**3GPP TSG-RAN WG3 Meeting #112-e *R3-212808***

**E-meeting, 17-28 May 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.423** | **CR** | **0622** | **rev** | **1** | **Current version:** | **16.5.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Expected UE Activity Behaviour | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, Lenovo, Motorola Mobility, Qualcomm Incorporated, ZTE | | | | | | | | | |
| ***Source to TSG:*** | RAN3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_newRAT-Core, TEI16 | | | | |  | ***Date:*** | | | 2021-05-01 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In the reply LS from SA2 S2-2101578, it is described that:   * SA2 would like to clarify that the correct interpretation of the description in section 5.4.6.2 of TS 23.501 is:   **Interpretation 1**: Both the UE level and PDU session level “Expected UE Activity Behaviour” are provided to the NG-RAN, then the NG-RAN performs the aggregation.   * In summary, except from “Expected UE Moving Trajectory”, “Expected Time and Day of Week in Trajectory”, "Stationary Indication" and "Battery Indication" in Table 4.15.6.3-1 can be used to derive PDU session level “Expected UE Activity Behaviour” parameter.   However, in RAN3 specifications, only UE level "Expected UE activity behaviour" is present. The PDU Session level "Expected UE activity behaviour" is missing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduction of PDU Session level "Expected UE activity behaviour" in the S-NODE MODIFICATION REQUEST message.  Impact analysis:  Impact assessment towards the previous version of the specification (same release):   * This CR has impact from functional point of view. * The impact can be considered isolated on PDU Session Level ”Expected UE activity behaviour”. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | RAN3 spec is not aligned with SA2 and PDU Session level "Expected UE activity behaviour" will not be supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.3.3, 9.1.2.5, 9.2.3.82, 9.3.4, 9.3.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS38.413 CR0431 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev0: R3-212151  Rev1: R3-212808  Revert the changes.  Include the PDU session level “Expected UE Activity Behavior” in the S-NODE MODIFICATION REQUEST message | | | | | | | | |

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| **Change Begins** |

### 8.3.3 M-NG-RAN node initiated S-NG-RAN node Modification Preparation

#### 8.3.3.1 General

This procedure is used to enable an M-NG-RAN node to request an S-NG-RAN node to either modify the UE context at the S-NG-RAN node or to query the current SCG configuration for supporting delta signalling in M-NG-RAN node initiated S-NG-RAN node change, or to provide the S-RLF-related information to the S-NG-RAN node.

The procedure uses UE-associated signalling.

#### 8.3.3.2 Successful Operation



Figure 8.3.3.2-1: M-NG-RAN node initiated S-NG-RAN node Modification Preparation, successful operation

**<Unchanged Text Omitted>**

For each QoS flow which has been successfully added or modified in the S-NG-RAN node, if the *QoS Monitoring Request* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE or the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-RAN node shall store this information, and, if supported, perform delay measurement and QoS monitoring as specified in TS 23.501 [7]. If the *QoS Monitoring Reporting Frequency* IE was included in the *QoS Flow Level QoS Parameters* IE contained in the *PDU Session Resource Setup Info – SN terminated* IE or the *PDU Session Resource Modification Info – SN terminated* IE, the S-NG-RAN node shall store this information, and, if supported, use it for RAN part delay reporting. In case such a QoS flow is included in the *DRBs To Be Setup List* IE or the *DRBs To Be Modified List* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE or the *PDU Session Resource Modification Response Info – SN terminated* IE, the M-NG-RAN node shall, if supported, use it to configure lower layers for the purpose of delay measurement and QoS monitoring. If the *QoS Monitoring Reporting Frequency* IE is included in the *DRBs To Be Setup List* IE or the *DRBs To Be Modified List* IE within the *PDU Session Resource Setup Response Info – SN terminated* IE or the *PDU Session Resource Modification Response Info – SN terminated* IE, the M-NG-RAN node shall, if supported, use it for RAN part delay reporting.

If the *PDU Session Expected UE Activity Behaviour* IE is included in the *PDU Session Resources To Be Added List* IE or the *PDU Session Resources To Be Modified List* IE of the S-NODE MODIFICATION REQUEST message, the S-NG-RAN node shall, if supported, use it for the concerned PDU session as specified in TS 23.501 [7].

If the M-NG-RAN node receives in the S-NODE MODIFICATION REQUEST ACKNOWLEDGE message within the *PDU Session Resource Modification Response Info –MN terminated* IE a DRBs Admitted to be Setup or Modified Item with DRB ID(s) that it has not requested to be setup or modified, the M-NG-RAN node shall ignore the contained information.

**<Unchanged Text Omitted>**

#### 9.1.2.5 S-NODE MODIFICATION REQUEST

This message is sent by the M-NG-RAN node to the S-NG-RAN node to either request the preparation to modify S-NG-RAN node resources for a specific UE, or to query for the current SCG configuration, or to provide the S-RLF-related information to the S-NG-RAN node.

Direction: M-NG-RAN node → S-NG-RAN node.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.3.1 |  | | YES | reject |
| M-NG-RAN node UE XnAP ID | M |  | NG-RAN node UE XnAP ID 9.2.3.16 | Allocated at the M-NG-RAN node | | YES | reject |
| S-NG-RAN node UE XnAP ID | M |  | NG-RAN node UE XnAP ID  9.2.3.16 | Allocated at the S-NG-RAN node | | YES | reject |
| Cause | M |  | 9.2.3.2 |  | | YES | ignore |
| PDCP Change Indication | O |  | 9.2.3.74 |  | | YES | ignore |
| Selected PLMN | O |  | PLMN Identity  9.2.2.4 | The selected PLMN of the SCG in the S-NG-RAN node. | | YES | ignore |
| Mobility Restriction List | O |  | 9.2.3.53 |  | | YES | ignore |
| SCG Configuration Query | O |  | 9.2.3.27 |  | | YES | ignore |
| **UE Context Information** |  | *0..1* |  |  | | YES | reject |
| >UE Security Capabilities | O |  | 9.2.3.49 |  | | – |  |
| >S-NG-RAN node Security Key | O |  | 9.2.3.51 |  | | – |  |
| >S-NG-RAN node UE Aggregate Maximum Bit Rate | O |  | UE Aggregate Maximum Bit Rate  9.2.3.17 |  | | – |  |
| >Index to RAT/Frequency Selection Priority | O |  | 9.2.3.23 |  | | – |  |
| >Lower Layer presence status change | O |  | 9.2.3.60 |  | | – |  |
| **>PDU Session Resources To Be Added List** |  | *0..1* |  |  | | – |  |
| **>>PDU Session Resources To Be Added Item** |  | *1 .. <maxnoofPDUSessions>* |  | NOTE: If neither the  *PDU Session Resource Setup Info – SN terminated* IE  nor the  *PDU Session Resource Setup Info – MN terminated* IE is present in a *PDU Session Resources To Be Added Item* IE, abnormal conditions as specified in clause 8.3.3.4 apply. | | – |  |
| >>>PDU Session ID | M |  | 9.2.3.18 |  | | – |  |
| >>>S-NSSAI | M |  | 9.2.3.21 |  | | – |  |
| >>>S-NG-RAN node PDU Session Aggregate Maximum Bit Rate | O |  | PDU Session Aggregate Maximum Bit Rate  9.2.3.69 |  | | – |  |
| >>>PDU Session Resource Setup Info – SN terminated | O |  | 9.2.1.5 |  | | – |  |
| >>>PDU Session Resource Setup Info – MN terminated | O |  | 9.2.1.7 |  | | – |  |
| >>PDU Session Expected UE Activity Behaviour | O |  | Expected UE Behaviour  9.2.3.82 | Expected UE Activity Behaviour for the PDU Session. | | YES | ignore |
| **>PDU Session Resources To Be Modified List** |  | *0..1* |  |  | | – |  |
| **>>PDU Session Resources To Be Modified Item** |  | *1 .. <maxnoofPDUSessions>* |  | NOTE: If neither the  *PDU Session Resource Modification Info – SN terminated* IE  nor the  *PDU Session Resource Modification Info – MN terminated* IE is present in a *PDU Session Resources To Be Modified Item* IE, abnormal conditions as specified in clause 8.3.3.4 apply. | | – |  |
| >>>PDU Session ID | M |  | 9.2.3.18 |  | | – |  |
| >>>S-NG-RAN node PDU Session Aggregate Maximum Bit Rate | O |  | PDU Session Aggregate Maximum Bit Rate  9.2.3.69 |  | | – |  |
| >>>PDU Session Resource Modification Info – SN terminated | O |  | 9.2.1.9 |  | | – |  |
| >>>PDU Session Resource Modification Info – MN terminated | O |  | 9.2.1.11 |  | | – |  |
| >>>S-NSSAI | O |  | 9.2.3.21 |  | | YES | reject |
| >>PDU Session Expected UE Activity Behaviour | O |  | Expected UE Behaviour  9.2.3.82 | Expected UE Activity Behaviour for the PDU Session. | | YES | ignore |
| >PDU Session Resources To Be Released List | O |  | PDU session List with Cause  9.2.1.26 |  | | – |  |
| M-NG-RAN node to S-NG-RAN node Container | O |  | OCTET STRING | Includes the *CG-ConfigInfo* message as defined in subclause 11.2.2. of TS 38.331 [10]. | | YES | ignore |
| Requested Split SRBs | O |  | ENUMERATED (srb1, srb2, srb1&2, ...) | Indicates that resources for Split SRBs are requested. | | YES | ignore |
| Requested Split SRBs release | O |  | ENUMERATED (srb1, srb2, srb1&2, ...) | Indicates that resources for Split SRBs are requested to be released. | | YES | ignore |
| Desired Activity Notification Level | O |  | 9.2.3.77 | |  | YES | ignore |
| Additional DRB IDs | O |  | DRB List  9.2.1.29 | | Indicates additional list of DRB IDs that the S-NG-RAN node may use for SN-terminated bearers. | YES | reject |
| S-NG-RAN node Maximum Integrity Protected Data Rate Uplink | O |  | Bit Rate  9.2.3.4 | | The S-NG-RAN node Maximum Integrity Protected Data Rate Uplink is a portion of the UE’s Maximum Integrity Protected Data Rate in the Uplink, which is enforced by the S-NG-RAN node for the UE’s SN terminated PDU sessions. If the *S-NG-RAN node Maximum Integrity Protected Data Rate Downlink* IE is not present, this IE applies to both UL and DL. | YES | reject |
| S-NG-RAN node Maximum Integrity Protected Data Rate Downlink | O |  | Bit Rate  9.2.3.4 | | The S-NG-RAN node Maximum Integrity Protected Data Rate Downlink is a portion of the UE’s Maximum Integrity Protected Data Rate in the Downlink, which is enforced by the S-NG-RAN node for the UE’s SN terminated PDU sessions. | YES | reject |
| Location Information at S-NODE reporting | O |  | ENUMERATED (pscell, ...) | | Indicates that the user’s Location Information at S-NODE is to be provided. | YES | ignore |
| MR-DC Resource Coordination Information | O |  | 9.2.2.33 | | Information used to coordinate resource utilisation between M-NG-RAN node and S-NG-RAN node. | YES | ignore |
| PCell ID | O |  | Global NG-RAN Cell Identity  9.2.2.27 | |  | YES | reject |
| NE-DC TDM Pattern | O |  | 9.2.2.38 | |  | YES | ignore |
| Requested Fast MCG recovery via SRB3 | O |  | ENUMERATED (true, ...) | | Indicates that the resources for fast MCG recovery via SRB3 are requested. | YES | ignore |
| Requested Fast MCG recovery via SRB3 Release | O |  | ENUMERATED (true, ...) | | Indicates that resources for fast MCG recovery via SRB3 are requested to be released. | YES | ignore |
| SN triggered | O |  | ENUMERATED (TRUE ...) | |  | YES | ignore |

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| Range bound | Explanation |
| maxnoofPDUSessions | Maximum no. of PDU sessions. Value is 256 |

**<Unchanged Text Omitted>**

#### 9.2.3.82 Expected UE Activity Behaviour

This IE indicates information about the expected "UE activity behaviour" of the UE or the PDU session as defined in TS 23.501 [7].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Expected Activity Period | O |  | INTEGER (1..30|40|50|60|80| 100|120|150|180| 181, ...) | If set to "181" the expected activity time is longer than 180 seconds.  The remaining values indicate the expected activity time in [seconds]. |
| Expected Idle Period | O |  | INTEGER (1..30|40|50|60|80| 100|120|150|180| 181, ...) | If set to "181" the expected idle time is longer than 180 seconds.  The remaining values indicate the expected idle time in [seconds]. |
| Source of UE Activity Behaviour Information | O |  | ENUMERATED (subscription information, statistics, ...) | If "subscription information" is indicated, the information contained in the *Expected Activity Period* IE and the *Expected Idle Period* IE, if present, is derived from subscription information.  If "statistics" is indicated, the information contained in the *Expected Activity Period* IE and the *Expected Idle Period* IE, if present, is derived from statistical information. |

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| **Next Change** |

### 9.3.4 PDU Definitions

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-- PDU definitions for XnAP.

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-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

XnAP-PDU-Contents {

itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

ngran-access (22) modules (3) xnap (2) version1 (1) xnap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- IE parameter types from other modules.

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-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

IMPORTS

ActivationIDforCellActivation,

AMF-Region-Information,

AMF-UE-NGAP-ID,

AS-SecurityInformation,

AssistanceDataForRANPaging,

BitRate,

Cause,

CellAndCapacityAssistanceInfo-EUTRA,

CellAndCapacityAssistanceInfo-NR,

CellAssistanceInfo-EUTRA,

CellAssistanceInfo-NR,

CHOinformation-Req,

CHOinformation-Ack,

CHO-MRDC-Indicator,

CPTransportLayerInformation,

TNLA-To-Add-List,

TNLA-To-Update-List,

TNLA-To-Remove-List,

TNLA-Setup-List,

TNLA-Failed-To-Setup-List,

CriticalityDiagnostics,

XnUAddressInfoperPDUSession-List,

DAPSResponseInfo-List,

DataTrafficResourceIndication,

DeliveryStatus,

DesiredActNotificationLevel,

DRB-ID,

DRB-List,

DRB-Number,

DRBsSubjectToDLDiscarding-List,

DRBsSubjectToEarlyStatusTransfer-List,

DRBsSubjectToStatusTransfer-List,

DRBToQoSFlowMapping-List,

E-UTRA-CGI,

ExpectedUEActivityBehaviour,

ExpectedUEBehaviour,

ExtendedUEIdentityIndexValue,

FiveGCMobilityRestrictionListContainer,

GlobalCell-ID,

GlobalNG-RANNode-ID,

GlobalNG-RANCell-ID,

GUAMI,

**<Unchanged Text Omitted>**

id-IABNodeIndication,

id-UERadioCapabilityID,

id-PDUSessionExpectedUEActivityBehaviour,

maxnoofCellsinNG-RANnode,

maxnoofDRBs,

maxnoofPDUSessions,

maxnoofQoSFlows

FROM XnAP-Constants;

**<Unchanged Text Omitted>**

PDUSessionsToBeAdded-SNModRequest-List ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionsToBeAdded-SNModRequest-Item

PDUSessionsToBeAdded-SNModRequest-Item ::= SEQUENCE {

pduSessionId PDUSession-ID,

s-NSSAI S-NSSAI,

sN-PDUSessionAMBR PDUSessionAggregateMaximumBitRate OPTIONAL,

sn-terminated PDUSessionResourceSetupInfo-SNterminated OPTIONAL,

mn-terminated PDUSessionResourceSetupInfo-MNterminated OPTIONAL,

-- NOTE: If neither the *PDU Session Resource Setup Info – SN terminated* IE

-- nor the *PDU Session Resource Setup Info – MN terminated* IE is present,

-- abnormal conditions as specified in clause 8.3.3.4 apply.

iE-Extension ProtocolExtensionContainer { {PDUSessionsToBeAdded-SNModRequest-Item-ExtIEs} } OPTIONAL,

...

}

PDUSessionsToBeAdded-SNModRequest-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

{ID id-PDUSessionExpectedUEActivityBehaviour CRITICALITY ignore EXTENSION ExpectedUEActivityBehaviour PRESENCE optional},

...

}

PDUSessionsToBeModified-SNModRequest-List ::= SEQUENCE (SIZE(1..maxnoofPDUSessions)) OF PDUSessionsToBeModified-SNModRequest-Item

PDUSessionsToBeModified-SNModRequest-Item ::= SEQUENCE {

pduSessionId PDUSession-ID,

sN-PDUSessionAMBR PDUSessionAggregateMaximumBitRate OPTIONAL,

sn-terminated PDUSessionResourceModificationInfo-SNterminated OPTIONAL,

mn-terminated PDUSessionResourceModificationInfo-MNterminated OPTIONAL,

-- NOTE: If neither the *PDU Session Resource Modification Info – SN terminated* IE

-- nor the *PDU Session Resource Modification Info – MN terminated* IE is present,

-- abnormal conditions as specified in clause 8.3.3.4 apply.

iE-Extension ProtocolExtensionContainer { {PDUSessionsToBeModified-SNModRequest-Item-ExtIEs} } OPTIONAL,

...

}

PDUSessionsToBeModified-SNModRequest-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

{ID id-S-NSSAI CRITICALITY reject EXTENSION S-NSSAI PRESENCE optional}|

{ID id-PDUSessionExpectedUEActivityBehaviour CRITICALITY ignore EXTENSION ExpectedUEActivityBehaviour PRESENCE optional},

...

}

### 9.3.7 Constant definitions

-- ASN1START

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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-- Constant definitions

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-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

**<Unchanged Text Omitted>**

id-QoSMonitoringDisabled ProtocolIE-ID ::= 243

id-ExtendedUEIdentityIndexValue ProtocolIE-ID ::= 244

id-PDUSessionExpectedUEActivityBehaviour ProtocolIE-ID ::= yyy

END

-- ASN1STOP

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| **Change Ends** |