Plan**

*Type: agenda For: -  
 Source: CH SWG Chair*

(Replaces S5-187034)

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

**S5-187044 Reply LS from SA2 ccSA5 on Data Volume Reporting in 5GC**

*Type: LS in For: (not specified)  
 Original outgoing LS: S2-1811547, to RAN3, cc SA5, CT4  
 Source: SA2*

**Abstract:**

SA2 agreed to cover Data Volume reporting procedures for Dual Connectivity option of NR connected to 5GC (MR-DC) and plans to complete the work for rel.15 in Q4 2018. For the time being SA2 approved attached CR 0661 to TS 23.501 and intends to complete the CR to TS 23.502 at the next SA2 meeting.

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

**S5-187035 CH Executive Report**

*Type: report For: (not specified)  
 Source: CH SWG Chair*

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

### 7.2 New Charging Work Item proposals

**S5-187200 New WID on Network Exposure Charging in 5G System Architecture**

*Type: WID new For: Agreement  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187306**.

**S5-187306 New WID on Network Exposure Charging in 5G System Architecture**

*Type: WID new For: Agreement  
 Source: Ericsson*

(Replaces S5-187200)

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

**S5-187244 New WID Charging AMF in 5G System Architecture Phase 1**

*Type: WID new For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187307**.

**S5-187307 New WID Charging AMF in 5G System Architecture Phase 1**

*Type: WID new For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187244)

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

### 7.3 Charging Maintenance and Rel-16 small Enhancements

**S5-187075 Rel-15 CR 32.291 Correction of response code in flow for Notify**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0011 Cat: F (Rel-15)  
  
 Source: Ericsson*

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

**S5-187076 Rel-15 CR 32.255 Allow update of NotifyUri**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0007 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187322**.

**S5-187322 Rel-15 CR 32.255 Allow update of NotifyUri**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0007 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187076)

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

**S5-187077 Rel-15 CR 32.290 Allow update of NotifyUri**

*Type: CR For: Agreement  
 32.290 v15.1.0 CR-0020 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187323**.

**S5-187323 Rel-15 CR 32.290 Allow update of NotifyUri**

*Type: CR For: Agreement  
 32.290 v15.1.0 CR-0020 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187077)

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

**S5-187078 Rel-15 CR 32.291 Allow update of NotifyUri**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0012 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187324**.

**S5-187324 Rel-15 CR 32.291 Allow update of NotifyUri**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0012 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187078)

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

**S5-187079 Rel-15 CR 32.291 Correction of overlapping results between Invocation result and Result code**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0013 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187325**.

**S5-187325 Rel-15 CR 32.291 Correction of overlapping results between Invocation result and Result code**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0013 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187079)

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

**S5-187080 Rel-15 CR 32.255 Correction of Invocation Result at http ok**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0008 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187326**.

**S5-187326 Rel-15 CR 32.255 Correction of Invocation Result at http ok**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0008 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187080)

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

**S5-187081 Rel-15 CR 32.290 Correction of Invocation Result at http ok**

*Type: CR For: Agreement  
 32.290 v15.1.0 CR-0021 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187327**.

**S5-187327 Rel-15 CR 32.290 Correction of Invocation Result at http ok**

*Type: CR For: Agreement  
 32.290 v15.1.0 CR-0021 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187081)

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

**S5-187082 Rel-15 CR 32.291 Correction of Invocation Result at http ok**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0014 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187328**.

**S5-187328 Rel-15 CR 32.291 Correction of Invocation Result at http ok**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0014 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187082)

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

**S5-187083 Rel-15 CR 32.255 Correction of Online non-blocking handling**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0009 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187329**.

**S5-187329 Rel-15 CR 32.255 Correction of Online non-blocking handling**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0009 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187083)

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

**S5-187084 Rel-15 CR 32.291 Correction of Rating Group type to Uint32**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0015 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187331**.

**S5-187331 Rel-15 CR 32.291 Correction of Rating Group type to Uint32**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0015 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187084)

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

**S5-187085 Rel-15 CR 32.255 Correction of UPF Id definition**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0010 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187333**.

**S5-187333 Rel-15 CR 32.255 Correction of UPF Id definition**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0010 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187085)

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

**S5-187086 Rel-15 CR 32.255 Correction AMF Id definition**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0011 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187334**.

**S5-187334 Rel-15 CR 32.255 Correction AMF Id definition**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0011 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187086)

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

**S5-187087 Rel-15 CR 32.291 Correction of name for Multiple Unit**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0016 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187388**.

**S5-187388 Rel-15 CR 32.291 Correction of name for Multiple Unit**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0016 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187087)

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

**S5-187088 Rel-15 CR 32.291 Allow PDUSession reference in Notify**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0017 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **not pursued**.

**S5-187089 Rel-15 CR 32.298 Correct PDU Session level trigger in CHF CDR**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0681 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187389**.

**S5-187389 Rel-15 CR 32.298 Correct PDU Session level trigger in CHF CDR**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0681 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187089)

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

**S5-187090 Rel-15 CR 32.255 Correction of Unused Quota Timer naming**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0012 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187390**.

**S5-187390 Rel-15 CR 32.255 Correction of Unused Quota Timer naming**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0012 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187090)

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

**S5-187091 Rel-15 CR 32.291 Correction of Unused Quota Timer naming**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0018 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187391**.

**S5-187391 Rel-15 CR 32.291 Correction of Unused Quota Timer naming**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0018 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187091)

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

**S5-187092 Rel-15 CR 32.291 Correction of missing http status codes**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0019 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187392**.

**S5-187392 Rel-15 CR 32.291 Correction of missing http status codes**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0019 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187092)

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

**S5-187093 Rel-15 CR 32.251 Correction of Supported Feature for EDCE5-CH**

*Type: CR For: Agreement  
 32.251 v15.3.0 CR-0508 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187394**.

**S5-187394 Rel-15 CR 32.251 Correction of Supported Feature for EDCE5-CH**

*Type: CR For: Agreement  
 32.251 v15.3.0 CR-0508 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187093)

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

**S5-187097 R15 CR 32.255 Correction of errors from Edithelp**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0005 rev 2 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-186389)

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

**S5-187098 Rel-15 CR 32.255 Introduction Data Volume Reporting for Option 4&7**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0013 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187395**.

**S5-187395 Rel-15 CR 32.255 Introduction Data Volume Reporting for Option 4&7**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0013 rev 1 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187098)

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

**S5-187099 Rel-15 CR 32.298 Introduction Data Volume Reporting for Option 4&7**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0683 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187396**.

**S5-187396 Rel-15 CR 32.298 Introduction Data Volume Reporting for Option 4&7**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0683 rev 1 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187099)

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

**S5-187100 Rel-15 CR 32.291 Introduction Data Volume Reporting for Option 4&7**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0021 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187397**.

**S5-187397 Rel-15 CR 32.291 Introduction Data Volume Reporting for Option 4&7**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0021 rev 1 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187100)

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

**S5-187107 Rel-15 CR 32.291 Alignment on Session Identifier**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0022 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187398**.

**S5-187398 Rel-15 CR 32.291 Alignment on Session Identifier**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0022 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187107)

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

**S5-187108 Rel-15 CR 32.290 Add description for Charging Notification**

*Type: CR For: Agreement  
 32.290 v15.1.0 CR-0023 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187399**.

**S5-187399 Rel-15 CR 32.290 Add description for Charging Notification**

*Type: CR For: Agreement  
 32.290 v15.1.0 CR-0023 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187108)

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

**S5-187109 Rel-15 CR 32.291 Correction on Charging Notification message**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0023 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187400**.

**S5-187400 Rel-15 CR 32.291 Correction on Charging Notification message**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0023 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187109)

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

**S5-187110 Rel-15 CR 32.291 Correction on Charging ID data type**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0024 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187401**.

**S5-187401 Rel-15 CR 32.291 Correction on Charging ID data type**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0024 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187110)

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

**S5-187111 Rel-15 CR 32.255 Complete flows alignment with TS 23.502**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0014 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187404**.

**S5-187404 Rel-15 CR 32.255 Complete flows alignment with TS 23.502**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0014 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187111)

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

**S5-187120 Rel-15 CR 32.291 Correction on Reauthorizationdetails**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0025 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187402**.

**S5-187402 Rel-15 CR 32.291 Correction on Reauthorizationdetails**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0025 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187120)

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

**S5-187137 Correction of Data Volume Uplink and Downlink definition**

*Type: CR For: Agreement  
 32.298 v14.6.0 CR-0687 Cat: F (Rel-14)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187298**.

**S5-187298 Correction of Data Volume Uplink and Downlink definition**

*Type: CR For: Agreement  
 32.298 v14.6.0 CR-0687 rev 1 Cat: F (Rel-14)  
  
 Source: Ericsson*

(Replaces S5-187137)

**Decision:** The document was **revised to S5-187318**.

**S5-187318 Correction of Data Volume Uplink and Downlink definition**

*Type: CR For: Agreement  
 32.298 v14.6.0 CR-0687 rev 2 Cat: F (Rel-14)  
  
 Source: Ericsson*

(Replaces S5-187298)

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

**S5-187138 Correction of Data Volume Uplink and Downlink definition**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0688 Cat: A (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Unclear definition of Data Volume Uplink and Downlink in List of Service Data of PS domain CDR parameters, especially the interpretation of “in case of GTP based tunnelling, the amount of data counted in P-GW shall be based on the payload of the GTP-U protocol”. For flow based charging, IP-CAN bearer based charging & IP-CAN Session based charging, when interworking with external IP networks, the inner IP packets of GTP-U tunnel should be counted, i.e. IP packets length should be counted. In some scenarios this isn’t equal to T-PDU with tailing garbage bytes behind the IP packets in T-PDU. TS 29.281, clause 4.2.1, GTP-U Tunnel description has defined “inner IP packet in a GTPv1-U packet (T-PDU) is either

- An IP packet sent to the UE/MS in the downlink direction over one or more tunnels from the external network identified by the APN.

- An IP packet sent from a UE/MS in the uplink direction over one or more tunnels to the external network identified by the APN.“

Above inner IP packet of GTP-U tunnel description match with IP-CAN bearer / Session & service data flow concept.

**Decision:** The document was **revised to S5-187299**.

**S5-187299 Correction of Data Volume Uplink and Downlink definition**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0688 rev 1 Cat: A (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187138)

**Decision:** The document was **revised to S5-187319**.

**S5-187319 Correction of Data Volume Uplink and Downlink definition**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0688 rev 2 Cat: A (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187299)

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

**S5-187139 Correcting the definition of data counting at the tunnelling interface**

*Type: CR For: Agreement  
 32.251 v14.3.0 CR-0509 Cat: F (Rel-14)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187300**.

**S5-187300 Correcting the definition of data counting at the tunnelling interface**

*Type: CR For: Agreement  
 32.251 v14.3.0 CR-0509 rev 1 Cat: F (Rel-14)  
  
 Source: Ericsson*

(Replaces S5-187139)

**Decision:** The document was **revised to S5-187320**.

**S5-187320 Correcting the definition of data counting at the tunnelling interface**

*Type: CR For: Agreement  
 32.251 v14.3.0 CR-0509 rev 2 Cat: F (Rel-14)  
  
 Source: Ericsson*

(Replaces S5-187300)

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

**S5-187140 Correcting the definition of data counting at the tunnelling interface**

*Type: CR For: Agreement  
 32.251 v15.3.0 CR-0510 Cat: A (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187301**.

**S5-187301 Correcting the definition of data counting at the tunnelling interface**

*Type: CR For: Agreement  
 32.251 v15.3.0 CR-0510 rev 1 Cat: A (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187140)

**Decision:** The document was **revised to S5-187321**.

**S5-187321 Correcting the definition of data counting at the tunnelling interface**

*Type: CR For: Agreement  
 32.251 v15.3.0 CR-0510 rev 2 Cat: A (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187301)

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

**S5-187179 Rel15 CR 32.251 PRA charging clarification**

*Type: CR For: Agreement  
 32.251 v15.3.0 CR-0511 Cat: F (Rel-15)  
  
 Source: Huawei*

**Decision:** The document was **revised to S5-187406**.

**S5-187406 Rel15 CR 32.251 PRA charging clarification**

*Type: CR For: Agreement  
 32.251 v15.3.0 CR-0511 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces S5-187179)

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

**S5-187180 Rel15 CR 32.255 PRA charging clarification**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0015 Cat: F (Rel-15)  
  
 Source: Huawei*

**Decision:** The document was **revised to S5-187407**.

**S5-187181 Rel15 CR 32.251 Multi-PRAs charging clarification**

*Type: CR For: Agreement  
 32.251 v15.3.0 CR-0512 Cat: F (Rel-15)  
  
 Source: Huawei*

**Decision:** The document was **revised to S5-187446**.

**S5-187407 Rel15 CR 32.255 PRA charging clarification**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0015 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces S5-187180)

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

**S5-187446 Rel15 CR 32.251 Multi-PRAs charging clarification**

*Type: CR For: Agreement  
 32.251 v15.3.0 CR-0512 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces S5-187181)

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

**S5-187233 Rel-15 CR 32.255 Add missing clause on formal description**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0016 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187403**.

**S5-187403 Rel-15 CR 32.255 Add missing clause on formal description**

*Type: CR For: Agreement  
 32.255 v15.0.0 CR-0016 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187233)

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

**S5-187330 LS to SA2 on Introduction of a special case of online charging method**

*Type: LS out For: Approval  
 to SA2  
 Source: SA5 (Ericsson)*

**Abstract:**

Change of title

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

**S5-187332 LS to CT4 CT3 on introduction of common data types**

*Type: LS out For: Approval  
 to CT4, CT3  
 Source: SA5 (Nokia)*

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

**S5-187393 Rel-15 CR 32.291 Failure Handling Mechanism Clarification**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0029 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

(revision of Tdoc S5-186379. CR#0005 from SA5#121)

**Discussion:**

(remaining part agreed in S5-18739: the other part is changed and relocated in S5-187325)

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

**S5-187405 Rel-15 CR 32.255 Correction on flows for alignment with TS 23.502**

*Type: CR For: Agreement  
 32.255 v15.0.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Revision of CR#0006 (S5-186418 from SA5#121)

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

**S5-187452 R15 CR 32.291 Correction of Serving Network Function ID definition**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0030 Cat: F (Rel-15)  
  
 Source: Ericsson, Nokia, Nokia Shanghai Bell*

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

### 7.4 Rel-15 Charging

#### 7.4.1 SMS Charging in 5G System Architecture Phase 1

**S5-187094 Rel-15 CR 32.290 Addition of event charging**

*Type: CR For: Agreement  
 32.290 v15.1.0 CR-0022 Cat: B (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187308**.

**S5-187308 Rel-15 CR 32.290 Addition of event charging**

*Type: CR For: Agreement  
 32.290 v15.1.0 CR-0022 rev 1 Cat: B (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187094)

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

**S5-187095 Rel-15 CR 32.291 Addition of event charging**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0020 Cat: B (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187309**.

**S5-187309 Rel-15 CR 32.291 Addition of event charging**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0020 rev 1 Cat: B (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187095)

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

**S5-187096 Rel-15 CR 32.298 Addition of SMS info to CHF CDR**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0682 Cat: B (Rel-15)  
  
 Source: Ericsson*

**Decision:** The document was **revised to S5-187317**.

**S5-187317 Rel-15 CR 32.298 Addition of SMS info to CHF CDR**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0682 rev 1 Cat: B (Rel-15)  
  
 Source: Ericsson*

(Replaces S5-187096)

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

**S5-187101 Rel-15 CR 32.274 Introduction of 5GS for SMS charging via Ro Rf**

*Type: CR For: Agreement  
 32.274 v15.0.0 CR-0060 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**S5-187102 Rel-15 CR 32.274 Introduction of offline charging for IP-SM-GW architecture and flows**

*Type: CR For: Agreement  
 32.274 v15.0.0 CR-0061 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187310**.

**S5-187310 Rel-15 CR 32.274 Introduction of offline charging for IP-SM-GW architecture and flows**

*Type: CR For: Agreement  
 32.274 v15.0.0 CR-0061 rev 1 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187102)

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

**S5-187103 Rel-15 CR 32.274 Introduction of offline charging for IP-SM-GW CDRs**

*Type: CR For: Agreement  
 32.274 v15.0.0 CR-0062 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187311**.

**S5-187311 Rel-15 CR 32.274 Introduction of offline charging for IP-SM-GW CDRs**

*Type: CR For: Agreement  
 32.274 v15.0.0 CR-0062 rev 1 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187103)

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

**S5-187104 Rel-15 CR 32.298 Introduction of 5GS for SMS charging via Ro Rf**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0684 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**S5-187105 Rel-15 CR 32.298 Introduction of offline charging for IP-SM-GW**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0685 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187312**.

**S5-187312 Rel-15 CR 32.298 Introduction of offline charging for IP-SM-GW**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0685 rev 1 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187105)

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

**S5-187106 Rel-15 CR 32.298 Introduction of SMS Charging to ASN.1 CHF CDR**

*Type: CR For: Agreement  
 32.298 v15.4.0 CR-0686 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**S5-187182 Rel15 CR 32.291 Data Type for SMS**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0026 Cat: B (Rel-15)  
  
 Source: Huawei*

**Decision:** The document was **revised to S5-187297**.

**S5-187297 Rel15 CR 32.291 Data Type for SMS**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0026 rev 1 Cat: B (Rel-15)  
  
 Source: Huawei, Nokia, Nokia Shanghai Bell*

(Replaces S5-187182)

**Decision:** The document was **revised to S5-187314**.

**S5-187314 Rel15 CR 32.291 Data Type for SMS**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0026 rev 2 Cat: B (Rel-15)  
  
 Source: Huawei, Nokia, Nokia Shanghai Bell*

(Replaces S5-187297)

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

**S5-187229 Rel-15 CR 32.274 Introduction of Detailed message format**

*Type: CR For: Agreement  
 32.274 v15.0.0 CR-0063 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187313**.

**S5-187313 Rel-15 CR 32.274 Introduction of Detailed message format**

*Type: CR For: Agreement  
 32.274 v15.0.0 CR-0063 rev 1 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187229)

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

**S5-187230 Rel-15 CR 32.274 Introduction of clauses on formal description and binding**

*Type: CR For: Agreement  
 32.274 v15.0.0 CR-0064 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**S5-187231 Rel-15 CR 32.291 Introduce Binding for SMS charging**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0027 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187316**.

**S5-187316 Rel-15 CR 32.291 Introduce Binding for SMS charging**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0027 rev 2 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187231)

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

**S5-187232 Rel-15 CR 32.291 Introduce OpenAPI extension for SMS charging**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0028 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to S5-187315**.

**S5-187315 Rel-15 CR 32.291 Introduce OpenAPI extension for SMS charging**

*Type: CR For: Agreement  
 32.291 v15.0.0 CR-0028 rev 1 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187232)

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

**S5-187234 R15 CR 32.274 Introduction of Message content charging SMSF**

*Type: CR For: Agreement  
 32.274 v15.0.0 CR-0057 rev 2 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-186297)

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

**S5-187240 R15 CR 32.274 Introduction of CHF CDR description for SMSF**

*Type: CR For: Agreement  
 32.274 v15.0.0 CR-0058 rev 2 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-186298)

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

**S5-187242 R15 CR 32.274 Introduction of SMS information converged charging**

*Type: CR For: Agreement  
 32.274 v15.0.0 CR-0059 rev 2 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-186299)

**Decision:** The document was **revised to S5-187451**.

**S5-187451 R15 CR 32.274 Introduction of SMS information converged charging**

*Type: CR For: Agreement  
 32.274 v15.0.0 CR-0059 rev 3 Cat: B (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces S5-187242)

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

### 7.5 Rel-16 Charging

#### 7.5.1 Volume Based Charging Aspects for VoLTE

#### 7.5.2 Nchf Online and Offline Charging Services (Preliminary work before SA approval)

**S5-187183 Rel16 DraftCR 32.240 Change for Service Based Interface Implications**

*Type: other For: Agreement  
 Source: Huawei*

**Decision:** The document was **not pursued**.

**S5-187184 Rel16 DraftCR 32.255 Add Nchf Offline Charging**

*Type: other For: Agreement  
 Source: Huawei*

**Decision:** The document was **not pursued**.

#### 7.5.3 Charging Enhancement of 5GC interworking with EPC (Preliminary work before SA approval)

### 7.6 Charging Studies

#### 7.6.1 Study on Charging Aspects of Network Slicing (Preliminary work before SA approval)

**S5-187185 Rel16 TR 32.xxx Skeleton**

*Type: other For: Agreement  
 Source: Huawei*

**Abstract:**

This is the draft TR justified by the WID in S5-186290 agreed at meeting SA5#121.

**Decision:** The document was **revised to S5-187447**.

**S5-187447 Rel16 TR 32.xxx Skeleton**

*Type: other For: Agreement  
 Source: Huawei*

(Replaces S5-187185)

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

**S5-187186 Rel16 pCR 32.xxx Scope**

*Type: other For: Approval  
 Source: Huawei*

**Decision:** The document was **revised to S5-187448**.

**S5-187448 Rel16 pCR 32.xxx Scope**

*Type: other For: Approval  
 Source: Huawei*

(Replaces S5-187186)

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

**S5-187187 Rel16 pCR 32.xxx Update of the Skeleton**

*Type: other For: Agreement  
 Source: Huawei*

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

**S5-187188 Rel16 pCR 32.xxx Update of the Reference**

*Type: other For: Agreement  
 Source: Huawei*

**Decision:** The document was **revised to S5-187449**.

**S5-187449 Rel16 pCR 32.xxx Update of the Reference**

*Type: other For: Agreement  
 Source: Huawei*

(Replaces S5-187188)

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

**S5-187450 TBD Study on Charging Aspects of Network Slicing (Preliminary work before SA approval)**

*Type: other For: Agreement  
 Source: Huawei*

**Abstract:**

TS 32.xxx for agreement by email.

**Discussion:**

The document was for email approval.

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

**S5-187556 draft TR 32.xxx "Study on Charging Aspects of Network Slicing" incorporating pCRs approved at SA5#122**

*Type: other For: Approval  
 Source: Rapporteur: Chen Shan*

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

## 8 Any Other Business

## 9 Closing of the meeting (latest by Friday 16.00)

The chairman thanked the hosts (NAF and the SK Group), and also thanked the delegates for their hard work prior to and during the meeting. The meeting closed at 15:50.

## Annex A: List of contribution documents

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Document | Title | Source | Decision | Replaces | Replaced by |
| S5-187000 | Agenda | WG Chairman | approved |  |  |
| S5-187001 | IPR and legal declaration | WG Chairman | noted |  |  |
| S5-187002 | Report from last SA5 meeting (draft) | MCC | revised |  | S5-187335 |
| S5-187003 | Leaders meeting agenda | WG Chairman | noted |  |  |
| S5-187004 | Leaders meeting minutes | WG Chairman | noted |  |  |
| S5-187005 | SA5 Working Procedures | WG Vice Chair (Huawei) | noted |  |  |
| S5-187006 | SA5 Meeting Facility Requirements | WG Vice Chair (Orange) | approved |  |  |
| S5-187007 | Process for management of draft TSs/TRs | WG Chairman | noted |  |  |
| S5-187008 | CR Quality Check | MCC | noted |  |  |
| S5-187009 | Status of email approvals | WG Vice Chair (Orange) | available |  |  |
| S5-187010 | SA5 Meeting Calendar | WG Chairman | revised |  | S5-187366 |
| S5-187011 | 3GPP SA5 Work Plan | MCC | noted |  |  |
| S5-187012 | Time Plan for OAM&P | WG Vice Chair (Huawei) | revised |  | S5-187338 |
| S5-187013 | OAM Executive Report | WG Vice Chair (Huawei) | revised |  | S5-187543 |
| S5-187014 | OAM&P SWG action list | WG Vice Chair (Huawei) | revised |  | S5-187493 |
| S5-187015 | Minutes of OAM&P SWG opening session | WG Vice Chair (Huawei) | noted |  |  |
| S5-187016 | Minutes of New Work Item proposals - OAM&P | WG Vice Chair (Orange) | noted |  |  |
| S5-187017 | Minutes of OAM&P Maintenance and Rel-16 small Enhancements | MCC | withdrawn |  |  |
| S5-187018 | Minutes of Assurance data and Performance Management for 5G networks and network slicing | Rapporteur (Intel) | noted |  |  |
| S5-187019 | Minutes of Management of QoE measurement collection | Rapporteur (Ericsson) | noted |  |  |
| S5-187020 | Minutes of Energy efficiency of 5G | Rapporteur (ORANGE) | noted |  |  |
| S5-187021 | Minutes of Study on OAM aspects of LTE and WLAN integration | Rapporteur (Ericsson) | noted |  |  |
| S5-187022 | Minutes of Network policy management for mobile networks based on NFV scenarios | Rapporteur (China Mobile) | noted |  |  |
| S5-187023 | Minutes of Methodology for 5G management specifications | Rapporteur (Ericsson) | noted |  |  |
| S5-187024 | Minutes of Intent driven management service for mobile networks | Rapporteur (Huawei) | noted |  |  |
| S5-187025 | Minutes of Enhancement of performance assurance for 5G networks including network slicing | Rapporteur (Intel) | noted |  |  |
| S5-187026 | Minutes for Study on system and functional aspects of Energy Efficiency in 5G networks | Rapporteur (ORANGE) | noted |  |  |
| S5-187027 | Minutes of Study on integration of ONAP DCAE and 3GPP management architecture | Rapporteur ORANGE) | noted |  |  |
| S5-187028 | Minutes of Study on integration of ONAP and 3GPP configuration management services for 5G networks | Rapporteur (Ericsson) | noted |  |  |
| S5-187029 | Minutes of Study on protocol enhancement for real time communication | Rapporteur(Nokia) | withdrawn |  |  |
| S5-187030 | Minutes of Study on management aspects of edge computing | Rapporteur (Intel) | noted |  |  |
| S5-187031 | Minutes of Study on tenancy concept in 5G networks and network slicing management | Rapporteur (Huawei) | noted |  |  |
| S5-187032 | Minutes of Study on management aspects of communication services | Rapporteur (Ericsson) | noted |  |  |
| S5-187033 | Minutes of Study on Self-Organizing Networks (SON) for 5G | Rapporteur (Intel) | noted |  |  |
| S5-187034 | CH Agenda and Time Plan | CH SWG Chair | revised |  | S5-187305 |
| S5-187035 | CH Executive Report | CH SWG Chair | noted |  |  |
| S5-187036 | Resubmitted Reply LS from CT to SA5 on API specification and API version number maintenance | TSG CT | replied to |  |  |
| S5-187037 | Reply LS from RAN2 to SA5 on L2 measurements | RAN2 | noted |  |  |
| S5-187038 | Reply LS to SA5 on L2 measurements | RAN3 | noted |  |  |
| S5-187039 | LS from SA2 to SA5 on QoS Monitoring | SA2 | replied to |  |  |
| S5-187040 | Resubmitted Reply LS from SA4 to SA5 on Attributes for QoE measurement collection | SA4 | revised |  | S5-187375 |
| S5-187041 | Resubmitted LS from ITU-T to SA5 on cooperation on REST-based network management framework | ITU-T Study Group 2 | replied to |  |  |
| S5-187042 | LS/r from ITU-T to SA5 on Energy Efficiency (reply to 3GPP TSG SA5 - S5-182439) | ITU-T Study Group 5 | noted |  |  |
| S5-187043 | LS/r from ITU-T ccSA5 on Energy Efficiency (reply to ETSI TC EE - EE(18)053033-E) | ITU-T Study Group 5 | postponed |  |  |
| S5-187044 | Reply LS from SA2 ccSA5 on Data Volume Reporting in 5GC | SA2 | noted |  |  |
| S5-187045 | Revised SID on integration of ONAP and 3GPP configuration management services for 5G networks | Nanjing Ericsson Panda Com Ltd | revised |  | S5-187471 |
| S5-187046 | R16 CR 28.541 Add GUtranRelation Class | ZTE Wistron Telecom AB | not pursued |  |  |
| S5-187047 | R16 CR 28.541 Add Beam Class | ZTE Wistron Telecom AB | revised |  | S5-187343 |
| S5-187048 | R16 CR 28.552 Add CQI measurements | ZTE Wistron Telecom AB | revised |  | S5-187440 |
| S5-187049 | R16 CR 28.552 Add RSRP measurements | ZTE Wistron Telecom AB | revised |  | S5-187442 |
| S5-187050 | R16 CR 28.552 Add Flow Setup measurements | ZTE Wistron Telecom AB | merged |  |  |
| S5-187051 | R16 CR 28.552 Add Flow release measurements | ZTE Wistron Telecom AB | merged |  |  |
| S5-187052 | R16 CR 28.552 Add MCS Distribution measurements | ZTE Wistron Telecom AB | revised |  | S5-187491 |
| S5-187053 | R16 CR 28.552 Add TB related measurements | ZTE Wistron Telecom AB | revised |  | S5-187444 |
| S5-187054 | R16 CR 28.552 Add RLC data volume measurements | ZTE Wistron Telecom AB | revised |  | S5-187445 |
| S5-187055 | R16 CR 28.552 Add PDCP data volume measurements | ZTE Wistron Telecom AB | merged |  | S5-187456 |
| S5-187056 | R16 CR 28.552 Add PDCP throughput measurements | ZTE Wistron Telecom AB | not pursued |  |  |
| S5-187057 | R16 CR 28.552 Add TA related measurements | ZTE Wistron Telecom AB | revised |  | S5-187457 |
| S5-187058 | Rel-15 CR 28.530 Fix gap of requirement for Network Slicing priority | China Telecom Corporation Ltd. | revised |  | S5-187344 |
| S5-187059 | CR Rel-15 28662 on frequency band | Ericsson Inc. | revised |  | S5-187345 |
| S5-187060 | TD on NR cell frequency relation | Ericsson Inc. | revised |  | S5-187346 |
| S5-187061 | CR Rel-15 TS 28658 view (E-UTRAN) of cell and frequency relations | Ericsson Inc. | withdrawn |  |  |
| S5-187062 | CR Rel-15 TS 28541 view (NR) of cell and frequency relation | Ericsson Inc. | withdrawn |  |  |
| S5-187063 | CR Rel-15 TS 28541 Remove the ExternalENBFunction definition | Ericsson Inc. | revised |  | S5-187347 |
| S5-187064 | CR Rel-15 TS 28541 plmnIdList RW | Ericsson Inc. | withdrawn |  |  |
| S5-187065 | CR Rel-15 TS 28541 on ExternalGNBCUCPFunction | Ericsson Inc. | revised |  | S5-187348 |
| S5-187066 | CR Rel-15 TS 28.622 Generic NRM IS on Measurement Control | Ericsson Inc. | revised |  | S5-187349 |
| S5-187067 | CR Rel-15 TS 32432 on measurement type | Ericsson Inc. | revised |  | S5-187350 |
| S5-187068 | TD YANG solution style guide | Ericsson Inc. | withdrawn |  |  |
| S5-187069 | TD YANG solution style guide | Ericsson Inc. | noted |  |  |
| S5-187070 | PM terms for NSI and NSSI | Cisco Systems Belgium | revised |  | S5-187458 |
| S5-187071 | DP on PM terms for NSI and NSSI | Cisco Systems Inc. | noted |  |  |
| S5-187072 | Discussion Paper on the management of disaggregated RAN | Cisco Systems Inc. | revised |  | S5-187466 |
| S5-187073 | pCR to 28.861 ANR SON function | Cisco Systems Inc. | merged |  | S5-187509 |
| S5-187074 | pCR to 28.861 CCO SON function | Cisco Systems Inc. | merged |  | S5-187509 |
| S5-187075 | Rel-15 CR 32.291 Correction of response code in flow for Notify | Ericsson | agreed |  |  |
| S5-187076 | Rel-15 CR 32.255 Allow update of NotifyUri | Ericsson | revised |  | S5-187322 |
| S5-187077 | Rel-15 CR 32.290 Allow update of NotifyUri | Ericsson | revised |  | S5-187323 |
| S5-187078 | Rel-15 CR 32.291 Allow update of NotifyUri | Ericsson | revised |  | S5-187324 |
| S5-187079 | Rel-15 CR 32.291 Correction of overlapping results between Invocation result and Result code | Ericsson | revised |  | S5-187325 |
| S5-187080 | Rel-15 CR 32.255 Correction of Invocation Result at http ok | Ericsson | revised |  | S5-187326 |
| S5-187081 | Rel-15 CR 32.290 Correction of Invocation Result at http ok | Ericsson | revised |  | S5-187327 |
| S5-187082 | Rel-15 CR 32.291 Correction of Invocation Result at http ok | Ericsson | revised |  | S5-187328 |
| S5-187083 | Rel-15 CR 32.255 Correction of Online non-blocking handling | Ericsson | revised |  | S5-187329 |
| S5-187084 | Rel-15 CR 32.291 Correction of Rating Group type to Uint32 | Ericsson | revised |  | S5-187331 |
| S5-187085 | Rel-15 CR 32.255 Correction of UPF Id definition | Ericsson | revised |  | S5-187333 |
| S5-187086 | Rel-15 CR 32.255 Correction AMF Id definition | Ericsson | revised |  | S5-187334 |
| S5-187087 | Rel-15 CR 32.291 Correction of name for Multiple Unit | Ericsson | revised |  | S5-187388 |
| S5-187088 | Rel-15 CR 32.291 Allow PDUSession reference in Notify | Ericsson | not pursued |  |  |
| S5-187089 | Rel-15 CR 32.298 Correct PDU Session level trigger in CHF CDR | Ericsson | revised |  | S5-187389 |
| S5-187090 | Rel-15 CR 32.255 Correction of Unused Quota Timer naming | Ericsson | revised |  | S5-187390 |
| S5-187091 | Rel-15 CR 32.291 Correction of Unused Quota Timer naming | Ericsson | revised |  | S5-187391 |
| S5-187092 | Rel-15 CR 32.291 Correction of missing http status codes | Ericsson | revised |  | S5-187392 |
| S5-187093 | Rel-15 CR 32.251 Correction of Supported Feature for EDCE5-CH | Ericsson | revised |  | S5-187394 |
| S5-187094 | Rel-15 CR 32.290 Addition of event charging | Ericsson | revised |  | S5-187308 |
| S5-187095 | Rel-15 CR 32.291 Addition of event charging | Ericsson | revised |  | S5-187309 |
| S5-187096 | Rel-15 CR 32.298 Addition of SMS info to CHF CDR | Ericsson | revised |  | S5-187317 |
| S5-187097 | R15 CR 32.255 Correction of errors from Edithelp | Nokia, Nokia Shanghai Bell | agreed | S5-186389 |  |
| S5-187098 | Rel-15 CR 32.255 Introduction Data Volume Reporting for Option 4&7 | Nokia, Nokia Shanghai Bell | revised |  | S5-187395 |
| S5-187099 | Rel-15 CR 32.298 Introduction Data Volume Reporting for Option 4&7 | Nokia, Nokia Shanghai Bell | revised |  | S5-187396 |
| S5-187100 | Rel-15 CR 32.291 Introduction Data Volume Reporting for Option 4&7 | Nokia, Nokia Shanghai Bell | revised |  | S5-187397 |
| S5-187101 | Rel-15 CR 32.274 Introduction of 5GS for SMS charging via Ro Rf | Nokia, Nokia Shanghai Bell | agreed |  |  |
| S5-187102 | Rel-15 CR 32.274 Introduction of offline charging for IP-SM-GW architecture and flows | Nokia, Nokia Shanghai Bell | revised |  | S5-187310 |
| S5-187103 | Rel-15 CR 32.274 Introduction of offline charging for IP-SM-GW CDRs | Nokia, Nokia Shanghai Bell | revised |  | S5-187311 |
| S5-187104 | Rel-15 CR 32.298 Introduction of 5GS for SMS charging via Ro Rf | Nokia, Nokia Shanghai Bell | agreed |  |  |
| S5-187105 | Rel-15 CR 32.298 Introduction of offline charging for IP-SM-GW | Nokia, Nokia Shanghai Bell | revised |  | S5-187312 |
| S5-187106 | Rel-15 CR 32.298 Introduction of SMS Charging to ASN.1 CHF CDR | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| S5-187107 | Rel-15 CR 32.291 Alignment on Session Identifier | Nokia, Nokia Shanghai Bell | revised |  | S5-187398 |
| S5-187108 | Rel-15 CR 32.290 Add description for Charging Notification | Nokia, Nokia Shanghai Bell | revised |  | S5-187399 |
| S5-187109 | Rel-15 CR 32.291 Correction on Charging Notification message | Nokia, Nokia Shanghai Bell | revised |  | S5-187400 |
| S5-187110 | Rel-15 CR 32.291 Correction on Charging ID data type | Nokia, Nokia Shanghai Bell | revised |  | S5-187401 |
| S5-187111 | Rel-15 CR 32.255 Complete flows alignment with TS 23.502 | Nokia, Nokia Shanghai Bell | revised |  | S5-187404 |
| S5-187112 | pCR to 28.861 E2E Service Quality Optimization | Cisco Systems Belgium | revised |  | S5-187510 |
| S5-187113 | Self-configuration for NG-RAN and 5GC | Cisco Systems Belgium | merged |  | S5-187509 |
| S5-187114 | Revised WID on Management of QoE measurement collection | Ericsson | agreed |  |  |
| S5-187115 | pCR R16 28.405-030 Include QoE parameters | Ericsson | approved |  |  |
| S5-187116 | R15 CR TS 28.532 change alarmIRP to FaultSupervision MnS producer | ZTE Wistron Telecom AB | revised |  | S5-187351 |
| S5-187117 | pCR R16 28.405-030 Add forced deactivation | Ericsson | approved |  |  |
| S5-187118 | pCR R16 28.405-030 Add X2 handover | Ericsson | not pursued |  | S5-187374 |
| S5-187119 | pCR R16 28.405-030 Reporting collected data | Ericsson | withdrawn |  |  |
| S5-187120 | Rel-15 CR 32.291 Correction on Reauthorizationdetails | Nokia, Nokia Shanghai Bell | revised |  | S5-187402 |
| S5-187121 | Presentation of TR 32.972 to SA for Approval | Orange | approved |  |  |
| S5-187122 | pCR TS 28.310 – Management services | Orange | revised |  | S5-187377 |
| S5-187123 | pCR TS 28.310 – Use cases and requirements for DV measurement | Orange, Huawei | revised |  | S5-187378 |
| S5-187124 | pCR TS 28.310 – Use cases and requirements for PEE measurement | Orange, Huawei | revised |  | S5-187379 |
| S5-187125 | Discussion paper on SS Burst set periodicity in NG-RAN | Orange | noted |  |  |
| S5-187126 | pCR 28.550 Add solution for performance data streaming | Intel, BT | revised |  | S5-187372 |
| S5-187127 | CR Rel-16 28.552 Add PDU Session Modification related measurements for SMF | Intel China Ltd. | revised |  | S5-187474 |
| S5-187128 | CR Rel-16 28.552 Add PDU Session Release related measurements for SMF | Intel China Ltd. | revised |  | S5-187475 |
| S5-187129 | CR Rel-16 28.552 Add N4 Session Establishment related measurements for UPF | Intel China Ltd. | agreed |  |  |
| S5-187130 | CR Rel-16 28.552 Add NF performance measurements related to VR | Intel China Ltd. | revised |  | S5-187460 |
| S5-187131 | CR Rel-16 28.658 Add WLANMobilitySet IOC | Intel China Ltd. | revised |  | S5-187380 |
| S5-187132 | CR Rel-16 28.659 Add WLANMobilitySet IOC | Intel China Ltd. | withdrawn |  |  |
| S5-187133 | CR Rel-16 28.659 Add WLANMobilitySet IOC | Intel China Ltd. | revised |  | S5-187381 |
| S5-187134 | CR Rel-16 32.425 Add measurements related to user data transmission on Xw interface for non-collocated LWA | Intel Corporation (UK) Ltd | revised | S5-186236 | S5-187382 |
| S5-187135 | CR Rel-16 32.425 Add measurements related to XwAP procedures for non-collocated LWA | Intel Corporation (UK) Ltd | revised | S5-186238 | S5-187383 |
| S5-187136 | CR Rel-16 32.425 Add measurements related to RRC procedures for LWA | Intel China Ltd. | revised |  | S5-187384 |
| S5-187137 | Correction of Data Volume Uplink and Downlink definition | Ericsson | revised |  | S5-187298 |
| S5-187138 | Correction of Data Volume Uplink and Downlink definition | Ericsson | revised |  | S5-187299 |
| S5-187139 | Correcting the definition of data counting at the tunnelling interface | Ericsson | revised |  | S5-187300 |
| S5-187140 | Correcting the definition of data counting at the tunnelling interface | Ericsson | revised |  | S5-187301 |
| S5-187141 | Rel-15 CR TS 32.450 Add missing EE KPI for E-UTRAN | Huawei, Orange | revised |  | S5-187352 |
| S5-187142 | Rel-15 CR TS 32.451 Add missing EE KPI for E-UTRAN | Huawei, Orange | revised |  | S5-187353 |
| S5-187143 | Rel-15 CR TS 32.425 Update measurements supporting EE KPI | Huawei, Orange | revised |  | S5-187354 |
| S5-187144 | Rel-16 CR TS 32.425 Update measurements supporting EE KPI | Huawei, Orange | revised |  | S5-187355 |
| S5-187145 | Rel-15 CR TS 28.532 Add stage 2 definition for provisioning management service related notifications | Huawei | revised |  | S5-187356 |
| S5-187146 | Rel-15 CR TS 28.532 Correct stage 3 definition for provisioning management service related notifications | Huawei | revised |  | S5-187357 |
| S5-187147 | Rel-15 CR TS 28.531 Correct procedures with reference to TS 28.541 | Huawei | revised |  | S5-187358 |
| S5-187148 | Rel-15 CR TS 28.531 Add use case and requirements for MnS Query | Huawei | not pursued |  | S5-187360 |
| S5-187149 | Rel-15 CR TS 28.532 Add stage2 definition for MnS Query | Huawei | revised |  | S5-187361 |
| S5-187150 | Rel-15 CR TS 28.532 Add stage3 definition for MnS Query | Huawei | revised |  | S5-187362 |
| S5-187151 | Rel-15 CR TS 28.541 Update NR NRM with Cell Relation | Huawei | revised |  | S5-187363 |
| S5-187152 | pCR 28.900 Add example of 3GPP MnS Provider using interfaces provided by ONAP VF-C | China Mobile | withdrawn |  |  |
| S5-187153 | pCR 28.900 Add example of 3GPP MnS Provider using interfaces provided by ONAP VF-C | China Mobile | revised |  | S5-187472 |
| S5-187154 | CR Rel-15 TS 28.541 Correction of missing 5G NRM NRSectorCarrier IOC attributes. | Pivotal Commware | revised |  | S5-187337 |
| S5-187155 | pCR 28.812 Add concept for utilization of intent | Huawei | revised |  | S5-187413 |
| S5-187156 | pCR 28.812 Update the figures for area cell load balance and cell rehome scenario | Huawei | revised |  | S5-187414 |
| S5-187157 | pCR 28.812 Add intent driven instant cell deletion scenario | Huawei | revised |  | S5-187415 |
| S5-187158 | pCR 28.812 Add intent driven network optimization scenario | Huawei | revised |  | S5-187416 |
| S5-187159 | pCR 28.900 Add example of 3GPP MnS Provider using interfaces provided by ONAP DCAE | Huawei | revised |  | S5-187467 |
| S5-187160 | pCR 28.812 Update network provisioning scenario | Huawei | revised |  | S5-187417 |
| S5-187161 | Rel-16 CR TS 28.552 Add the performance measurement of CQI distribution | Huawei | withdrawn |  |  |
| S5-187162 | Rel-15 CR TS 28.552 Add the performance measurement of MCS distribution | Huawei | withdrawn |  |  |
| S5-187163 | Rel-15 CR TS 28.552 Add Qos flow related performance measurements | Huawei | withdrawn |  |  |
| S5-187164 | Rel-15 CR TS 28.552 Correction of the Packet loss measurements | Huawei | revised |  | S5-187373 |
| S5-187165 | Rel-15 CR TS 28.552 Add PDCP data volume measurements | Huawei | withdrawn |  |  |
| S5-187166 | Rel-15 CR TS 28.554 Add KPI of QoS flow Retainability | Huawei | withdrawn |  |  |
| S5-187167 | pCR 28.812 NSI resource utilization optimization | Huawei Tech.(UK) Co., Ltd | revised |  | S5-187418 |
| S5-187168 | pCR 28.805 Add definition of communication service | Huawei | revised |  | S5-187500 |
| S5-187169 | pCR 28.805 Add requirements of MDA-Assisted network provision contributing to SLA assurance | Huawei | revised |  | S5-187494 |
| S5-187170 | pCR 28.805 Add UC and requirements for creation of communication service instance | Huawei | merged |  | S5-187504 |
| S5-187171 | pCR 28.805 Add UC and requirements for termination of communication service instance | Huawei | revised |  | S5-187499 |
| S5-187172 | pCR 28.805 Add UC and requirements for multi-degree SLA assurance | Huawei | revised |  | S5-187495 |
| S5-187173 | pCR 28.805 Add UC and requirements for SLA monitoring and assurance for network slicing | Huawei | revised |  | S5-187497 |
| S5-187174 | Add Business level requirements | China Mobile | revised |  | S5-187386 |
| S5-187175 | Add Policy management architecture | China Mobile | revised |  | S5-187385 |
| S5-187176 | Rel-16 draftCR TS 28.531 Add use case and requirements for MnS Registration | Huawei | not pursued |  | S5-187463 |
| S5-187177 | pCR 28.861 NSI resource utilization performance optimization | Huawei Tech.(UK) Co., Ltd | merged |  | S5-187511 |
| S5-187178 | pCR 28.812 Add introduction for Intent Expression | Huawei Tech.(UK) Co., Ltd | revised |  | S5-187419 |
| S5-187179 | Rel15 CR 32.251 PRA charging clarification | Huawei | revised |  | S5-187406 |
| S5-187180 | Rel15 CR 32.255 PRA charging clarification | Huawei | revised |  | S5-187407 |
| S5-187181 | Rel15 CR 32.251 Multi-PRAs charging clarification | Huawei | revised |  | S5-187446 |
| S5-187182 | Rel15 CR 32.291 Data Type for SMS | Huawei | revised |  | S5-187297 |
| S5-187183 | Rel16 DraftCR 32.240 Change for Service Based Interface Implications | Huawei | not pursued |  |  |
| S5-187184 | Rel16 DraftCR 32.255 Add Nchf Offline Charging | Huawei | not pursued |  |  |
| S5-187185 | Rel16 TR 32.xxx Skeleton | Huawei | revised |  | S5-187447 |
| S5-187186 | Rel16 pCR 32.xxx Scope | Huawei | revised |  | S5-187448 |
| S5-187187 | Rel16 pCR 32.xxx Update of the Skeleton | Huawei | approved |  |  |
| S5-187188 | Rel16 pCR 32.xxx Update of the Reference | Huawei | revised |  | S5-187449 |
| S5-187189 | Discussion paper about network slice priority handling in 3GPP management system | Huawei Telecommunication India | noted |  |  |
| S5-187190 | Rel-16 CR Introduce definitions of Network slice management priority and operation severity | Huawei Telecommunication India | not pursued |  | - |
| S5-187191 | Rel-16 CR Add network slice management use case with priority | Huawei Telecommunication India | revised |  | S5-187368 |
| S5-187192 | Rel-16 CR Add network slice management interactions with severity type | Huawei Telecommunication India | revised |  | S5-187369 |
| S5-187193 | Rel-16 CR Change NRM IOCs for network slice priority support | Huawei Telecommunication India | not pursued |  |  |
| S5-187194 | Change NRM IOCs for network slice priority support stage 3 | Huawei Telecommunication India | not pursued |  |  |
| S5-187195 | Rel-16 DraftCR Update scope of TS 28.xxx | Huawei Telecommunication India | not pursued |  | - |
| S5-187196 | Rel-16 DraftCR Add general information for discovery of MnS | Huawei Telecommunication India | not pursued |  | S5-187464 |
| S5-187197 | Revised WID on management service discovery in 5G network management | Huawei Telecommunication India | revised |  | S5-187465 |
| S5-187198 | pCR 28.804 Corrections of existing tenancy concept | Huawei Telecommunication India | revised |  | S5-187490 |
| S5-187199 | pCR 28.804 Concept of multiple exposure of same MnS | Huawei Telecommunication India | revised |  | S5-187492 |
| S5-187200 | New WID on Network Exposure Charging in 5G System Architecture | Ericsson | revised |  | S5-187306 |
| S5-187201 | pCR Concept of MnS consumed by tenant | Huawei Telecommunication India | revised |  | S5-187489 |
| S5-187202 | Rel-16 CR TS 28.552 Add the performance measurement of CQI distribution | Huawei | withdrawn |  |  |
| S5-187203 | Rel-16 CR TS 28.552 Add the performance measurement of MCS distribution | Huawei | withdrawn |  |  |
| S5-187204 | Rel-16 CR TS 28.552 Add Qos flow related performance measurements | Huawei | withdrawn |  |  |
| S5-187205 | Rel-16 CR TS 28.552 Add PDCP data volume measurements | Huawei | withdrawn |  |  |
| S5-187206 | Rel-16 CR TS 28.554 Add KPI of QoS flow Retainability | Huawei | withdrawn |  |  |
| S5-187207 | Rel-16 CR TS 28.552 Add the performance measurement of CQI distribution | Huawei | revised |  | S5-187441 |
| S5-187208 | Rel-16 CR TS 28.552 Add the performance measurement of MCS distribution | Huawei | merged |  | S5-187491 |
| S5-187209 | Rel-16 CR TS 28.552 Add Qos flow related performance measurements | Huawei | merged |  |  |
| S5-187210 | Rel-16 CR TS 28.552 Add PDCP data volume measurements | Huawei | merged |  | S5-187456 |
| S5-187211 | Rel-16 CR TS 28.554 Add KPI of QoS flow Retainability | Huawei | postponed |  |  |
| S5-187212 | Draft LS on the slicing terminology and the role of S-NSSAI parameter | SA5 (Cisco Systems Belgium) | revised |  | S5-187461 |
| S5-187213 | pCR 28.900 ONAP controllers and 3GPP provisioning service for CM purpose | Nanjing Ericsson Panda Com Ltd | revised |  | S5-187473 |
| S5-187214 | pCR 28.900 update References for CM purposes | Nanjing Ericsson Panda Com Ltd | approved |  |  |
| S5-187215 | pCR 28.900 add description for positioning | Nanjing Ericsson Panda Com Ltd | revised |  | S5-187478 |
| S5-187216 | pCR 28.900 comparative analysis for CM purposes | Nanjing Ericsson Panda Com Ltd | revised |  | S5-187479 |
| S5-187217 | RRM Policy enhancements | Nokia, Nokia Shanghai Bell | revised |  | S5-187251 |
| S5-187218 | add rules for Stage 2 to YANG mapping in NRM | Nokia, Nokia Shanghai Bell | revised |  | S5-187387 |
| S5-187219 | add rules for generic JSON and YANG NRM definition | Nokia, Nokia Shanghai Bell | revised |  | S5-187408 |
| S5-187220 | add modulization rules in YANG NRM definition | Nokia, Nokia Shanghai Bell | revised |  | S5-187409 |
| S5-187221 | add rules for Stage 3 NRM packing and change tracking | Nokia, Nokia Shanghai Bell | noted |  |  |
| S5-187222 | CR Rel-15 28.552 Add DRB setup related measurements and UC for gNB | Ericsson GmbH, Eurolab | revised |  | S5-187462 |
| S5-187223 | CR R-15 28.554 Add DRB Accessibility KPI and Use Case | Ericsson GmbH, Eurolab | noted |  |  |
| S5-187224 | Discussion on TAC attributes in 28.541 | Ericsson | revised |  | S5-187420 |
| S5-187225 | pCR 28.861 Add SON concepts | Intel Corporation (UK) Ltd | revised |  | S5-187506 |
| S5-187226 | pCR 28.861 Add key issues overview for 5G SON study | Intel Corporation (UK) Ltd | merged |  | S5-187509 |
| S5-187227 | pCR 28.861 add use case for eMBB, URLLC, and mMTC network slice | Intel Corporation (UK) Ltd | merged |  | S5-187511 |
| S5-187228 | pCR 28.861 add use case for beam coverage and capacity optimization | Intel Corporation (UK) Ltd | revised |  | S5-187513 |
| S5-187229 | Rel-15 CR 32.274 Introduction of Detailed message format | Nokia, Nokia Shanghai Bell | revised |  | S5-187313 |
| S5-187230 | Rel-15 CR 32.274 Introduction of clauses on formal description and binding | Nokia, Nokia Shanghai Bell | agreed |  |  |
| S5-187231 | Rel-15 CR 32.291 Introduce Binding for SMS charging | Nokia, Nokia Shanghai Bell | revised |  | S5-187316 |
| S5-187232 | Rel-15 CR 32.291 Introduce OpenAPI extension for SMS charging | Nokia, Nokia Shanghai Bell | revised |  | S5-187315 |
| S5-187233 | Rel-15 CR 32.255 Add missing clause on formal description | Nokia, Nokia Shanghai Bell | revised |  | S5-187403 |
| S5-187234 | R15 CR 32.274 Introduction of Message content charging SMSF | Nokia, Nokia Shanghai Bell | agreed | S5-186297 |  |
| S5-187235 | pCR 28.803 edge computing network | Intel Corporation (UK) Ltd | revised |  | S5-187482 |
| S5-187236 | pCR 28.900 Example of a notification header | Ericsson Japan K.K. | approved |  |  |
| S5-187237 | pCR 28.803 edge computing deployment scenarios | Intel Corporation (UK) Ltd | revised |  | S5-187483 |
| S5-187238 | pCR 28.803 use cases for UPF instantiation and termination | Intel Corporation (UK) Ltd | revised |  | S5-187484 |
| S5-187239 | pCR 28.803 use cases for local DN deployment | Intel Corporation (UK) Ltd | revised |  | S5-187485 |
| S5-187240 | R15 CR 32.274 Introduction of CHF CDR description for SMSF | Nokia, Nokia Shanghai Bell | agreed | S5-186298 |  |
| S5-187241 | pCR 28.803 add use case for E2E OSS deployment scenario | Intel Corporation (UK) Ltd | revised |  | S5-187486 |
| S5-187242 | R15 CR 32.274 Introduction of SMS information converged charging | Nokia, Nokia Shanghai Bell | revised | S5-186299 | S5-187451 |
| S5-187243 | pCR 28.803 add use case for RAN condition data | Intel Corporation (UK) Ltd | revised |  | S5-187487 |
| S5-187244 | New WID Charging AMF in 5G System Architecture Phase 1 | Nokia, Nokia Shanghai Bell | revised |  | S5-187307 |
| S5-187245 | Fix containment issue in YANG definition | Nokia Korea | revised |  | S5-187410 |
| S5-187246 | Correction of reference | Ericsson Japan K.K. | revised |  | S5-187421 |
| S5-187247 | Discussion paper on the abbreviation of MF | Ericsson | revised |  | S5-187422 |
| S5-187248 | Rel-15 CR 28.530 Replace MF with managed function | Ericsson Limited | revised |  | S5-187423 |
| S5-187249 | Rel-15 CR 28.533 Replace MF with management function | Ericsson Limited | revised |  | S5-187424 |
| S5-187250 | Rel-15 CR 28.622 Replace MF with ManagedFunction | Ericsson Limited | revised |  | S5-187425 |
| S5-187251 | RRM Policy enhancements | Nokia, Nokia Shanghai Bell | revised | S5-187217 | S5-187359 |
| S5-187252 | pCR 28.805 Move key topics to Annex | Ericsson Limited | revised |  | S5-187501 |
| S5-187253 | pCR 32.160 Insert guidelines and examples in NRM template | Ericsson Limited | revised |  | S5-187411 |
| S5-187254 | Discussion Paper on options for mapping 3GPP 5G alarm notifications on ONAP VES JSON Collector API | AT&T, Deutsche Telekom, Orange | revised |  | S5-187468 |
| S5-187255 | pCR 32.160 Add stage 1 template | Ericsson Limited | approved |  |  |
| S5-187256 | pCR 32.160 Insert guidelines and examples in template for operations and notifications | Ericsson Limited | revised |  | S5-187412 |
| S5-187257 | pCR TS 28.900 – Options for mapping 3GPP 5G alarm notifications on ONAP VES JSON Collector API | AT&T, Deutsche Telekom, Orange | revised |  | S5-187469 |
| S5-187258 | pCR TS 28.900 – Mapping 3GPP 5G PM data reporting on ONAP VES JSON Collector API | AT&T, Deutsche Telekom, Orange | revised |  | S5-187470 |
| S5-187259 | pCR TS 28.900 – ONAP Heartbeat and Event Throttling | AT&T, Deutsche Telekom, Orange | approved |  |  |
| S5-187260 | Update NRM root IOCs to support slice priority | Nokia, Nokia Shanghai Bell | revised |  | S5-187370 |
| S5-187261 | pCR TS 28.900 – 3GPP Fault Supervision operations | AT&T, Deutsche Telekom, Orange | approved |  |  |
| S5-187262 | Revised SID on integration of ONAP DCAE and 3GPP management architecture | AT&T, Orange | agreed |  |  |
| S5-187263 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | revised |  | S5-187427 |
| S5-187264 | Presentation of TR 28.900 for Information to SA#82 | AT&T, Orange | approved |  |  |
| S5-187265 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | revised |  | S5-187428 |
| S5-187266 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | revised |  | S5-187429 |
| S5-187267 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | revised |  | S5-187430 |
| S5-187268 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | revised |  | S5-187431 |
| S5-187269 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | revised |  | S5-187432 |
| S5-187270 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | revised |  | S5-187433 |
| S5-187271 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | revised |  | S5-187434 |
| S5-187272 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | revised |  | S5-187435 |
| S5-187273 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | revised |  | S5-187436 |
| S5-187274 | Rel-15 CR 28.531 Implement minor corrections | Ericsson Limited | revised |  | S5-187437 |
| S5-187275 | Rel-15 CR 28.532 Correct erroneous reference to notification header | Ericsson Limited | agreed |  |  |
| S5-187276 | Rel-15 CR 28.533 Implement MnS naming agreement | Ericsson Limited | agreed |  |  |
| S5-187277 | Rel-15 CR 28.541 Implement minor corrections | Ericsson Limited | agreed |  |  |
| S5-187278 | Presentation of TS 28.550 for approval | Intel, CMCC | revised |  | S5-187523 |
| S5-187279 | Rel-15 CR 32.156 Inconsistent definition of composition | Ericsson Limited | revised |  | S5-187438 |
| S5-187280 | Rel-16 CR 32.156 Make the use of association roles optional | Ericsson Limited | agreed |  | - |
| S5-187281 | Rel-16 CR 32.156 Make the use of the visibility symbol optional | Ericsson Limited | agreed |  | - |
| S5-187282 | Discussion paper on communication service management concept | Ericsson Limited | noted |  |  |
| S5-187283 | pCR 28.805 Add description of communication service concept to background and concepts | Ericsson Limited | revised |  | S5-187502 |
| S5-187284 | pCR 28.805 Use case to realize a communication service in a single network slice | Ericsson Limited | revised |  | S5-187503 |
| S5-187285 | pCR 28.805 Use case to realize multiple communication services in a single network slice | Ericsson Limited | revised |  | S5-187504 |
| S5-187286 | pCR 28.805 Use case to remove a communication service from a network slice | Ericsson Limited | revised |  | S5-187505 |
| S5-187287 | Correct stage 3 description of the Provisioning Management Service | Nokia, Nokia Shanghai Bell | merged |  | S5-187357 |
| S5-187288 | Service Based Trace Management | Nokia Korea | revised |  | S5-187342 |
| S5-187289 | Update NRM IRP Solution Set to support slice priority | Nokia, Nokia Shanghai Bell | revised |  | S5-187439 |
| S5-187290 | Update Stage 3 NRM for RRM Policy enhancements | Nokia, Nokia Shanghai Bell | agreed |  |  |
| S5-187291 | Minutes of Management service discovery in 5G networks | Huawei | noted |  |  |
| S5-187292 | Minutes of NRM enhancements | Rapporteur (Nokia) | withdrawn |  |  |
| S5-187293 | LS reply on QoS monitoring | SA5 (Intel China Ltd.) | noted |  |  |
| S5-187294 | Outstanding questions from ETSI NFV ISG related to network slicing | Ericsson, Nokia, Huawei, ZTE | noted |  |  |
| S5-187295 | Presentation of TS 32.160 to SA for information | Ericsson LM | approved |  |  |
| S5-187296 | Draft LS reply on QoS monitoring | SA5 (Huawei Tech.(UK) Co., Ltd) | noted |  |  |
| S5-187297 | Rel15 CR 32.291 Data Type for SMS | Huawei, Nokia, Nokia Shanghai Bell | revised | S5-187182 | S5-187314 |
| S5-187298 | Correction of Data Volume Uplink and Downlink definition | Ericsson | revised | S5-187137 | S5-187318 |
| S5-187299 | Correction of Data Volume Uplink and Downlink definition | Ericsson | revised | S5-187138 | S5-187319 |
| S5-187300 | Correcting the definition of data counting at the tunnelling interface | Ericsson | revised | S5-187139 | S5-187320 |
| S5-187301 | Correcting the definition of data counting at the tunnelling interface | Ericsson | revised | S5-187140 | S5-187321 |
| S5-187302 | Sequence of pCR discussion | Intel Corporation (UK) Ltd | noted |  |  |
| S5-187303 | JSON Schema related IETF draft reference update | Ericsson LM (WG chairman) | noted |  |  |
| S5-187304 | pCR 28.861 Legacy SON functions | Ericsson, Verizon | revised |  | S5-187509 |
| S5-187305 | CH Agenda and Time Plan | CH SWG Chair | approved | S5-187034 | - |
| S5-187306 | New WID on Network Exposure Charging in 5G System Architecture | Ericsson | agreed | S5-187200 | - |
| S5-187307 | New WID Charging AMF in 5G System Architecture Phase 1 | Nokia, Nokia Shanghai Bell | agreed | S5-187244 | - |
| S5-187308 | Rel-15 CR 32.290 Addition of event charging | Ericsson | agreed | S5-187094 | - |
| S5-187309 | Rel-15 CR 32.291 Addition of event charging | Ericsson | agreed | S5-187095 | - |
| S5-187310 | Rel-15 CR 32.274 Introduction of offline charging for IP-SM-GW architecture and flows | Nokia, Nokia Shanghai Bell | agreed | S5-187102 | - |
| S5-187311 | Rel-15 CR 32.274 Introduction of offline charging for IP-SM-GW CDRs | Nokia, Nokia Shanghai Bell | agreed | S5-187103 | - |
| S5-187312 | Rel-15 CR 32.298 Introduction of offline charging for IP-SM-GW | Nokia, Nokia Shanghai Bell | agreed | S5-187105 | - |
| S5-187313 | Rel-15 CR 32.274 Introduction of Detailed message format | Nokia, Nokia Shanghai Bell | agreed | S5-187229 | - |
| S5-187314 | Rel15 CR 32.291 Data Type for SMS | Huawei, Nokia, Nokia Shanghai Bell | agreed | S5-187297 | - |
| S5-187315 | Rel-15 CR 32.291 Introduce OpenAPI extension for SMS charging | Nokia, Nokia Shanghai Bell | agreed | S5-187232 | - |
| S5-187316 | Rel-15 CR 32.291 Introduce Binding for SMS charging | Nokia, Nokia Shanghai Bell | agreed | S5-187231 | - |
| S5-187317 | Rel-15 CR 32.298 Addition of SMS info to CHF CDR | Ericsson | agreed | S5-187096 | - |
| S5-187318 | Correction of Data Volume Uplink and Downlink definition | Ericsson | agreed | S5-187298 | - |
| S5-187319 | Correction of Data Volume Uplink and Downlink definition | Ericsson | agreed | S5-187299 | - |
| S5-187320 | Correcting the definition of data counting at the tunnelling interface | Ericsson | agreed | S5-187300 | - |
| S5-187321 | Correcting the definition of data counting at the tunnelling interface | Ericsson | agreed | S5-187301 | - |
| S5-187322 | Rel-15 CR 32.255 Allow update of NotifyUri | Ericsson | agreed | S5-187076 | - |
| S5-187323 | Rel-15 CR 32.290 Allow update of NotifyUri | Ericsson | agreed | S5-187077 | - |
| S5-187324 | Rel-15 CR 32.291 Allow update of NotifyUri | Ericsson | agreed | S5-187078 | - |
| S5-187325 | Rel-15 CR 32.291 Correction of overlapping results between Invocation result and Result code | Ericsson | agreed | S5-187079 | - |
| S5-187326 | Rel-15 CR 32.255 Correction of Invocation Result at http ok | Ericsson | agreed | S5-187080 | - |
| S5-187327 | Rel-15 CR 32.290 Correction of Invocation Result at http ok | Ericsson | agreed | S5-187081 | - |
| S5-187328 | Rel-15 CR 32.291 Correction of Invocation Result at http ok | Ericsson | agreed | S5-187082 | - |
| S5-187329 | Rel-15 CR 32.255 Correction of Online non-blocking handling | Ericsson | agreed | S5-187083 | - |
| S5-187330 | LS to SA2 on Introduction of a special case of online charging method | SA5 (Ericsson) | approved | - | - |
| S5-187331 | Rel-15 CR 32.291 Correction of Rating Group type to Uint32 | Ericsson | agreed | S5-187084 | - |
| S5-187332 | LS to CT4 CT3 on introduction of common data types | SA5 (Nokia) | approved | - | - |
| S5-187333 | Rel-15 CR 32.255 Correction of UPF Id definition | Ericsson | agreed | S5-187085 | - |
| S5-187334 | Rel-15 CR 32.255 Correction AMF Id definition | Ericsson | agreed | S5-187086 | - |
| S5-187335 | Report from last SA5 meeting (final) | MCC | approved | S5-187002 | - |
| S5-187336 | Reply to: Resubmitted Reply LS from CT to SA5 on API specification and API version number maintenance | SA5 (Ericsson et al) | approved | - | - |
| S5-187337 | CR Rel-15 TS 28.541 Correction of missing 5G NRM NRSectorCarrier IOC attributes. | Pivotal Commware | revised | S5-187154 | S5-187364 |
| S5-187338 | Time Plan for OAM&P | WG Vice Chair (Huawei) | approved | S5-187012 | - |
| S5-187339 | Reply to: LS from SA2 to SA5 on QoS Monitoring | SA5 (Huawei, Intel China) | approved | - | - |
| S5-187340 | Reply to: Resubmitted LS from ITU-T to SA5 on cooperation on REST-based network management framework | SA5 (Ericsson) | revised | - | S5-187557 |
| S5-187341 | Preparation of reply to ETSI NFV on network slicing | Nokia, Huawei, Ericsson | endorsed | - | - |
| S5-187342 | Trace Management in the context of Services Based Management Architecture | Nokia Korea | revised | S5-187288 | S5-187517 |
| S5-187343 | R16 CR 28.541 Add Beam Class | ZTE Wistron Telecom AB | not pursued | S5-187047 | - |
| S5-187344 | Rel-15 CR 28.530 Fix gap of requirement for Network Slicing priority | China Telecom Corporation Ltd. | agreed | S5-187058 | - |
| S5-187345 | CR Rel-15 28662 on frequency band | Ericsson Inc. | withdrawn | S5-187059 | S5-187541 |
| S5-187346 | TD on NR cell frequency relation | Ericsson,Huawei | endorsed | S5-187060 | - |
| S5-187347 | CR Rel-15 TS 28541 Remove the ExternalENBFunction definition | Ericsson Inc. | agreed | S5-187063 | - |
| S5-187348 | CR Rel-15 TS 28541 on ExternalGNBCUCPFunction | Ericsson Inc. | agreed | S5-187065 | - |
| S5-187349 | CR Rel-15 TS 28.622 Generic NRM IS on Measurement Control | Ericsson Inc. | agreed | S5-187066 | - |
| S5-187350 | CR Rel-15 TS 32432 on measurement type | Ericsson Inc. | agreed | S5-187067 | - |
| S5-187351 | R15 CR TS 28.532 change alarmIRP to FaultSupervision MnS producer | ZTE Wistron Telecom AB | agreed | S5-187116 | - |
| S5-187352 | Rel-15 CR TS 32.450 Add missing EE KPI for E-UTRAN | Huawei, Orange | agreed | S5-187141 | - |
| S5-187353 | Rel-15 CR TS 32.451 Add missing EE KPI for E-UTRAN | Huawei, Orange | agreed | S5-187142 | - |
| S5-187354 | Rel-15 CR TS 32.425 Update measurements supporting EE KPI | Huawei, Orange | agreed | S5-187143 | - |
| S5-187355 | Rel-16 CR TS 32.425 Update measurements supporting EE KPI | Huawei, Orange | agreed | S5-187144 | - |
| S5-187356 | Rel-15 CR TS 28.532 Add stage 2 definition for provisioning management service related notifications | Huawei | agreed | S5-187145 | - |
| S5-187357 | Rel-15 CR TS 28.532 Correct stage 3 definition for provisioning management service related notifications | Nokia, Nokia Shanghai Bell, Huawei | agreed | S5-187146 | - |
| S5-187358 | Rel-15 CR TS 28.531 Correct procedures with reference to TS 28.541 | Huawei | agreed | S5-187147 | - |
| S5-187359 | RRM Policy enhancements | Nokia, Nokia Shanghai Bell | revised | S5-187251 | S5-187426 |
| S5-187360 | Rel-15 CR TS 28.533 Add use case and requirements for MnS Query | Huawei | agreed | S5-187148 | - |
| S5-187361 | Rel-15 CR TS 28.532 Add stage2 definition for MnS Query | Huawei | revised | S5-187149 | S5-187519 |
| S5-187362 | Rel-15 CR TS 28.532 Add stage3 definition for MnS Query | Huawei | revised | S5-187150 | S5-187520 |
| S5-187363 | Rel-15 CR TS 28.541 Update NR NRM with Cell Relation | Huawei, Ericsson | agreed | S5-187151 | - |
| S5-187364 | CR Rel-15 TS 28.541 Add read-only NRM Info Model definitions for beam IOC and attributes to NRSectorCarrier IOC | Pivotal Commware | postponed | S5-187337 | - |
| S5-187365 | CR Rel-15 TS 28.540 Support read-only mgmt of NR beams in NRM definitions | Pivotal Commware | revised | - | S5-187514 |
| S5-187366 | SA5 Meeting Calendar | WG Chairman | approved | S5-187010 | - |
| S5-187367 | Rel-16 CR Introduce definitions of Network slice management priority and operation severity | Huawei Telecommunication India | withdrawn | - | - |
| S5-187368 | Rel-16 CR Add network slice management use case with priority | Huawei Telecommunication India | agreed | S5-187191 | - |
| S5-187369 | Rel-16 CR Add network slice management interactions with severity type | Huawei Telecommunication India | revised | S5-187192 | S5-187521 |
| S5-187370 | Update NRM root IOCs to support slice priority | Nokia, Nokia Shanghai Bell | agreed | S5-187260 | - |
| S5-187371 | Study on management aspects of communication services | Rapporteur (Jan Groenendijk) | noted | - | - |
| S5-187372 | pCR 28.550 Add solution for performance data streaming | Intel, BT | approved | S5-187126 | - |
| S5-187373 | Rel-15 CR TS 28.552 Correction of the Packet loss measurements | Huawei | agreed | S5-187164 | - |
| S5-187374 | pCR R16 28.405-030 Add X2 handover | Ericsson | withdrawn | S5-187118 | - |
| S5-187375 | Resubmitted Reply LS from SA4 to SA5 on Attributes for QoE measurement collection | SA4 | replied to | S5-187040 | - |
| S5-187376 | Reply to: Resubmitted Reply LS from SA4 to SA5 on Attributes for QoE measurement collection | SA5 | revised | - | S5-187524 |
| S5-187377 | pCR TS 28.310 – Management services | Orange | approved | S5-187122 | - |
| S5-187378 | pCR TS 28.310 – Use cases and requirements for DV measurement | Orange, Huawei | approved | S5-187123 | - |
| S5-187379 | pCR TS 28.310 – Use cases and requirements for PEE measurement | Orange, Huawei | approved | S5-187124 | - |
| S5-187380 | CR Rel-16 28.658 Add WLANMobilitySet IOC | Intel China Ltd. | revised | S5-187131 | S5-187525 |
| S5-187381 | CR Rel-16 28.659 Add WLANMobilitySet IOC | Intel China Ltd. | agreed | S5-187133 | - |
| S5-187382 | CR Rel-16 32.425 Add measurements related to user data transmission on Xw interface for non-collocated LWA | Intel Corporation (UK) Ltd | agreed | S5-187134 | - |
| S5-187383 | CR Rel-16 32.425 Add measurements related to XwAP procedures for non-collocated LWA | Intel Corporation (UK) Ltd | withdrawn | S5-187135 | - |
| S5-187384 | CR Rel-16 32.425 Add measurements related to RRC procedures for LWA | Intel China Ltd. | agreed | S5-187136 | - |
| S5-187385 | Add Policy management architecture | China Mobile | approved | S5-187175 | - |
| S5-187386 | Add Business level requirements | China Mobile | approved | S5-187174 | - |
| S5-187387 | add rules for Stage 2 to YANG mapping in NRM | Nokia, Nokia Shanghai Bell | approved | S5-187218 | - |
| S5-187388 | Rel-15 CR 32.291 Correction of name for Multiple Unit | Ericsson | agreed | S5-187087 | - |
| S5-187389 | Rel-15 CR 32.298 Correct PDU Session level trigger in CHF CDR | Ericsson | agreed | S5-187089 | - |
| S5-187390 | Rel-15 CR 32.255 Correction of Unused Quota Timer naming | Ericsson | agreed | S5-187090 | - |
| S5-187391 | Rel-15 CR 32.291 Correction of Unused Quota Timer naming | Ericsson | agreed | S5-187091 | - |
| S5-187392 | Rel-15 CR 32.291 Correction of missing http status codes | Ericsson | agreed | S5-187092 | - |
| S5-187393 | Rel-15 CR 32.291 Failure Handling Mechanism Clarification | Huawei | agreed | - | - |
| S5-187394 | Rel-15 CR 32.251 Correction of Supported Feature for EDCE5-CH | Ericsson | agreed | S5-187093 | - |
| S5-187395 | Rel-15 CR 32.255 Introduction Data Volume Reporting for Option 4&7 | Nokia, Nokia Shanghai Bell | agreed | S5-187098 | - |
| S5-187396 | Rel-15 CR 32.298 Introduction Data Volume Reporting for Option 4&7 | Nokia, Nokia Shanghai Bell | agreed | S5-187099 | - |
| S5-187397 | Rel-15 CR 32.291 Introduction Data Volume Reporting for Option 4&7 | Nokia, Nokia Shanghai Bell | agreed | S5-187100 | - |
| S5-187398 | Rel-15 CR 32.291 Alignment on Session Identifier | Nokia, Nokia Shanghai Bell | agreed | S5-187107 | - |
| S5-187399 | Rel-15 CR 32.290 Add description for Charging Notification | Nokia, Nokia Shanghai Bell | agreed | S5-187108 | - |
| S5-187400 | Rel-15 CR 32.291 Correction on Charging Notification message | Nokia, Nokia Shanghai Bell | agreed | S5-187109 | - |
| S5-187401 | Rel-15 CR 32.291 Correction on Charging ID data type | Nokia, Nokia Shanghai Bell | agreed | S5-187110 | - |
| S5-187402 | Rel-15 CR 32.291 Correction on Reauthorizationdetails | Nokia, Nokia Shanghai Bell | agreed | S5-187120 | - |
| S5-187403 | Rel-15 CR 32.255 Add missing clause on formal description | Nokia, Nokia Shanghai Bell | agreed | S5-187233 | - |
| S5-187404 | Rel-15 CR 32.255 Complete flows alignment with TS 23.502 | Nokia, Nokia Shanghai Bell | agreed | S5-187111 | - |
| S5-187405 | Rel-15 CR 32.255 Correction on flows for alignment with TS 23.502 | Nokia, Nokia Shanghai Bell | agreed | - | - |
| S5-187406 | Rel15 CR 32.251 PRA charging clarification | Huawei | agreed | S5-187179 | - |
| S5-187407 | Rel15 CR 32.255 PRA charging clarification | Huawei | agreed | S5-187180 | - |
| S5-187408 | add rules for generic JSON and YANG NRM definition | Nokia, Nokia Shanghai Bell | approved | S5-187219 | - |
| S5-187409 | add modulization rules in YANG NRM definition | Nokia, Nokia Shanghai Bell | approved | S5-187220 | - |
| S5-187410 | Fix containment issue in YANG definition | Nokia Korea | agreed | S5-187245 | - |
| S5-187411 | pCR 32.160 Insert guidelines and examples in NRM template | Ericsson Limited | approved | S5-187253 | - |
| S5-187412 | pCR 32.160 Insert guidelines and examples in template for operations and notifications | Ericsson Limited | approved | S5-187256 | - |
| S5-187413 | pCR 28.812 Add concept for utilization of intent | Huawei | approved | S5-187155 | - |
| S5-187414 | pCR 28.812 Update the figures for area cell load balance and cell rehome scenario | Huawei | approved | S5-187156 | - |
| S5-187415 | pCR 28.812 Add intent driven instant cell deletion scenario | Huawei | approved | S5-187157 | - |
| S5-187416 | pCR 28.812 Add intent driven network optimization scenario | Huawei | approved | S5-187158 | - |
| S5-187417 | pCR 28.812 Update network provisioning scenario | Huawei | approved | S5-187160 | - |
| S5-187418 | pCR 28.812 NSI resource utilization optimization | Huawei Tech.(UK) Co., Ltd | approved | S5-187167 | - |
| S5-187419 | pCR 28.812 Add introduction for Intent Expression | Huawei Tech.(UK) Co., Ltd | revised | S5-187178 | S5-187526 |
| S5-187420 | Discussion on TAC attributes in 28.541 | Ericsson | endorsed | S5-187224 | - |
| S5-187421 | Correction of reference | Ericsson Japan K.K. | agreed | S5-187246 | - |
| S5-187422 | Discussion paper on the abbreviation of MF | Ericsson | endorsed | S5-187247 | - |
| S5-187423 | Rel-15 CR 28.530 Replace MF with managed function | Ericsson Limited | agreed | S5-187248 | - |
| S5-187424 | Rel-15 CR 28.533 Replace MF with management function | Ericsson Limited | revised | S5-187249 | S5-187522 |
| S5-187425 | Rel-15 CR 28.622 Replace MF with ManagedFunction | Ericsson Limited | agreed | S5-187250 | - |
| S5-187426 | RRM Policy enhancements | Nokia, Nokia Shanghai Bell | agreed | S5-187359 | - |
| S5-187427 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | postponed | S5-187263 | - |
| S5-187428 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | postponed | S5-187265 | - |
| S5-187429 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | postponed | S5-187266 | - |
| S5-187430 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | postponed | S5-187267 | - |
| S5-187431 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | postponed | S5-187268 | - |
| S5-187432 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | postponed | S5-187269 | - |
| S5-187433 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | postponed | S5-187270 | - |
| S5-187434 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | postponed | S5-187271 | - |
| S5-187435 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | postponed | S5-187272 | - |
| S5-187436 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | postponed | S5-187273 | - |
| S5-187437 | Rel-16 CR 28.531 Implement minor corrections | Ericsson Limited | revised | S5-187274 | S5-187480 |
| S5-187438 | Rel-15 CR 32.156 Inconsistent definition of composition | Ericsson Limited | revised | S5-187279 | S5-187481 |
| S5-187439 | Update NRM IRP Solution Set to support slice priority | Nokia, Nokia Shanghai Bell | agreed | S5-187289 | - |
| S5-187440 | R16 CR 28.552 Add CQI measurements | ZTE Wistron Telecom AB | not pursued | S5-187048 | - |
| S5-187441 | Rel-16 CR TS 28.552 Add the performance measurement of CQI distribution | Huawei | not pursued | S5-187207 | - |
| S5-187442 | R16 CR 28.552 Add RSRP measurements | ZTE Wistron Telecom AB | postponed | S5-187049 | - |
| S5-187443 | QoS flow related measurements | Huawei, ZTE, Ericsson | approved | - | - |
| S5-187444 | R16 CR 28.552 Add TB related measurements | ZTE Wistron Telecom AB | agreed | S5-187053 | - |
| S5-187445 | R16 CR 28.552 Add RLC data volume measurements | ZTE Wistron Telecom AB | postponed | S5-187054 | - |
| S5-187446 | Rel15 CR 32.251 Multi-PRAs charging clarification | Huawei | agreed | S5-187181 | - |
| S5-187447 | Rel16 TR 32.xxx Skeleton | Huawei | approved | S5-187185 | - |
| S5-187448 | Rel16 pCR 32.xxx Scope | Huawei | agreed | S5-187186 | - |
| S5-187449 | Rel16 pCR 32.xxx Update of the Reference | Huawei | approved | S5-187188 | - |
| S5-187450 | TBD Study on Charging Aspects of Network Slicing (Preliminary work before SA approval) | Huawei | agreed | - | - |
| S5-187451 | R15 CR 32.274 Introduction of SMS information converged charging | Nokia, Nokia Shanghai Bell | agreed | S5-187242 | - |
| S5-187452 | R15 CR 32.291 Correction of Serving Network Function ID definition | Ericsson, Nokia, Nokia Shanghai Bell | agreed | - | - |
| S5-187453 | (reserved) | (charging subgroup) | withdrawn | - | - |
| S5-187454 | (reserved) | (charging subgroup) | withdrawn | - | - |
| S5-187455 | (reserved) | (charging subgroup) | withdrawn | - | - |
| S5-187456 | R16 CR 28.552 Add PDCP data volume measurements | Huawei, ZTE Wistron Telecom AB | agreed | S5-187055 | - |
| S5-187457 | R16 CR 28.552 Add TA related measurements | ZTE Wistron Telecom AB | postponed | S5-187057 | - |
| S5-187458 | PM terms for NSI and NSSI | Cisco Systems Belgium | agreed | S5-187070 | - |
| S5-187459 | Rel-16 CR TS 28.552 Add the performance measurement of MCS distribution | Huawei | withdrawn | S5-187208 | - |
| S5-187460 | CR Rel-16 28.552 Add NF performance measurements related to VR | Intel China Ltd. | agreed | S5-187130 | - |
| S5-187461 | Draft LS on the slicing terminology and the role of S-NSSAI parameter | SA5 (Cisco Systems Belgium) | approved | S5-187212 | - |
| S5-187462 | CR Rel-15 28.552 Add DRB setup related measurements and UC for gNB | Ericsson GmbH, Eurolab | agreed | S5-187222 | - |
| S5-187463 | Rel-16 draftCR TS 28.533 Add use case and requirements for MnS Registration | Huawei | revised | S5-187176 | S5-187530 |
| S5-187464 | Rel-16 DraftCR Add general information for discovery of MnS | Huawei Telecommunication India | approved | S5-187196 | - |
| S5-187465 | Revised WID on management service discovery in 5G network management | Huawei Telecommunication India | agreed | S5-187197 | - |
| S5-187466 | Discussion Paper on the management of disaggregated RAN | Cisco Systems Inc. | endorsed | S5-187072 | - |
| S5-187467 | pCR 28.900 Add example of 3GPP MnS Provider using interfaces provided by ONAP DCAE | Huawei | approved | S5-187159 | - |
| S5-187468 | Discussion Paper on options for mapping 3GPP 5G alarm notifications on ONAP VES JSON Collector API | AT&T, Deutsche Telekom, Orange | endorsed | S5-187254 | - |
| S5-187469 | pCR TS 28.900 – Options for mapping 3GPP 5G alarm notifications on ONAP VES JSON Collector API | AT&T, Deutsche Telekom, Orange | approved | S5-187257 | - |
| S5-187470 | pCR TS 28.900 – Mapping 3GPP 5G PM data reporting on ONAP VES JSON Collector API | AT&T, Deutsche Telekom, Orange | approved | S5-187258 | - |
| S5-187471 | Revised SID on integration of ONAP and 3GPP configuration management services for 5G networks | Nanjing Ericsson Panda Com Ltd | agreed | S5-187045 | - |
| S5-187472 | pCR 28.900 Add example of 3GPP MnS Provider using interfaces provided by ONAP VF-C | China Mobile, Huawei | approved | S5-187153 | - |
| S5-187473 | pCR 28.900 ONAP controllers and 3GPP provisioning service for CM purpose | Nanjing Ericsson Panda Com Ltd | approved | S5-187213 | - |
| S5-187474 | CR Rel-16 28.552 Add PDU Session Modification related measurements for SMF | Intel China Ltd. | agreed | S5-187127 | - |
| S5-187475 | CR Rel-16 28.552 Add PDU Session Release related measurements for SMF | Intel China Ltd. | agreed | S5-187128 | - |
| S5-187476 | Rel-16 CR 32.156 Make the use of association roles optional | Ericsson Limited | withdrawn | - | - |
| S5-187477 | Rel-16 CR 32.156 Make the use of the visibility symbol optional | Ericsson Limited | withdrawn | - | - |
| S5-187478 | pCR 28.900 add description for positioning | Nanjing Ericsson Panda Com Ltd | approved | S5-187215 | - |
| S5-187479 | pCR 28.900 comparative analysis for CM purposes | Nanjing Ericsson Panda Com Ltd | approved | S5-187216 | - |
| S5-187480 | Rel-16 CR 28.531 Implement minor corrections | Ericsson Limited | agreed | S5-187437 | - |
| S5-187481 | Rel-16 CR 32.156 Inconsistent definition of composition | Ericsson Limited | agreed | S5-187438 | - |
| S5-187482 | pCR 28.803 edge computing network | Intel Corporation (UK) Ltd | revised | S5-187235 | S5-187531 |
| S5-187483 | pCR 28.803 edge computing deployment scenarios | Intel Corporation (UK) Ltd | approved | S5-187237 | - |
| S5-187484 | pCR 28.803 use cases for UPF instantiation and termination | Intel Corporation (UK) Ltd | revised | S5-187238 | S5-187532 |
| S5-187485 | pCR 28.803 use cases for local DN deployment | Intel Corporation (UK) Ltd | revised | S5-187239 | S5-187533 |
| S5-187486 | pCR 28.803 add use case for E2E OSS deployment scenario | Intel Corporation (UK) Ltd | withdrawn | S5-187241 | - |
| S5-187487 | pCR 28.803 add use case for RAN condition data | Intel Corporation (UK) Ltd | withdrawn | S5-187243 | - |
| S5-187488 | Clarifications topics for NFV NS in context of Network Slicing | ETSI ISG NFV | replied to | - | - |
| S5-187489 | pCR Concept of MnS consumed by tenant | Huawei Telecommunication India | approved | S5-187201 | - |
| S5-187490 | pCR 28.804 Corrections of existing tenancy concept | Huawei Telecommunication India | revised | S5-187198 | S5-187534 |
| S5-187491 | R16 CR 28.552 Add MCS Distribution measurements | ZTE, Huawei | postponed | S5-187052 | - |
| S5-187492 | pCR 28.804 Concept of multiple exposure of same MnS | Huawei Telecommunication India | not pursued | S5-187199 | - |
| S5-187493 | OAM&P SWG action list | WG Vice Chair (Huawei) | noted | S5-187014 | - |
| S5-187494 | pCR 28.805 Add requirements of MDA-Assisted network provision contributing to SLA assurance | Huawei | approved | S5-187169 | - |
| S5-187495 | pCR 28.805 Add UC and requirements for multi-degree SLA assurance | Huawei | withdrawn | S5-187172 | - |
| S5-187496 | Study on non-file-based trace reporting | Nokia Korea | revised | - | S5-187518 |
| S5-187497 | pCR 28.805 Add UC and requirements for SLA monitoring and assurance for network slicing | Huawei | approved | S5-187173 | - |
| S5-187498 | pCR 28.805 Add UC and requirements for creation of communication service instance | Huawei | withdrawn | S5-187170 | - |
| S5-187499 | pCR 28.805 Add UC and requirements for termination of communication service instance | Huawei, Ericsson | revised | S5-187171 | S5-187527 |
| S5-187500 | pCR 28.805 Add definition of communication service | Huawei, Ericsson | revised | S5-187168 | S5-187528 |
| S5-187501 | pCR 28.805 Move key topics to Annex | Ericsson Limited | approved | S5-187252 | - |
| S5-187502 | pCR 28.805 Add description of communication service concept to background and concepts | Ericsson Limited, Deutsche Telekom | revised | S5-187283 | S5-187536 |
| S5-187503 | pCR 28.805 Use case to realize a communication service in a single network slice | Ericsson Limited | withdrawn | S5-187284 | - |
| S5-187504 | pCR 28.805 Use case to realize multiple communication services in a single network slice | Ericsson, Huawei, DT | approved | S5-187285 | - |
| S5-187505 | pCR 28.805 Use case to remove a communication service from a network slice | Ericsson Limited | withdrawn | S5-187286 | - |
| S5-187506 | pCR 28.861 Add SON concepts | Intel Corporation (UK) Ltd | revised | S5-187225 | S5-187538 |
| S5-187507 | pCR to 28.861 ANR SON function | Cisco Systems Inc. | withdrawn | S5-187073 | - |
| S5-187508 | pCR to 28.861 CCO SON function | Cisco Systems Inc. | withdrawn | S5-187074 | - |
| S5-187509 | pCR 28.861 Legacy SON functions | Ericsson, Verizon, Intel, Cisco | approved | S5-187304 | - |
| S5-187510 | pCR to 28.861 E2E Service Quality Optimization | Cisco Systems Belgium | noted | S5-187112 | - |
| S5-187511 | pCR 28.861 NSI resource utilization performance optimization | Huawei Tech.(UK) Co., Ltd, Intel Corporation (UK) | revised | S5-187177 | S5-187529 |
| S5-187512 | pCR 28.861 add use case for eMBB, URLLC, and mMTC network slice | Intel Corporation (UK) Ltd | withdrawn | S5-187227 | - |
| S5-187513 | pCR 28.861 add use case for beam coverage and capacity optimization | Intel Corporation (UK) Ltd | not pursued | S5-187228 | - |
| S5-187514 | CR Rel-15 TS 28.540 Support read-only mgmt of NR beams in NRM definitions | Pivotal Commware | revised | S5-187365 | S5-187542 |
| S5-187515 | Reply to: Clarifications topics for NFV NS in context of Network Slicing | SA5 (Huawei) | revised | - | S5-187516 |
| S5-187516 | Reply to: Clarifications topics for NFV NS in context of Network Slicing | SA5 (Huawei) | revised | S5-187515 | S5-187539 |
| S5-187517 | Trace Management in the context of Services Based Management Architecture | Nokia Korea | agreed | S5-187342 | - |
| S5-187518 | Study on non-file-based trace reporting | Nokia Korea | agreed | S5-187496 | - |
| S5-187519 | Rel-15 CR TS 28.532 Add stage2 definition for MnS Query | Huawei | approved | S5-187361 | - |
| S5-187520 | Rel-15 CR TS 28.532 Add stage3 definition for MnS Query | Huawei | approved | S5-187362 | - |
| S5-187521 | Rel-16 CR Add network slice management interactions with severity type | Huawei Telecommunication India | agreed | S5-187369 | - |
| S5-187522 | Rel-15 CR 28.533 Replace MF with management function | Ericsson Limited | agreed | S5-187424 | - |
| S5-187523 | Presentation of TS 28.550 for approval | Intel, CMCC | approved | S5-187278 | - |
| S5-187524 | Reply to: Resubmitted Reply LS from SA4 to SA5 on Attributes for QoE measurement collection | SA5 | approved | S5-187376 | - |
| S5-187525 | CR Rel-16 28.658 Add WLANMobilitySet IOC | Intel China Ltd. | agreed | S5-187380 | - |
| S5-187526 | pCR 28.812 Add introduction for Intent Expression | Huawei Tech.(UK) Co., Ltd | approved | S5-187419 | - |
| S5-187527 | pCR 28.805 Add UC and requirements for termination of communication service instance | Huawei, Ericsson, Deutsche Telekom | approved | S5-187499 | - |
| S5-187528 | pCR 28.805 Add definition of communication service | Huawei, Ericsson,Deutsche Telekom | approved | S5-187500 | - |
| S5-187529 | pCR 28.861 NSI resource utilization performance optimization | Huawei Tech.(UK) Co., Ltd, Intel Corporation (UK) | revised | S5-187511 | S5-187537 |
| S5-187530 | Rel-16 draftCR TS 28.533 Add use case and requirements for MnS Registration | Huawei | approved | S5-187463 | - |
| S5-187531 | pCR 28.803 edge computing network | Intel Corporation (UK) Ltd | approved | S5-187482 | - |
| S5-187532 | pCR 28.803 use cases for UPF instantiation and termination | Intel Corporation (UK) Ltd | approved | S5-187484 | - |
| S5-187533 | pCR 28.803 use cases for local DN deployment | Intel Corporation (UK) Ltd | revised | S5-187485 | S5-187535 |
| S5-187534 | pCR 28.804 Corrections of existing tenancy concept | Huawei Telecommunication India | approved | S5-187490 | - |
| S5-187535 | pCR 28.803 use cases for local DN deployment | Intel Corporation (UK) Ltd | approved | S5-187533 | - |
| S5-187536 | pCR 28.805 Add description of communication service concept to background and concepts | Ericsson Limited | revised | S5-187502 | S5-187540 |
| S5-187537 | pCR 28.861 NSI resource utilization performance optimization | Huawei Tech.(UK) Co., Ltd, Intel Corporation (UK) | approved | S5-187529 | - |
| S5-187538 | pCR 28.861 Add SON concepts | Intel Corporation (UK) Ltd | approved | S5-187506 | - |
| S5-187539 | Reply to: Clarifications topics for NFV NS in context of Network Slicing | SA5 (Huawei) | revised | S5-187516 | S5-187544 |
| S5-187540 | pCR 28.805 Add description of communication service concept to background and concepts | Ericsson Limited | approved | S5-187536 | - |
| S5-187541 | CR Rel-15 28662 on frequency band | Ericsson Inc. | agreed | S5-187345 | - |
| S5-187542 | CR Rel-15 TS 28.540 Support read-only mgmt of NR beams in NRM definitions | Pivotal Commware | agreed | S5-187514 | - |
| S5-187543 | OAM Executive Report | WG Vice Chair (Huawei) | noted | S5-187013 | - |
| S5-187544 | Reply to: Clarifications topics for NFV NS in context of Network Slicing | SA5 (Huawei) | approved | S5-187539 | - |
| S5-187545 | TS 28.310 incorporating pCRs approved at SA5#122 | Rapporteur: Jean Michel Cornil|y | approved | - | - |
| S5-187546 | TS 28.311 incorporating pCRs approved at SA5#122 | Rapporteur: Hao Zhang | approved | - | - |
| S5-187547 | TS 28.405 incorporating pCRs approved at SA5#122 | Rapporteur: Robert Petersen | approved | - | - |
| S5-187548 | TS 28.550 incorporating pCRs approved at SA5#122 | Rapporteur: Yizhi Yao | approved | - | - |
| S5-187549 | TR 28.803 incorporating pCRs approved at SA5#122 | Rapporteur: Joey Chou | approved | - | - |
| S5-187550 | TR 28.804 incorporating pCRs approved at SA5#122 | Rapporteur: Lei Zhu | approved | - | - |
| S5-187551 | TR 28.805 incorporating pCRs approved at SA5#122 | Rapporteur: Jan Groenendijk | approved | - | - |
| S5-187552 | TR 28.812 incorporating pCRs approved at SA5#122 | Rapporteur: Lan Zou | approved | - | - |
| S5-187553 | TR 28.861 incorporating pCRs approved at SA5#122 | Rapporteur: Joey Chou | approved | - | - |
| S5-187554 | TR 28.900 incorporating pCRs approved at SA5#122 | Rapporteur: Jean Michel Cornily | approved | - | - |
| S5-187555 | TS 32.160 incorporating pCRs approved at SA5#122 | Rapporteur: Jan Groenendijk | approved | - | - |
| S5-187556 | draft TR 32.xxx "Study on Charging Aspects of Network Slicing" incorporating pCRs approved at SA5#122 | Rapporteur: Chen Shan | withdrawn | - | - |
| S5-187557 | Reply to: Resubmitted LS from ITU-T to SA5 on cooperation on REST-based network management framework | SA5 (Ericsson) | approved | S5-187340 | - |

## Annex B: List of change requests

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Document | Title | Source | Spec | CR | Rev | Rel | Cat | WI | Decision |
| S5-187058 | Rel-15 CR 28.530 Fix gap of requirement for Network Slicing priority | China Telecom Corporation Ltd. | 28.530 | 0002 | - | Rel-15 | F | NETSLICE | revised |
| S5-187344 | Rel-15 CR 28.530 Fix gap of requirement for Network Slicing priority | China Telecom Corporation Ltd. | 28.530 | 0002 | 1 | Rel-15 | F | NETSLICE | agreed |
| S5-187248 | Rel-15 CR 28.530 Replace MF with managed function | Ericsson Limited | 28.530 | 0003 | - | Rel-15 | F | NETSLICE | revised |
| S5-187423 | Rel-15 CR 28.530 Replace MF with managed function | Ericsson Limited | 28.530 | 0003 | 1 | Rel-15 | F | NETSLICE | agreed |
| S5-187147 | Rel-15 CR TS 28.531 Correct procedures with reference to TS 28.541 | Huawei | 28.531 | 0006 | - | Rel-15 | F | NETSLICE-PRO\_NS | revised |
| S5-187358 | Rel-15 CR TS 28.531 Correct procedures with reference to TS 28.541 | Huawei | 28.531 | 0006 | 1 | Rel-15 | F | NETSLICE-PRO\_NS | agreed |
| S5-187148 | Rel-15 CR TS 28.531 Add use case and requirements for MnS Query | Huawei | 28.531 | 0007 | - | Rel-15 | F | NETSLICE-PRO\_NS | not pursued |
| S5-187190 | Rel-16 CR Introduce definitions of Network slice management priority and operation severity | Huawei Telecommunication India | 28.531 | 0008 | - | Rel-16 | B | TEI16 | not pursued |
| S5-187367 | Rel-16 CR Introduce definitions of Network slice management priority and operation severity | Huawei Telecommunication India | 28.531 | 0008 | 1 | Rel-16 | B | TEI16 | withdrawn |
| S5-187191 | Rel-16 CR Add network slice management use case with priority | Huawei Telecommunication India | 28.531 | 0009 | - | Rel-16 | B | TEI16 | revised |
| S5-187368 | Rel-16 CR Add network slice management use case with priority | Huawei Telecommunication India | 28.531 | 0009 | 1 | Rel-16 | B | TEI16 | agreed |
| S5-187192 | Rel-16 CR Add network slice management interactions with severity type | Huawei Telecommunication India | 28.531 | 0010 | - | Rel-16 | B | TEI16 | revised |
| S5-187369 | Rel-16 CR Add network slice management interactions with severity type | Huawei Telecommunication India | 28.531 | 0010 | 1 | Rel-16 | B | TEI16 | revised |
| S5-187521 | Rel-16 CR Add network slice management interactions with severity type | Huawei Telecommunication India | 28.531 | 0010 | 2 | Rel-16 | B | TEI16 | agreed |
| S5-187274 | Rel-15 CR 28.531 Implement minor corrections | Ericsson Limited | 28.531 | 0011 | - | Rel-15 | F | NETSLICE-PRO\_NS | revised |
| S5-187437 | Rel-16 CR 28.531 Implement minor corrections | Ericsson Limited | 28.531 | 0011 | 1 | Rel-16 | D | NETSLICE-PRO\_NS | revised |
| S5-187480 | Rel-16 CR 28.531 Implement minor corrections | Ericsson Limited | 28.531 | 0011 | 2 | Rel-16 | D | METHOGY | agreed |
| S5-187116 | R15 CR TS 28.532 change alarmIRP to FaultSupervision MnS producer | ZTE Wistron Telecom AB | 28.532 | 0020 | - | Rel-15 | F | NETSLICE-FS5G | revised |
| S5-187351 | R15 CR TS 28.532 change alarmIRP to FaultSupervision MnS producer | ZTE Wistron Telecom AB | 28.532 | 0020 | 1 | Rel-15 | F | NETSLICE-FS5G | agreed |
| S5-187145 | Rel-15 CR TS 28.532 Add stage 2 definition for provisioning management service related notifications | Huawei | 28.532 | 0021 | - | Rel-15 | F | NETSLICE | revised |
| S5-187356 | Rel-15 CR TS 28.532 Add stage 2 definition for provisioning management service related notifications | Huawei | 28.532 | 0021 | 1 | Rel-15 | F | NETSLICE | agreed |
| S5-187146 | Rel-15 CR TS 28.532 Correct stage 3 definition for provisioning management service related notifications | Huawei | 28.532 | 0022 | - | Rel-15 | F | NETSLICE | revised |
| S5-187357 | Rel-15 CR TS 28.532 Correct stage 3 definition for provisioning management service related notifications | Nokia, Nokia Shanghai Bell, Huawei | 28.532 | 0022 | 1 | Rel-15 | F | NETSLICE | agreed |
| S5-187149 | Rel-15 CR TS 28.532 Add stage2 definition for MnS Query | Huawei | 28.532 | 0023 | - | Rel-15 | F | NETSLICE | revised |
| S5-187361 | Rel-15 CR TS 28.532 Add stage2 definition for MnS Query | Huawei | 28.532 | 0023 | 1 | Rel-15 | F | NETSLICE | revised |
| S5-187150 | Rel-15 CR TS 28.532 Add stage3 definition for MnS Query | Huawei | 28.532 | 0024 | - | Rel-15 | F | NETSLICE | revised |
| S5-187362 | Rel-15 CR TS 28.532 Add stage3 definition for MnS Query | Huawei | 28.532 | 0024 | 1 | Rel-15 | F | NETSLICE | revised |
| S5-187275 | Rel-15 CR 28.532 Correct erroneous reference to notification header | Ericsson Limited | 28.532 | 0025 | - | Rel-15 | F | NETSLICE | agreed |
| S5-187287 | Correct stage 3 description of the Provisioning Management Service | Nokia, Nokia Shanghai Bell | 28.532 | 0026 | - | Rel-15 | F | NETSLICE-PRO\_NS | merged |
| S5-187249 | Rel-15 CR 28.533 Replace MF with management function | Ericsson Limited | 28.533 | 0004 | - | Rel-15 | F | NETSLICE | revised |
| S5-187424 | Rel-15 CR 28.533 Replace MF with management function | Ericsson Limited | 28.533 | 0004 | 1 | Rel-15 | F | NETSLICE | revised |
| S5-187522 | Rel-15 CR 28.533 Replace MF with management function | Ericsson Limited | 28.533 | 0004 | 2 | Rel-15 | F | NETSLICE | agreed |
| S5-187276 | Rel-15 CR 28.533 Implement MnS naming agreement | Ericsson Limited | 28.533 | 0005 | - | Rel-15 | F | NETSLICE | agreed |
| S5-187360 | Rel-15 CR TS 28.533 Add use case and requirements for MnS Query | Huawei | 28.533 | 0008 | - | Rel-15 | F | NETSLICE | agreed |
| S5-187365 | CR Rel-15 TS 28.540 Support read-only mgmt of NR beams in NRM definitions | Pivotal Commware | 28.540 | 0001 | - | Rel-15 | B | NETSLICE-5GNRM | revised |
| S5-187514 | CR Rel-15 TS 28.540 Support read-only mgmt of NR beams in NRM definitions | Pivotal Commware | 28.540 | 0001 | 1 | Rel-15 | B | NETSLICE-5GNRM | revised |
| S5-187542 | CR Rel-15 TS 28.540 Support read-only mgmt of NR beams in NRM definitions | Pivotal Commware | 28.540 | 0001 | 2 | Rel-15 | B | NETSLICE-5GNRM | agreed |
| S5-187046 | R16 CR 28.541 Add GUtranRelation Class | ZTE Wistron Telecom AB | 28.541 | 0028 | - | Rel-16 | B | NETSLICE-5GNRM | not pursued |
| S5-187047 | R16 CR 28.541 Add Beam Class | ZTE Wistron Telecom AB | 28.541 | 0029 | - | Rel-16 | B | NETSLICE-5GNRM | revised |
| S5-187343 | R16 CR 28.541 Add Beam Class | ZTE Wistron Telecom AB | 28.541 | 0029 | 1 | Rel-16 | B | NETSLICE-5GNRM | not pursued |
| S5-187062 | CR Rel-15 TS 28541 view (NR) of cell and frequency relation | Ericsson Inc. | 28.541 | 0030 | - | Rel-15 | F | NETSLICE-5GNRM | withdrawn |
| S5-187063 | CR Rel-15 TS 28541 Remove the ExternalENBFunction definition | Ericsson Inc. | 28.541 | 0031 | - | Rel-15 | F | NETSLICE-5GNRM | revised |
| S5-187347 | CR Rel-15 TS 28541 Remove the ExternalENBFunction definition | Ericsson Inc. | 28.541 | 0031 | 1 | Rel-15 | F | NETSLICE-5GNRM | agreed |
| S5-187064 | CR Rel-15 TS 28541 plmnIdList RW | Ericsson Inc. | 28.541 | 0032 | - | Rel-15 | F | NETSLICE-5GNRM | withdrawn |
| S5-187065 | CR Rel-15 TS 28541 on ExternalGNBCUCPFunction | Ericsson Inc. | 28.541 | 0033 | - | Rel-15 | F | NETSLICE-5GNRM | revised |
| S5-187348 | CR Rel-15 TS 28541 on ExternalGNBCUCPFunction | Ericsson Inc. | 28.541 | 0033 | 1 | Rel-15 | F | NETSLICE-5GNRM | agreed |
| S5-187151 | Rel-15 CR TS 28.541 Update NR NRM with Cell Relation | Huawei | 28.541 | 0034 | - | Rel-15 | F | NETSLICE-5GNRM | revised |
| S5-187363 | Rel-15 CR TS 28.541 Update NR NRM with Cell Relation | Huawei, Ericsson | 28.541 | 0034 | 1 | Rel-15 | F | NETSLICE-5GNRM | agreed |
| S5-187154 | CR Rel-15 TS 28.541 Correction of missing 5G NRM NRSectorCarrier IOC attributes. | Pivotal Commware | 28.541 | 0035 | - | Rel-15 | F | NETSLICE-5GNRM | revised |
| S5-187337 | CR Rel-15 TS 28.541 Correction of missing 5G NRM NRSectorCarrier IOC attributes. | Pivotal Commware | 28.541 | 0035 | 1 | Rel-15 | F | NETSLICE-5GNRM | revised |
| S5-187364 | CR Rel-15 TS 28.541 Add read-only NRM Info Model definitions for beam IOC and attributes to NRSectorCarrier IOC | Pivotal Commware | 28.541 | 0035 | 2 | Rel-15 | F | NETSLICE-5GNRM | postponed |
| S5-187193 | Rel-16 CR Change NRM IOCs for network slice priority support | Huawei Telecommunication India | 28.541 | 0036 | - | Rel-16 | B | TEI16 | not pursued |
| S5-187194 | Change NRM IOCs for network slice priority support stage 3 | Huawei Telecommunication India | 28.541 | 0037 | - | Rel-16 | B | TEI16 | not pursued |
| S5-187217 | RRM Policy enhancements | Nokia, Nokia Shanghai Bell | 28.541 | 0038 | - | Rel-15 | C | NETSLICE-5GNRM | revised |
| S5-187251 | RRM Policy enhancements | Nokia, Nokia Shanghai Bell | 28.541 | 0038 | 1 | Rel-15 | C | NETSLICE-5GNRM | revised |
| S5-187359 | RRM Policy enhancements | Nokia, Nokia Shanghai Bell | 28.541 | 0038 | 2 | Rel-15 | C | NETSLICE-5GNRM | revised |
| S5-187426 | RRM Policy enhancements | Nokia, Nokia Shanghai Bell | 28.541 | 0038 | 3 | Rel-15 | C | NETSLICE-5GNRM | agreed |
| S5-187245 | Fix containment issue in YANG definition | Nokia Korea | 28.541 | 0039 | - | Rel-15 | F | NETSLICE-5GNRM | revised |
| S5-187410 | Fix containment issue in YANG definition | Nokia Korea | 28.541 | 0039 | 1 | Rel-15 | F | NETSLICE-5GNRM | agreed |
| S5-187277 | Rel-15 CR 28.541 Implement minor corrections | Ericsson Limited | 28.541 | 0040 | - | Rel-15 | F | NETSLICE-5GNRM | agreed |
| S5-187290 | Update Stage 3 NRM for RRM Policy enhancements | Nokia, Nokia Shanghai Bell | 28.541 | 0041 | - | Rel-15 | F | NETSLICE | agreed |
| S5-187048 | R16 CR 28.552 Add CQI measurements | ZTE Wistron Telecom AB | 28.552 | 0006 | - | Rel-16 | B | 5G\_SLICE\_ePA | revised |
| S5-187440 | R16 CR 28.552 Add CQI measurements | ZTE Wistron Telecom AB | 28.552 | 0006 | 1 | Rel-16 | B | 5G\_SLICE\_ePA | not pursued |
| S5-187049 | R16 CR 28.552 Add RSRP measurements | ZTE Wistron Telecom AB | 28.552 | 0007 | - | Rel-16 | B | 5G\_SLICE\_ePA | revised |
| S5-187442 | R16 CR 28.552 Add RSRP measurements | ZTE Wistron Telecom AB | 28.552 | 0007 | 1 | Rel-16 | B | 5G\_SLICE\_ePA | postponed |
| S5-187050 | R16 CR 28.552 Add Flow Setup measurements | ZTE Wistron Telecom AB | 28.552 | 0008 | - | Rel-16 | B | 5G\_SLICE\_ePA | merged |
| S5-187051 | R16 CR 28.552 Add Flow release measurements | ZTE Wistron Telecom AB | 28.552 | 0009 | - | Rel-16 | B | 5G\_SLICE\_ePA | merged |
| S5-187052 | R16 CR 28.552 Add MCS Distribution measurements | ZTE Wistron Telecom AB | 28.552 | 0010 | - | Rel-16 | B | 5G\_SLICE\_ePA | revised |
| S5-187491 | R16 CR 28.552 Add MCS Distribution measurements | ZTE, Huawei | 28.552 | 0010 | 1 | Rel-16 | B | 5G\_SLICE\_ePA | postponed |
| S5-187053 | R16 CR 28.552 Add TB related measurements | ZTE Wistron Telecom AB | 28.552 | 0011 | - | Rel-16 | B | 5G\_SLICE\_ePA | revised |
| S5-187444 | R16 CR 28.552 Add TB related measurements | ZTE Wistron Telecom AB | 28.552 | 0011 | 1 | Rel-16 | B | 5G\_SLICE\_ePA | agreed |
| S5-187054 | R16 CR 28.552 Add RLC data volume measurements | ZTE Wistron Telecom AB | 28.552 | 0012 | - | Rel-16 | B | 5G\_SLICE\_ePA | revised |
| S5-187445 | R16 CR 28.552 Add RLC data volume measurements | ZTE Wistron Telecom AB | 28.552 | 0012 | 1 | Rel-16 | B | 5G\_SLICE\_ePA | postponed |
| S5-187055 | R16 CR 28.552 Add PDCP data volume measurements | ZTE Wistron Telecom AB | 28.552 | 0013 | - | Rel-16 | B | 5G\_SLICE\_ePA | merged |
| S5-187056 | R16 CR 28.552 Add PDCP throughput measurements | ZTE Wistron Telecom AB | 28.552 | 0014 | - | Rel-16 | B | 5G\_SLICE\_ePA | not pursued |
| S5-187057 | R16 CR 28.552 Add TA related measurements | ZTE Wistron Telecom AB | 28.552 | 0015 | - | Rel-16 | B | 5G\_SLICE\_ePA | revised |
| S5-187457 | R16 CR 28.552 Add TA related measurements | ZTE Wistron Telecom AB | 28.552 | 0015 | 1 | Rel-16 | B | 5G\_SLICE\_ePA | postponed |
| S5-187070 | PM terms for NSI and NSSI | Cisco Systems Belgium | 28.552 | 0016 | - | Rel-16 | F | 5G\_SLICE\_ePA | revised |
| S5-187458 | PM terms for NSI and NSSI | Cisco Systems Belgium | 28.552 | 0016 | 1 | Rel-16 | F | 5G\_SLICE\_ePA | agreed |
| S5-187127 | CR Rel-16 28.552 Add PDU Session Modification related measurements for SMF | Intel China Ltd. | 28.552 | 0017 | - | Rel-16 | B | 5G\_SLICE\_ePA | revised |
| S5-187474 | CR Rel-16 28.552 Add PDU Session Modification related measurements for SMF | Intel China Ltd. | 28.552 | 0017 | 1 | Rel-16 | B | 5G\_SLICE\_ePA | agreed |
| S5-187128 | CR Rel-16 28.552 Add PDU Session Release related measurements for SMF | Intel China Ltd. | 28.552 | 0018 | - | Rel-16 | B | 5G\_SLICE\_ePA | revised |
| S5-187475 | CR Rel-16 28.552 Add PDU Session Release related measurements for SMF | Intel China Ltd. | 28.552 | 0018 | 1 | Rel-16 | B | 5G\_SLICE\_ePA | agreed |
| S5-187129 | CR Rel-16 28.552 Add N4 Session Establishment related measurements for UPF | Intel China Ltd. | 28.552 | 0019 | - | Rel-16 | B | 5G\_SLICE\_ePA | agreed |
| S5-187130 | CR Rel-16 28.552 Add NF performance measurements related to VR | Intel China Ltd. | 28.552 | 0020 | - | Rel-16 | B | 5G\_SLICE\_ePA | revised |
| S5-187460 | CR Rel-16 28.552 Add NF performance measurements related to VR | Intel China Ltd. | 28.552 | 0020 | 1 | Rel-16 | B | 5G\_SLICE\_ePA | agreed |
| S5-187161 | Rel-16 CR TS 28.552 Add the performance measurement of CQI distribution | Huawei | 28.552 | 0021 | - | Rel-15 | B | NETSLICE-ADPM5G | withdrawn |
| S5-187162 | Rel-15 CR TS 28.552 Add the performance measurement of MCS distribution | Huawei | 28.552 | 0022 | - | Rel-15 | F | NETSLICE-ADPM5G | withdrawn |
| S5-187163 | Rel-15 CR TS 28.552 Add Qos flow related performance measurements | Huawei | 28.552 | 0023 | - | Rel-15 | F | NETSLICE-ADPM5G | withdrawn |
| S5-187164 | Rel-15 CR TS 28.552 Correction of the Packet loss measurements | Huawei | 28.552 | 0024 | - | Rel-15 | F | NETSLICE-ADPM5G | revised |
| S5-187373 | Rel-15 CR TS 28.552 Correction of the Packet loss measurements | Huawei | 28.552 | 0024 | 1 | Rel-15 | F | NETSLICE-ADPM5G | agreed |
| S5-187165 | Rel-15 CR TS 28.552 Add PDCP data volume measurements | Huawei | 28.552 | 0025 | - | Rel-15 | F | NETSLICE-ADPM5G | withdrawn |
| S5-187202 | Rel-16 CR TS 28.552 Add the performance measurement of CQI distribution | Huawei | 28.552 | 0026 | - | Rel-15 | F | 5G\_SLICE\_ePA | withdrawn |
| S5-187203 | Rel-16 CR TS 28.552 Add the performance measurement of MCS distribution | Huawei | 28.552 | 0027 | - | Rel-15 | F | 5G\_SLICE\_ePA | withdrawn |
| S5-187204 | Rel-16 CR TS 28.552 Add Qos flow related performance measurements | Huawei | 28.552 | 0028 | - | Rel-15 | F | 5G\_SLICE\_ePA | withdrawn |
| S5-187205 | Rel-16 CR TS 28.552 Add PDCP data volume measurements | Huawei | 28.552 | 0029 | - | Rel-15 | F | 5G\_SLICE\_ePA | withdrawn |
| S5-187207 | Rel-16 CR TS 28.552 Add the performance measurement of CQI distribution | Huawei | 28.552 | 0030 | - | Rel-16 | B | 5G\_SLICE\_ePA | revised |
| S5-187441 | Rel-16 CR TS 28.552 Add the performance measurement of CQI distribution | Huawei | 28.552 | 0030 | 1 | Rel-16 | B | 5G\_SLICE\_ePA | not pursued |
| S5-187208 | Rel-16 CR TS 28.552 Add the performance measurement of MCS distribution | Huawei | 28.552 | 0031 | - | Rel-16 | B | 5G\_SLICE\_ePA | merged |
| S5-187459 | Rel-16 CR TS 28.552 Add the performance measurement of MCS distribution | Huawei | 28.552 | 0031 | 1 | Rel-16 | B | 5G\_SLICE\_ePA | withdrawn |
| S5-187209 | Rel-16 CR TS 28.552 Add Qos flow related performance measurements | Huawei | 28.552 | 0032 | - | Rel-16 | B | 5G\_SLICE\_ePA | merged |
| S5-187210 | Rel-16 CR TS 28.552 Add PDCP data volume measurements | Huawei | 28.552 | 0033 | - | Rel-16 | B | 5G\_SLICE\_ePA | merged |
| S5-187222 | CR Rel-15 28.552 Add DRB setup related measurements and UC for gNB | Ericsson GmbH, Eurolab | 28.552 | 0034 | - | Rel-15 | F | 5G\_SLICE\_ePA | revised |
| S5-187462 | CR Rel-15 28.552 Add DRB setup related measurements and UC for gNB | Ericsson GmbH, Eurolab | 28.552 | 0034 | 1 | Rel-16 | B | 5G\_SLICE\_ePA | agreed |
| S5-187456 | R16 CR 28.552 Add PDCP data volume measurements | Huawei, ZTE Wistron Telecom AB | 28.552 | 0036 | - | Rel-16 | B | 5G\_SLICE\_ePA | agreed |
| S5-187166 | Rel-15 CR TS 28.554 Add KPI of QoS flow Retainability | Huawei | 28.554 | 0002 | - | Rel-15 | F | NETSLICE-ADPM5G | withdrawn |
| S5-187206 | Rel-16 CR TS 28.554 Add KPI of QoS flow Retainability | Huawei | 28.554 | 0003 | - | Rel-15 | F | 5G\_SLICE\_ePA | withdrawn |
| S5-187211 | Rel-16 CR TS 28.554 Add KPI of QoS flow Retainability | Huawei | 28.554 | 0004 | - | Rel-16 | B | 5G\_SLICE\_ePA | postponed |
| S5-187066 | CR Rel-15 TS 28.622 Generic NRM IS on Measurement Control | Ericsson Inc. | 28.622 | 0027 | - | Rel-15 | F | NETSLICE-5GNRM | revised |
| S5-187349 | CR Rel-15 TS 28.622 Generic NRM IS on Measurement Control | Ericsson Inc. | 28.622 | 0027 | 1 | Rel-15 | B | NETSLICE-5GNRM | agreed |
| S5-187250 | Rel-15 CR 28.622 Replace MF with ManagedFunction | Ericsson Limited | 28.622 | 0028 | - | Rel-15 | F | NETSLICE | revised |
| S5-187425 | Rel-15 CR 28.622 Replace MF with ManagedFunction | Ericsson Limited | 28.622 | 0028 | 1 | Rel-15 | F | NETSLICE | agreed |
| S5-187260 | Update NRM root IOCs to support slice priority | Nokia, Nokia Shanghai Bell | 28.622 | 0029 | - | Rel-15 | F | NETSLICE | revised |
| S5-187370 | Update NRM root IOCs to support slice priority | Nokia, Nokia Shanghai Bell | 28.622 | 0029 | 1 | Rel-15 | F | NETSLICE | agreed |
| S5-187289 | Update NRM IRP Solution Set to support slice priority | Nokia, Nokia Shanghai Bell | 28.623 | 0018 | - | Rel-15 | F | NETSLICE | revised |
| S5-187439 | Update NRM IRP Solution Set to support slice priority | Nokia, Nokia Shanghai Bell | 28.623 | 0018 | 1 | Rel-15 | F | NETSLICE | agreed |
| S5-187061 | CR Rel-15 TS 28658 view (E-UTRAN) of cell and frequency relations | Ericsson Inc. | 28.658 | 0034 | - | Rel-15 | F | NETSLICE-5GNRM | withdrawn |
| S5-187131 | CR Rel-16 28.658 Add WLANMobilitySet IOC | Intel China Ltd. | 28.658 | 0035 | - | Rel-16 | B | OAM\_LTE\_WLAN | revised |
| S5-187380 | CR Rel-16 28.658 Add WLANMobilitySet IOC | Intel China Ltd. | 28.658 | 0035 | 1 | Rel-16 | B | OAM\_LTE\_WLAN | revised |
| S5-187525 | CR Rel-16 28.658 Add WLANMobilitySet IOC | Intel China Ltd. | 28.658 | 0035 | 2 | Rel-16 | B | OAM\_LTE\_WLAN | agreed |
| S5-187132 | CR Rel-16 28.659 Add WLANMobilitySet IOC | Intel China Ltd. | 28.658 | 0036 | - | Rel-16 | B | OAM\_LTE\_WLAN | withdrawn |
| S5-187263 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | 28.658 | 0037 | - | Rel-11 | F | TEI11 | revised |
| S5-187427 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | 28.658 | 0037 | 1 | Rel-11 | F | OAM-FMC-IRP | postponed |
| S5-187265 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | 28.658 | 0038 | - | Rel-12 | A | TEI11 | revised |
| S5-187428 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | 28.658 | 0038 | 1 | Rel-12 | A | OAM-FMC-IRP | postponed |
| S5-187266 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | 28.658 | 0039 | - | Rel-13 | A | TEI11 | revised |
| S5-187429 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | 28.658 | 0039 | 1 | Rel-13 | A | OAM-FMC-IRP | postponed |
| S5-187267 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | 28.658 | 0040 | - | Rel-14 | A | TEI11 | revised |
| S5-187430 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | 28.658 | 0040 | 1 | Rel-14 | A | OAM-FMC-IRP | postponed |
| S5-187268 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | 28.658 | 0041 | - | Rel-15 | A | TEI11 | revised |
| S5-187431 | Correct PLMN ID List Type in Solution Set Stage 2 | Ericsson GmbH, Eurolab | 28.658 | 0041 | 1 | Rel-15 | A | OAM-FMC-IRP | postponed |
| S5-187133 | CR Rel-16 28.659 Add WLANMobilitySet IOC | Intel China Ltd. | 28.659 | 0027 | - | Rel-16 | B | OAM\_LTE\_WLAN | revised |
| S5-187381 | CR Rel-16 28.659 Add WLANMobilitySet IOC | Intel China Ltd. | 28.659 | 0027 | 1 | Rel-16 | B | OAM\_LTE\_WLAN | agreed |
| S5-187269 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | 28.659 | 0028 | - | Rel-11 | F | TEI11 | revised |
| S5-187432 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | 28.659 | 0028 | 1 | Rel-11 | F | OAM-FMC-IRP | postponed |
| S5-187270 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | 28.659 | 0029 | - | Rel-12 | A | TEI11 | revised |
| S5-187433 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | 28.659 | 0029 | 1 | Rel-12 | A | OAM-FMC-IRP | postponed |
| S5-187271 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | 28.659 | 0030 | - | Rel-13 | A | TEI11 | revised |
| S5-187434 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | 28.659 | 0030 | 1 | Rel-13 | A | OAM-FMC-IRP | postponed |
| S5-187272 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | 28.659 | 0031 | - | Rel-14 | A | TEI11 | revised |
| S5-187435 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | 28.659 | 0031 | 1 | Rel-14 | A | OAM-FMC-IRP | postponed |
| S5-187273 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | 28.659 | 0032 | - | Rel-15 | A | TEI11 | revised |
| S5-187436 | Correct Plmnid Type in Solution Set Stage 3 | Ericsson GmbH, Eurolab | 28.659 | 0032 | 1 | Rel-15 | A | OAM-FMC-IRP | postponed |
| S5-187059 | CR Rel-15 28662 on frequency band | Ericsson Inc. | 28.662 | 0008 | - | Rel-15 | F | NETSLICE-5GNRM | revised |
| S5-187345 | CR Rel-15 28662 on frequency band | Ericsson Inc. | 28.662 | 0008 | 1 | Rel-15 | F | NETSLICE-5GNRM | withdrawn |
| S5-187541 | CR Rel-15 28662 on frequency band | Ericsson Inc. | 28.662 | 0008 | 2 | Rel-15 | F | NETSLICE-5GNRM | agreed |
| S5-187279 | Rel-15 CR 32.156 Inconsistent definition of composition | Ericsson Limited | 32.156 | 0019 | - | Rel-15 | F | NETSLICE | revised |
| S5-187438 | Rel-15 CR 32.156 Inconsistent definition of composition | Ericsson Limited | 32.156 | 0019 | 1 | Rel-16 | D | TEI16 | revised |
| S5-187481 | Rel-16 CR 32.156 Inconsistent definition of composition | Ericsson Limited | 32.156 | 0019 | 2 | Rel-16 | D | METHOGY | agreed |
| S5-187280 | Rel-16 CR 32.156 Make the use of association roles optional | Ericsson Limited | 32.156 | 0020 | - | Rel-16 | C | METHOGY | agreed |
| S5-187476 | Rel-16 CR 32.156 Make the use of association roles optional | Ericsson Limited | 32.156 | 0020 | 1 | Rel-16 | C | METHOGY | withdrawn |
| S5-187281 | Rel-16 CR 32.156 Make the use of the visibility symbol optional | Ericsson Limited | 32.156 | 0021 | - | Rel-16 | C | METHOGY | agreed |
| S5-187477 | Rel-16 CR 32.156 Make the use of the visibility symbol optional | Ericsson Limited | 32.156 | 0021 | 1 | Rel-16 | C | METHOGY | withdrawn |
| S5-187093 | Rel-15 CR 32.251 Correction of Supported Feature for EDCE5-CH | Ericsson | 32.251 | 0508 | - | Rel-15 | F | EDCE5-CH | revised |
| S5-187394 | Rel-15 CR 32.251 Correction of Supported Feature for EDCE5-CH | Ericsson | 32.251 | 0508 | 1 | Rel-15 | F | EDCE5-CH | agreed |
| S5-187139 | Correcting the definition of data counting at the tunnelling interface | Ericsson | 32.251 | 0509 | - | Rel-14 | F | TEI14 | revised |
| S5-187300 | Correcting the definition of data counting at the tunnelling interface | Ericsson | 32.251 | 0509 | 1 | Rel-14 | F | TEI14 | revised |
| S5-187320 | Correcting the definition of data counting at the tunnelling interface | Ericsson | 32.251 | 0509 | 2 | Rel-14 | F | TEI14 | agreed |
| S5-187140 | Correcting the definition of data counting at the tunnelling interface | Ericsson | 32.251 | 0510 | - | Rel-15 | A | TEI14 | revised |
| S5-187301 | Correcting the definition of data counting at the tunnelling interface | Ericsson | 32.251 | 0510 | 1 | Rel-15 | A | TEI14 | revised |
| S5-187321 | Correcting the definition of data counting at the tunnelling interface | Ericsson | 32.251 | 0510 | 2 | Rel-15 | A | TEI14 | agreed |
| S5-187179 | Rel15 CR 32.251 PRA charging clarification | Huawei | 32.251 | 0511 | - | Rel-15 | F | AULC-CH, TEI15 | revised |
| S5-187406 | Rel15 CR 32.251 PRA charging clarification | Huawei | 32.251 | 0511 | 1 | Rel-15 | F | AULC-CH, TEI15 | agreed |
| S5-187181 | Rel15 CR 32.251 Multi-PRAs charging clarification | Huawei | 32.251 | 0512 | - | Rel-15 | F | AULC-CH, TEI15 | revised |
| S5-187446 | Rel15 CR 32.251 Multi-PRAs charging clarification | Huawei | 32.251 | 0512 | 1 | Rel-15 | F | AULC-CH, TEI15 | agreed |
| S5-187405 | Rel-15 CR 32.255 Correction on flows for alignment with TS 23.502 | Nokia, Nokia Shanghai Bell | 32.255 | - | - | Rel-15 | F | 5GS\_Ph1-DCH | agreed |
| S5-187097 | R15 CR 32.255 Correction of errors from Edithelp | Nokia, Nokia Shanghai Bell | 32.255 | 0005 | 2 | Rel-15 | F | 5GS\_Ph1-DCH | agreed |
| S5-187076 | Rel-15 CR 32.255 Allow update of NotifyUri | Ericsson | 32.255 | 0007 | - | Rel-15 | F | 5GS\_Ph1-DCH | revised |
| S5-187322 | Rel-15 CR 32.255 Allow update of NotifyUri | Ericsson | 32.255 | 0007 | 1 | Rel-15 | F | 5GS\_Ph1-DCH | agreed |
| S5-187080 | Rel-15 CR 32.255 Correction of Invocation Result at http ok | Ericsson | 32.255 | 0008 | - | Rel-15 | F | 5GS\_Ph1-DCH | revised |
| S5-187326 | Rel-15 CR 32.255 Correction of Invocation Result at http ok | Ericsson | 32.255 | 0008 | 1 | Rel-15 | F | 5GS\_Ph1-DCH | agreed |
| S5-187083 | Rel-15 CR 32.255 Correction of Online non-blocking handling | Ericsson | 32.255 | 0009 | - | Rel-15 | F | 5GS\_Ph1-DCH | revised |
| S5-187329 | Rel-15 CR 32.255 Correction of Online non-blocking handling | Ericsson | 32.255 | 0009 | 1 | Rel-15 | F | 5GS\_Ph1-DCH | agreed |
| S5-187085 | Rel-15 CR 32.255 Correction of UPF Id definition | Ericsson | 32.255 | 0010 | - | Rel-15 | F | 5GS\_Ph1-DCH | revised |
| S5-187333 | Rel-15 CR 32.255 Correction of UPF Id definition | Ericsson | 32.255 | 0010 | 1 | Rel-15 | F | 5GS\_Ph1-DCH | agreed |
| S5-187086 | Rel-15 CR 32.255 Correction AMF Id definition | Ericsson | 32.255 | 0011 | - | Rel-15 | F | 5GS\_Ph1-DCH | revised |
| S5-187334 | Rel-15 CR 32.255 Correction AMF Id definition | Ericsson | 32.255 | 0011 | 1 | Rel-15 | F | 5GS\_Ph1-DCH | agreed |
| S5-187090 | Rel-15 CR 32.255 Correction of Unused Quota Timer naming | Ericsson | 32.255 | 0012 | - | Rel-15 | F | 5GS\_Ph1-DCH | revised |
| S5-187390 | Rel-15 CR 32.255 Correction of Unused Quota Timer naming | Ericsson | 32.255 | 0012 | 1 | Rel-15 | F | 5GS\_Ph1-DCH | agreed |
| S5-187098 | Rel-15 CR 32.255 Introduction Data Volume Reporting for Option 4&7 | Nokia, Nokia Shanghai Bell | 32.255 | 0013 | - | Rel-15 | B | 5GS\_Ph1 | revised |
| S5-187395 | Rel-15 CR 32.255 Introduction Data Volume Reporting for Option 4&7 | Nokia, Nokia Shanghai Bell | 32.255 | 0013 | 1 | Rel-15 | B | 5GS\_Ph1-DCH | agreed |
| S5-187111 | Rel-15 CR 32.255 Complete flows alignment with TS 23.502 | Nokia, Nokia Shanghai Bell | 32.255 | 0014 | - | Rel-15 | F | 5GS\_Ph1-DCH | revised |
| S5-187404 | Rel-15 CR 32.255 Complete flows alignment with TS 23.502 | Nokia, Nokia Shanghai Bell | 32.255 | 0014 | 1 | Rel-15 | F | 5GS\_Ph1-DCH | agreed |
| S5-187180 | Rel15 CR 32.255 PRA charging clarification | Huawei | 32.255 | 0015 | - | Rel-15 | F | 5GS\_Ph1-DCH | revised |
| S5-187407 | Rel15 CR 32.255 PRA charging clarification | Huawei | 32.255 | 0015 | 1 | Rel-15 | F | 5GS\_Ph1-DCH | agreed |
| S5-187233 | Rel-15 CR 32.255 Add missing clause on formal description | Nokia, Nokia Shanghai Bell | 32.255 | 0016 | - | Rel-15 | F | 5GS\_Ph1-DCH | revised |
| S5-187403 | Rel-15 CR 32.255 Add missing clause on formal description | Nokia, Nokia Shanghai Bell | 32.255 | 0016 | 1 | Rel-15 | F | 5GS\_Ph1-DCH | agreed |
| S5-187234 | R15 CR 32.274 Introduction of Message content charging SMSF | Nokia, Nokia Shanghai Bell | 32.274 | 0057 | 2 | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187240 | R15 CR 32.274 Introduction of CHF CDR description for SMSF | Nokia, Nokia Shanghai Bell | 32.274 | 0058 | 2 | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187242 | R15 CR 32.274 Introduction of SMS information converged charging | Nokia, Nokia Shanghai Bell | 32.274 | 0059 | 2 | Rel-15 | B | 5GS\_Ph1-SMSCH | revised |
| S5-187451 | R15 CR 32.274 Introduction of SMS information converged charging | Nokia, Nokia Shanghai Bell | 32.274 | 0059 | 3 | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187101 | Rel-15 CR 32.274 Introduction of 5GS for SMS charging via Ro Rf | Nokia, Nokia Shanghai Bell | 32.274 | 0060 | - | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187102 | Rel-15 CR 32.274 Introduction of offline charging for IP-SM-GW architecture and flows | Nokia, Nokia Shanghai Bell | 32.274 | 0061 | - | Rel-15 | B | 5GS\_Ph1-SMSCH | revised |
| S5-187310 | Rel-15 CR 32.274 Introduction of offline charging for IP-SM-GW architecture and flows | Nokia, Nokia Shanghai Bell | 32.274 | 0061 | 1 | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187103 | Rel-15 CR 32.274 Introduction of offline charging for IP-SM-GW CDRs | Nokia, Nokia Shanghai Bell | 32.274 | 0062 | - | Rel-15 | B | 5GS\_Ph1-SMSCH | revised |
| S5-187311 | Rel-15 CR 32.274 Introduction of offline charging for IP-SM-GW CDRs | Nokia, Nokia Shanghai Bell | 32.274 | 0062 | 1 | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187229 | Rel-15 CR 32.274 Introduction of Detailed message format | Nokia, Nokia Shanghai Bell | 32.274 | 0063 | - | Rel-15 | B | 5GS\_Ph1-SMSCH | revised |
| S5-187313 | Rel-15 CR 32.274 Introduction of Detailed message format | Nokia, Nokia Shanghai Bell | 32.274 | 0063 | 1 | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187230 | Rel-15 CR 32.274 Introduction of clauses on formal description and binding | Nokia, Nokia Shanghai Bell | 32.274 | 0064 | - | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187077 | Rel-15 CR 32.290 Allow update of NotifyUri | Ericsson | 32.290 | 0020 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187323 | Rel-15 CR 32.290 Allow update of NotifyUri | Ericsson | 32.290 | 0020 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187081 | Rel-15 CR 32.290 Correction of Invocation Result at http ok | Ericsson | 32.290 | 0021 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187327 | Rel-15 CR 32.290 Correction of Invocation Result at http ok | Ericsson | 32.290 | 0021 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187094 | Rel-15 CR 32.290 Addition of event charging | Ericsson | 32.290 | 0022 | - | Rel-15 | B | TEI15 | revised |
| S5-187308 | Rel-15 CR 32.290 Addition of event charging | Ericsson | 32.290 | 0022 | 1 | Rel-15 | B | TEI15 | agreed |
| S5-187108 | Rel-15 CR 32.290 Add description for Charging Notification | Nokia, Nokia Shanghai Bell | 32.290 | 0023 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187399 | Rel-15 CR 32.290 Add description for Charging Notification | Nokia, Nokia Shanghai Bell | 32.290 | 0023 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187075 | Rel-15 CR 32.291 Correction of response code in flow for Notify | Ericsson | 32.291 | 0011 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187078 | Rel-15 CR 32.291 Allow update of NotifyUri | Ericsson | 32.291 | 0012 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187324 | Rel-15 CR 32.291 Allow update of NotifyUri | Ericsson | 32.291 | 0012 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187079 | Rel-15 CR 32.291 Correction of overlapping results between Invocation result and Result code | Ericsson | 32.291 | 0013 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187325 | Rel-15 CR 32.291 Correction of overlapping results between Invocation result and Result code | Ericsson | 32.291 | 0013 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187082 | Rel-15 CR 32.291 Correction of Invocation Result at http ok | Ericsson | 32.291 | 0014 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187328 | Rel-15 CR 32.291 Correction of Invocation Result at http ok | Ericsson | 32.291 | 0014 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187084 | Rel-15 CR 32.291 Correction of Rating Group type to Uint32 | Ericsson | 32.291 | 0015 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187331 | Rel-15 CR 32.291 Correction of Rating Group type to Uint32 | Ericsson | 32.291 | 0015 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187087 | Rel-15 CR 32.291 Correction of name for Multiple Unit | Ericsson | 32.291 | 0016 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187388 | Rel-15 CR 32.291 Correction of name for Multiple Unit | Ericsson | 32.291 | 0016 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187088 | Rel-15 CR 32.291 Allow PDUSession reference in Notify | Ericsson | 32.291 | 0017 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | not pursued |
| S5-187091 | Rel-15 CR 32.291 Correction of Unused Quota Timer naming | Ericsson | 32.291 | 0018 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187391 | Rel-15 CR 32.291 Correction of Unused Quota Timer naming | Ericsson | 32.291 | 0018 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187092 | Rel-15 CR 32.291 Correction of missing http status codes | Ericsson | 32.291 | 0019 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187392 | Rel-15 CR 32.291 Correction of missing http status codes | Ericsson | 32.291 | 0019 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187095 | Rel-15 CR 32.291 Addition of event charging | Ericsson | 32.291 | 0020 | - | Rel-15 | B | TEI15 | revised |
| S5-187309 | Rel-15 CR 32.291 Addition of event charging | Ericsson | 32.291 | 0020 | 1 | Rel-15 | B | TEI15 | agreed |
| S5-187100 | Rel-15 CR 32.291 Introduction Data Volume Reporting for Option 4&7 | Nokia, Nokia Shanghai Bell | 32.291 | 0021 | - | Rel-15 | B | 5GS\_Ph1 | revised |
| S5-187397 | Rel-15 CR 32.291 Introduction Data Volume Reporting for Option 4&7 | Nokia, Nokia Shanghai Bell | 32.291 | 0021 | 1 | Rel-15 | B | 5GS\_Ph1-DCH | agreed |
| S5-187107 | Rel-15 CR 32.291 Alignment on Session Identifier | Nokia, Nokia Shanghai Bell | 32.291 | 0022 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187398 | Rel-15 CR 32.291 Alignment on Session Identifier | Nokia, Nokia Shanghai Bell | 32.291 | 0022 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187109 | Rel-15 CR 32.291 Correction on Charging Notification message | Nokia, Nokia Shanghai Bell | 32.291 | 0023 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187400 | Rel-15 CR 32.291 Correction on Charging Notification message | Nokia, Nokia Shanghai Bell | 32.291 | 0023 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187110 | Rel-15 CR 32.291 Correction on Charging ID data type | Nokia, Nokia Shanghai Bell | 32.291 | 0024 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187401 | Rel-15 CR 32.291 Correction on Charging ID data type | Nokia, Nokia Shanghai Bell | 32.291 | 0024 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187120 | Rel-15 CR 32.291 Correction on Reauthorizationdetails | Nokia, Nokia Shanghai Bell | 32.291 | 0025 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187402 | Rel-15 CR 32.291 Correction on Reauthorizationdetails | Nokia, Nokia Shanghai Bell | 32.291 | 0025 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187182 | Rel15 CR 32.291 Data Type for SMS | Huawei | 32.291 | 0026 | - | Rel-15 | B | 5GS\_Ph1-SMSCH | revised |
| S5-187297 | Rel15 CR 32.291 Data Type for SMS | Huawei, Nokia, Nokia Shanghai Bell | 32.291 | 0026 | 1 | Rel-15 | B | 5GS\_Ph1-SMSCH | revised |
| S5-187314 | Rel15 CR 32.291 Data Type for SMS | Huawei, Nokia, Nokia Shanghai Bell | 32.291 | 0026 | 2 | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187231 | Rel-15 CR 32.291 Introduce Binding for SMS charging | Nokia, Nokia Shanghai Bell | 32.291 | 0027 | - | Rel-15 | B | 5GS\_Ph1-SMSCH | revised |
| S5-187316 | Rel-15 CR 32.291 Introduce Binding for SMS charging | Nokia, Nokia Shanghai Bell | 32.291 | 0027 | 2 | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187232 | Rel-15 CR 32.291 Introduce OpenAPI extension for SMS charging | Nokia, Nokia Shanghai Bell | 32.291 | 0028 | - | Rel-15 | B | 5GS\_Ph1-SMSCH | revised |
| S5-187315 | Rel-15 CR 32.291 Introduce OpenAPI extension for SMS charging | Nokia, Nokia Shanghai Bell | 32.291 | 0028 | 1 | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187393 | Rel-15 CR 32.291 Failure Handling Mechanism Clarification | Huawei | 32.291 | 0029 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187452 | R15 CR 32.291 Correction of Serving Network Function ID definition | Ericsson, Nokia, Nokia Shanghai Bell | 32.291 | 0030 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187089 | Rel-15 CR 32.298 Correct PDU Session level trigger in CHF CDR | Ericsson | 32.298 | 0681 | - | Rel-15 | F | 5GS\_Ph1-SBI\_CH | revised |
| S5-187389 | Rel-15 CR 32.298 Correct PDU Session level trigger in CHF CDR | Ericsson | 32.298 | 0681 | 1 | Rel-15 | F | 5GS\_Ph1-SBI\_CH | agreed |
| S5-187096 | Rel-15 CR 32.298 Addition of SMS info to CHF CDR | Ericsson | 32.298 | 0682 | - | Rel-15 | B | TEI15 | revised |
| S5-187317 | Rel-15 CR 32.298 Addition of SMS info to CHF CDR | Ericsson | 32.298 | 0682 | 1 | Rel-15 | B | TEI15 | agreed |
| S5-187099 | Rel-15 CR 32.298 Introduction Data Volume Reporting for Option 4&7 | Nokia, Nokia Shanghai Bell | 32.298 | 0683 | - | Rel-15 | B | 5GS\_Ph1 | revised |
| S5-187396 | Rel-15 CR 32.298 Introduction Data Volume Reporting for Option 4&7 | Nokia, Nokia Shanghai Bell | 32.298 | 0683 | 1 | Rel-15 | B | 5GS\_Ph1-DCH | agreed |
| S5-187104 | Rel-15 CR 32.298 Introduction of 5GS for SMS charging via Ro Rf | Nokia, Nokia Shanghai Bell | 32.298 | 0684 | - | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187105 | Rel-15 CR 32.298 Introduction of offline charging for IP-SM-GW | Nokia, Nokia Shanghai Bell | 32.298 | 0685 | - | Rel-15 | B | 5GS\_Ph1-SMSCH | revised |
| S5-187312 | Rel-15 CR 32.298 Introduction of offline charging for IP-SM-GW | Nokia, Nokia Shanghai Bell | 32.298 | 0685 | 1 | Rel-15 | B | 5GS\_Ph1-SMSCH | agreed |
| S5-187106 | Rel-15 CR 32.298 Introduction of SMS Charging to ASN.1 CHF CDR | Nokia, Nokia Shanghai Bell | 32.298 | 0686 | - | Rel-15 | B | 5GS\_Ph1-SMSCH | withdrawn |
| S5-187137 | Correction of Data Volume Uplink and Downlink definition | Ericsson | 32.298 | 0687 | - | Rel-14 | F | TEI14 | revised |
| S5-187298 | Correction of Data Volume Uplink and Downlink definition | Ericsson | 32.298 | 0687 | 1 | Rel-14 | F | TEI14 | revised |
| S5-187318 | Correction of Data Volume Uplink and Downlink definition | Ericsson | 32.298 | 0687 | 2 | Rel-14 | F | TEI14 | agreed |
| S5-187138 | Correction of Data Volume Uplink and Downlink definition | Ericsson | 32.298 | 0688 | - | Rel-15 | A | TEI14 | revised |
| S5-187299 | Correction of Data Volume Uplink and Downlink definition | Ericsson | 32.298 | 0688 | 1 | Rel-15 | A | TEI14 | revised |
| S5-187319 | Correction of Data Volume Uplink and Downlink definition | Ericsson | 32.298 | 0688 | 2 | Rel-15 | A | TEI14 | agreed |
| S5-187134 | CR Rel-16 32.425 Add measurements related to user data transmission on Xw interface for non-collocated LWA | Intel Corporation (UK) Ltd | 32.425 | 0173 | 2 | Rel-16 | B | OAM\_LTE\_WLAN | revised |
| S5-187382 | CR Rel-16 32.425 Add measurements related to user data transmission on Xw interface for non-collocated LWA | Intel Corporation (UK) Ltd | 32.425 | 0173 | 3 | Rel-16 | B | OAM\_LTE\_WLAN | agreed |
| S5-187135 | CR Rel-16 32.425 Add measurements related to XwAP procedures for non-collocated LWA | Intel Corporation (UK) Ltd | 32.425 | 0174 | 2 | Rel-16 | B | OAM\_LTE\_WLAN | revised |
| S5-187383 | CR Rel-16 32.425 Add measurements related to XwAP procedures for non-collocated LWA | Intel Corporation (UK) Ltd | 32.425 | 0174 | 3 | Rel-16 | B | OAM\_LTE\_WLAN | withdrawn |
| S5-187136 | CR Rel-16 32.425 Add measurements related to RRC procedures for LWA | Intel China Ltd. | 32.425 | 0175 | - | Rel-16 | B | OAM\_LTE\_WLAN | revised |
| S5-187384 | CR Rel-16 32.425 Add measurements related to RRC procedures for LWA | Intel China Ltd. | 32.425 | 0175 | 1 | Rel-16 | B | OAM\_LTE\_WLAN | agreed |
| S5-187143 | Rel-15 CR TS 32.425 Update measurements supporting EE KPI | Huawei, Orange | 32.425 | 0176 | - | Rel-15 | F | PEE\_CMON | revised |
| S5-187354 | Rel-15 CR TS 32.425 Update measurements supporting EE KPI | Huawei, Orange | 32.425 | 0176 | 1 | Rel-15 | F | PEE\_CMON | agreed |
| S5-187144 | Rel-16 CR TS 32.425 Update measurements supporting EE KPI | Huawei, Orange | 32.425 | 0177 | - | Rel-16 | F | PEE\_CMON | revised |
| S5-187355 | Rel-16 CR TS 32.425 Update measurements supporting EE KPI | Huawei, Orange | 32.425 | 0177 | 1 | Rel-16 | A | PEE\_CMON | agreed |
| S5-187067 | CR Rel-15 TS 32432 on measurement type | Ericsson Inc. | 32.432 | 0006 | - | Rel-15 | F | NETSLICE-5GNRM | revised |
| S5-187350 | CR Rel-15 TS 32432 on measurement type | Ericsson Inc. | 32.432 | 0006 | 1 | Rel-15 | B | NETSLICE-5GNRM | agreed |
| S5-187246 | Correction of reference | Ericsson Japan K.K. | 32.432 | 0007 | - | Rel-15 | F | TEI15 | revised |
| S5-187421 | Correction of reference | Ericsson Japan K.K. | 32.432 | 0007 | 1 | Rel-15 | F | TEI15 | agreed |
| S5-187141 | Rel-15 CR TS 32.450 Add missing EE KPI for E-UTRAN | Huawei, Orange | 32.450 | 0018 | - | Rel-15 | F | PEE\_CMON | revised |
| S5-187352 | Rel-15 CR TS 32.450 Add missing EE KPI for E-UTRAN | Huawei, Orange | 32.450 | 0018 | 1 | Rel-15 | F | PEE\_CMON | agreed |
| S5-187142 | Rel-15 CR TS 32.451 Add missing EE KPI for E-UTRAN | Huawei, Orange | 32.451 | 0005 | - | Rel-15 | F | PEE\_CMON | revised |
| S5-187353 | Rel-15 CR TS 32.451 Add missing EE KPI for E-UTRAN | Huawei, Orange | 32.451 | 0005 | 1 | Rel-15 | F | PEE\_CMON | agreed |

## Annex C: Lists of liaisons

### C1: Incoming liaison statements

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Document | Original | Title | From | Decision | Reply in |
| S5-187036 | CP-182239 | Resubmitted Reply LS from CT to SA5 on API specification and API version number maintenance | TSG CT | replied to | S5-187336 |
| S5-187037 | R2-1816011 | Reply LS from RAN2 to SA5 on L2 measurements | RAN2 | noted |  |
| S5-187038 | R3-186232 | Reply LS to SA5 on L2 measurements | RAN3 | noted |  |
| S5-187039 | S2-1811558 | LS from SA2 to SA5 on QoS Monitoring | SA2 | replied to | S5-187339 |
| S5-187040 | S4-180240 | Resubmitted Reply LS from SA4 to SA5 on Attributes for QoE measurement collection | SA4 | revised |  |
| S5-187041 | SG2-LS62 | Resubmitted LS from ITU-T to SA5 on cooperation on REST-based network management framework | ITU-T Study Group 2 | replied to | S5-187340 |
| S5-187042 | SG5-LS76 | LS/r from ITU-T to SA5 on Energy Efficiency (reply to 3GPP TSG SA5 - S5-182439) | ITU-T Study Group 5 | noted |  |
| S5-187043 | SG5-LS81 | LS/r from ITU-T ccSA5 on Energy Efficiency (reply to ETSI TC EE - EE(18)053033-E) | ITU-T Study Group 5 | postponed |  |
| S5-187044 | S2-1811547 | Reply LS from SA2 ccSA5 on Data Volume Reporting in 5GC | SA2 | noted |  |
| S5-187375 | S4-180240 | Resubmitted Reply LS from SA4 to SA5 on Attributes for QoE measurement collection | SA4 | replied to | S5-187376 |
| S5-187488 | NFVIFA(18)000844r1 | Clarifications topics for NFV NS in context of Network Slicing | ETSI ISG NFV | replied to | S5-187515 |

### C2: Outgoing liaison statements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Document | Title | To | Cc | reply to i/c LS |
| S5-187330 | LS to SA2 on Introduction of a special case of online charging method | SA2 | - |  |
| S5-187332 | LS to CT4 CT3 on introduction of common data types | CT4, CT3 | - |  |
| S5-187336 | Reply to: Resubmitted Reply LS from CT to SA5 on API specification and API version number maintenance | TSG CT, TSG SA | CT4, CT3, SA, SA6 | S5-187036 |
| S5-187339 | Reply to: LS from SA2 to SA5 on QoS Monitoring | SA2 | - | S5-187039 |
| S5-187461 | Draft LS on the slicing terminology and the role of S-NSSAI parameter | SA2, RAN2 | RAN3 | - |
| S5-187524 | Reply to: Resubmitted Reply LS from SA4 to SA5 on Attributes for QoE measurement collection | SA4 | - | S5-187375 |
| S5-187544 | Reply to: Clarifications topics for NFV NS in context of Network Slicing | ETSI ISG NFV | - | S5-187488 |
| S5-187557 | Reply to: Resubmitted LS from ITU-T to SA5 on cooperation on REST-based network management framework | ITU-T Study Group 2 | - | S5-187041 |

## Annex D: List of agreed/approved new and revised Work Items

|  |  |  |  |
| --- | --- | --- | --- |
| Document | Title | Source | new/revised |
| S5-187518 | Study on non-file-based trace reporting | Nokia Korea | SID new |
| S5-187262 | Revised SID on integration of ONAP DCAE and 3GPP management architecture | AT&T, Orange | SID revised |
| S5-187471 | Revised SID on integration of ONAP and 3GPP configuration management services for 5G networks | Nanjing Ericsson Panda Com Ltd | SID revised |
| S5-187306 | New WID on Network Exposure Charging in 5G System Architecture | Ericsson | WID new |
| S5-187307 | New WID Charging AMF in 5G System Architecture Phase 1 | Nokia, Nokia Shanghai Bell | WID new |
| S5-187465 | Revised WID on management service discovery in 5G network management | Huawei Telecommunication India | WID new |
| S5-187517 | Trace Management in the context of Services Based Management Architecture | Nokia Korea | WID new |
| S5-187114 | Revised WID on Management of QoE measurement collection | Ericsson | WID revised |

## Annex E: List of draft Technical Specifications and Reports

|  |  |  |  |
| --- | --- | --- | --- |
| Document | Spec | vers | Doc title |
| S5-187545 | 28.310 | 0.2.0 | TS 28.310 incorporating pCRs approved at SA5#122 |
| S5-187546 | 28.311 | 0.2.0 | TS 28.311 incorporating pCRs approved at SA5#122 |
| S5-187547 | 28.405 | 0.4.0 | TS 28.405 incorporating pCRs approved at SA5#122 |
| S5-187548 | 28.550 | 2.2.0 | TS 28.550 incorporating pCRs approved at SA5#122 |
| S5-187549 | 28.803 | 0.2.0 | TR 28.803 incorporating pCRs approved at SA5#122 |
| S5-187550 | 28.804 | 0.2.0 | TR 28.804 incorporating pCRs approved at SA5#122 |
| S5-187551 | 28.805 | 0.2.0 | TR 28.805 incorporating pCRs approved at SA5#122 |
| S5-187552 | 28.812 | 0.2.0 | TR 28.812 incorporating pCRs approved at SA5#122 |
| S5-187553 | 28.861 | 0.2.0 | TR 28.861 incorporating pCRs approved at SA5#122 |
| S5-187554 | 28.900 | 0.7.0 | TR 28.900 incorporating pCRs approved at SA5#122 |
| S5-187555 | 32.160 | 0.2.0 | TS 32.160 incorporating pCRs approved at SA5#122 |

## Annex F: List of action items

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Meeting/Number | Agenda item | Document | Details | Responsible | Due by |
| 122/1 | 6.1 | S5-187303 | Investigate the changes of references needed in SA5 specs. | Chairman | 2018-11-16 |

## Annex G: List of participants

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| TITLE | Family Name | Given Name | Role | Employer Organization | Employer Category Code | Organization Represented | Organization Represented Category Code |
| Dr. | Al-kanani | Hassan | Delegate | NEC Europe Ltd | ETSI | NEC Corporation | ETSI |
| Mr. | Andrianov | Anatoly | Delegate | Nokia Germany | ETSI | Nokia | ATIS |
| Mrs. | Ayani | Zhulia | Delegate | Ericsson LM | ETSI | Ericsson Japan K.K. | ARIB |
| Dr. | Baboescu | Florin | Delegate | BROADCOM CORPORATION | ETSI | BROADCOM CORPORATION | ETSI |
| Mrs. | bor-yaliniz | irem | Delegate | Huawei Technologies Co. Ltd. | ETSI | Huawei Technologies France | ETSI |
| Miss | CHEN | SHAN | Delegate | Huawei Tech.(UK) Co., Ltd | ETSI | Huawei Technologies Co. Ltd. | ETSI |
| Mr. | Chou | Joey | Delegate | Intel Corporation (UK) Ltd | ETSI | Intel | ATIS |
| Dr. | Cornily | Jean Michel | ViceChairman | Orange | ETSI | Orange Spain | ETSI |
| Mr. | Costello | Tim | Delegate | BT plc | ETSI | BT plc | ETSI |
| Mr. | Feng | Luo | Delegate | China Mobile (Suzhou) Software | CCSA | China Mobile (Suzhou) Software | CCSA |
| Mrs. | Gardella | Maryse | Subgrp chair | Nokia France | ETSI | Nokia UK | ETSI |
| Mr. | Groenendijk | Jan | Delegate | Ericsson LM | ETSI | Ericsson Limited | ETSI |
| Mr. | Guttman | Erik | Delegate | Samsung R&D Institute UK | ETSI | Samsung R&D Institute UK | ETSI |
| Mr. | Horvat | Attila | Delegate | Huawei Technologies Sweden AB | ETSI | Huawei Technologies Sweden AB | ETSI |
| Mr. | IJntema | Wieger | Delegate | TNO | ETSI | KPN N.V. | ETSI |
| Mr. | Jahangir | Zeeshan | Delegate | T-Mobile USA Inc. | ATIS | T-Mobile USA Inc. | ATIS |
| Mr. | Jan | Onnegren | Delegate | Ericsson LM | ETSI | Ericsson España S.A. | ETSI |
| Mr. | Jesske | Roland | Delegate | Deutsche Telekom AG | ETSI | Deutsche Telekom AG | ETSI |
| Mr. | Klotz | Michael | Delegate | Deutsche Telekom AG | ETSI | Deutsche Telekom AG | ETSI |
| Dr. | Lagha | Naceur | Delegate | Amdocs Software Systems Ltd | ETSI | Amdocs Software Systems Ltd | ETSI |
| Mr. | Li | Gang | Delegate | Nanjing Ericsson Panda Com Ltd | CCSA | Ericsson Hungary Ltd | ETSI |
| Mr. | Li | Rihui | Delegate | ZTE Trunking Technology Corp. | CCSA | ZTE Trunking Technology Corp. | CCSA |
| Mr. | Libunao | Gerardo | Delegate | Verizon UK Ltd | ETSI | Verizon UK Ltd | ETSI |
| Mr. | Martin | Jesus | Delegate | TELEFONICA S.A. | ETSI | TELEFONICA S.A. | ETSI |
| Mr. | McNamee | Alan | Delegate | Openet Telecom | ETSI | Openet Telecom | ETSI |
| Mr. | Meredith | John M | SECRETARY | ETSI | ETSI | ETSI | ETSI |
| Ing. | Moggio | Fabrizio | Delegate | TELECOM ITALIA S.p.A. | ETSI | TELECOM ITALIA S.p.A. | ETSI |
| Mr. | Petersen | Robert | Delegate | Ericsson LM | ETSI | Ericsson Telecomunicazioni SpA | ETSI |
| Miss | Ping | Jing | Delegate | Nokia Germany | ETSI | Nokia Korea | TTA |
| Dr. | Pollakowski | Olaf | Delegate | Nokia Germany | ETSI | Nokia Germany | ETSI |
| Mr. | Potter | Benjamin | Delegate | AT&T GNS Belgium SPRL | ETSI | AT&T GNS Belgium SPRL | ETSI |
| Mr. | Sakae | Kozo | Delegate | DOCOMO Communications Lab. | ETSI | NTT DOCOMO INC. | TTC |
| Mr. | Sha | Wenhao | Delegate | SRTC | CCSA | SRTC | CCSA |
| Mr. | Singh | Rob | Delegate | SSL | ATIS | SSL | ATIS |
| Mr. | Smith | David K. | Delegate | AT&T GNS Belgium SPRL | ETSI | AT&T GNS Belgium SPRL | ETSI |
| Miss | Sun | Xiaowen | Delegate | China Mobile Research Inst. |  | China Mobile International Ltd | CCSA |
| Mr. | Toche | Christian | ViceChairman | Huawei Technologies France | ETSI | Futurewei Technologies | ATIS |
| Mr. | Törnkvist | Robert | Delegate | Ericsson LM | ETSI | Ericsson France S.A.S | ETSI |
| Mr. | Tovinger | Thomas | Chairman | Ericsson LM | ETSI | Ericsson LM | ETSI |
| Mr. | Tse | Edwin | Delegate | Ericsson LM | ETSI | Ericsson Inc. | ATIS |
| Dr. | Tseng | Yung-Lan | Delegate | Asia Pacific Telecom co. Ltd | ETSI | Asia Pacific Telecom co. Ltd | ETSI |
| Mr. | Xu | Ruiyue | Delegate | Huawei Tech.(UK) Co., Ltd | ETSI | HiSilicon Technologies Co. Ltd | CCSA |
| Dr. | Yanover | Vladimir | Delegate | Cisco Systems Belgium | ETSI | Cisco Systems Belgium | ETSI |
| Mr. | Yao | Yizhi | Delegate | Intel Corporation (UK) Ltd | ETSI | Intel China Ltd. | CCSA |
| Mr. | Zhang | Hao | Delegate | China Mobile Com. Corporation | CCSA | China Mobile Group Device Co. | CCSA |
| Mr. | Zhang | Kai | Delegate | Huawei Tech.(UK) Co., Ltd | ETSI | Huawei Tech.(UK) Co., Ltd | ETSI |
| Mr. | Zhu | Lei | Delegate | Huawei Tech.(UK) Co., Ltd | ETSI | Huawei Telecommunication India | TSDSI |
| Mr. | Zhu | Weihong | Delegate | ZTE Corporation | ETSI | ZTE Wistron Telecom AB | ETSI |
| Miss | Zou | Lan | Delegate | Huawei Tech.(UK) Co., Ltd | ETSI | Huawei Tech.(UK) Co., Ltd | ETSI |

## Annex I: List of future meetings

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Title | Start date | End date (OP) | Town | Country | Reference |
| SA5#123 | 2019-01-21 | 2019-01-25 | Montreal | CA | S5-123 |
| SA5#124 | 2019-02-25 | 2019-03-01 | Taipei | TW | S5-124 |
| SA5#125 | 2019-04-08 | 2019-04-12 | NewPort Beach | US | S5-125 |
| SA5#126 | 2019-05-13 | 2019-05-17 | Sophia Antipolis | FR | S5-126 |
| SA5-Ad Hoc Possibility TBC | 2019-06-24 | 2019-06-28 | Sapporo | JP | S5-ah-40151 |
| SA5#127 | 2019-08-19 | 2019-08-23 | Bruges | BE | S5-127 |
| SA5-Ad Hoc TBC | 2019-10-21 | 2019-10-25 | TBD |  | S5-ah-40152 |
| SA5-OAM Ad Hoc | 2019-10-21 | 2019-10-25 | Sophia Antipolis | FR | S5-ah-34467 |
| SA5#128 | 2019-11-18 | 2019-11-22 | China | CN | S5-128 |