**3GPP TSG-RAN WG3 Meeting #113-e *R3-214343***

**E-meeting, 16-26 Aug 2021**

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| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **38.463** | **CR** | **0614** | **rev** | **1** | **Current version:** | **16.6.0** |  |
|  |
| *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 |  |

|  |
| --- |
|  |
| ***Title:***  | Restricting the number of DL EHC contexts  |
|  |  |
| ***Source to WG:*** | Huawei, China Unicom, ZTE |
| ***Source to TSG:*** | RAN3 |
|  |  |
| ***Work item code:*** | NR\_IIoT-Core |  | ***Date:*** | 2021-08-16 |
|  |  |  |  |  |
| ***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 canbe 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:*** | With current EHC parameters transferred via E1, CU-UP has no knowledge of UE’s capability. There is a risk that CU-UP establishes too many DL EHC contexts such that the total number of established EHC contexts exceeds *maxNumberEHC-Contexts.*The number of EHC contexts for DL should be less than or equal to *maxNumberEHC-Contexts* - *maxCID\_EHC\_UL* across all DRBs.  |
|  |  |
| ***Summary of change:*** | To add a *maxCID-EHC-DL* IE which is configured per-DRB. The *maxCID-EHC-DL* IE is included within the *EHC Downlink* IE and indicates the maximum number of EHC contexts that can be established in DL for the corresponding DRB. Since CU-CP has the knowledge of both *maxCID\_EHC\_UL* and *maxNumberEHC-Contexts,* it can distribute the overall available contexts space between different DRBs that require it, as long as the distributed *maxCID-EHC-DL* satisfies:  Summation of *maxCID-EHC-DL* and *maxCID-EHC-UL* across all DRBs is less than or equal to *maxNumberEHC-Contexts.*To add procedural texts so that:* For each requested DRB, if the *EHC Downlink* IE is included within the *EHC Parameters* IE in the *PDCP Configuration* IE, the gNB-CU-CP shall include the *maxCID-EHC-DL* IE within the *EHC Downlink* IE in the *PDCP Configuration* IE in the BEARER CONTEXT SETUP REQUEST message.
* For each requested DRB, if the *EHC Downlink* IE is included within the *EHC Parameters* IE in the *PDCP Configuration* IE, the gNB-CU-CP shall include the *maxCID-EHC-DL* IE within the *EHC Downlink* IE in the *PDCP Configuration* IE in the BEARER CONTEXT MODIFICATION REQUEST message.

Impact Analysis:Impact assessment towards the previous version of the specification (same release): This CR has isolated impact with the previous version of the specification (same release) because the change only affects the inclusion of *EHC Downlink* IE. |
|  |  |
| ***Consequences if not approved:*** | There is a risk that the total number of established EHC contexts exceeds UE’s capability *maxNumberEHC-Contexts* |
|  |  |
| ***Clauses affected:*** | 8.3.1,8.3.2,9.3.1.90, ASN.1 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Rev 1: Capture the agreements, change the CR title, add ZTE as co-signer |

**<<<<<<<<<<<<<<<<<<<<<<<<<<<<< Start of Changes>>>>>>>>>>>>>>>>>>>>>>>>>>**

## 8.3 Bearer Context Management procedures

### 8.3.1 Bearer Context Setup

#### 8.3.1.1 General

The purpose of the Bearer Context Setup procedure is to allow the gNB-CU-CP to establish a bearer context in the gNB-CU-UP. The procedure uses UE-associated signalling.

#### 8.3.1.2 Successful Operation



Figure 8.3.1.2-1: Bearer Context Setup procedure: Successful Operation.

<Unchanged Text Omitted>

If the BEARER CONTEXT SETUP REQUEST message contains the *NPN Context Information* IE the gNB-CU-UP shall, if supported, take it into account when allocating UP resources for the bearer context.

For each requested DRB, if the *EHC Parameters* IE is included in the *PDCP Configuration* IE, the gNB-CU-CP shall, if supported, also include *ROHC Parameters* IE in the *PDCP Configuration* IE in the BEARER CONTEXT SETUP REQUEST message, to enable the gNB-CU-UP to perform appropriate header compression.

For each requested DRB, if the *EHC Downlink* IE is included within the *EHC Parameters* IE in the *PDCP Configuration* IE, the gNB-CU-CP shall include the *maxCID-EHC-DL* IE within the *EHC Downlink* IE in the *PDCP Configuration* IE in the BEARER CONTEXT SETUP REQUEST message.

If the *EHC parameters* IE is included in the *PDCP Configuration* IE contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP may take these parameters into account to perform appropriate header compression for the concerned DRB.

If the *DAPS Request Information* IE is included for a DRB to be setup in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall consider that the request concerns a DAPS handover for that DRB and, if admitted, act as specified in TS 38.300 [4].

If the *CHO Initiation* IE is contained in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP shall consider that the request concerns conditional handover or conditional PSCell change and act as specified in TS 38.401 [2].

If the *MCG Offered GBR QoS Flow Information* IE is contained in the *QoS Flows Information To Be Setup* IE within the *DRB To Setup List* IE in the BEARER CONTEXT SETUP REQUEST message, the gNB-CU-UP may take it into account when two cell groups are served by the gNB-CU-UP.

**<<<<<<<<<<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>>>>>>>**

8.3.2 Bearer Context Modification (gNB-CU-CP initiated)

8.3.2.1 General

The purpose of the Bearer Context Modification procedure is to allow the gNB-CU-CP to modify a bearer context in the gNB-CU-UP. The procedure uses UE-associated signalling.

8.3.2.2 Successful Operation

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**Figure 8.3.2.2-1: Bearer Context Modification procedure: Successful Operation.**

<Unchanged Text Omitted>

If the *UE DL Aggregate Maximum Bit Rate* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *UE DL Maximum Integrity Protected Data Rate* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *Bearer Context Status Change* IE is contained in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall consider the UE RRC state and act as specified in TS 38.401 [2].

If the *Data Forwarding Information Request* IE, *PDU Session Data Forwarding Information Request* IE or the *DRB Data Forwarding Information Request* IE are included in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall include the requested forwarding information in the *Data Forwarding Information Response* IE, *PDU Session Data Forwarding Information Response* IE or the *DRB Data Forwarding Information Response* IE in the BEARER CONTEXT MODIFICATION RESPONSE message.

If the *PDCP Configuration* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information, except for the *PDCP SN UL Size* IE, the *PDCP SN DL Size* IE and the *RLC mode* IE which shall be ignored.

For each requested DRB, if the *EHC Downlink* IE is included within the *EHC Parameters* IE in the *PDCP Configuration* IE, the gNB-CU-CP shall include the *maxCID-EHC-DL* IE within the *EHC Downlink* IE in the *PDCP Configuration* IE in the BEARER CONTEXT MODIFICATION REQUEST message.

If the *E-UTRAN QoS* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall update the corresponding information.

If the *PDCP SN Status Request* IE is contained in the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall act as specified in TS 38.401 [2] and include the *UL COUNT Value* IE and the *DL COUNT Value* IE in the BEARER CONTEXT MODIFICATION RESPONSE message.

If the *PDCP SN Status Information* IE is contained in the *DRB To Setup List* IE or the *DRB To Modify List* IE in the BEARER CONTEXT MODIFICATION REQUEST message, the gNB-CU-UP shall take it into account and act as specified in TS 38.401 [2].

**<<<<<<<<<<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>>>>>>>**

#### 9.3.1.90 EHC Parameters

This IE carries the EHC parameters for ethernet header compression.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| **EHC Common** | M |  |  |  | - | - |
| >EHC-CID-Length | M |  | ENUMERATED { bits7, bits15, … } | See description of ehc-CID-Length in TS 38.331 [10] | - | - |
| **EHC Downlink** | O |  |  |  | - | - |
| >drb-ContinueEHC-DL | M |  | ENUMERATED { true, … } | See description of drb-ContinueEHC-DL in TS 38.331 [10] | - | - |
| >maxCID-EHC-DL | O |  | INTEGER(1..32767, …) | Indicate the maximum number of DL EHC contexts that can be established for the DRB. The total value of maxCID-EHC-DL across all bearers for the UE should be less than or equal to the value of maxNumberEHC-Contexts parameter as indicated by the UE. | YES | ignore |
| **EHC Uplink** | O |  |  |  | - | - |
| >drb-ContinueEHC-UL | M |  | ENUMERATED { true, … } | See description of drb-ContinueEHC-UL in TS 38.331 [10] | - | - |

**<<<<<<<<<<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>>>>>>>**

9.4.5 Information Element Definitions

-- ASN1START

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

--

-- Information Element Definitions

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

E1AP-IEs {

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

ngran-access (22) modules (3) e1ap (5) version1 (1) e1ap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

 id-CommonNetworkInstance,

 id-SNSSAI,

 id-OldQoSFlowMap-ULendmarkerexpected,

 id-DRB-QoS,

 id-endpoint-IP-Address-and-Port,

 id-NetworkInstance,

 id-QoSFlowMappingIndication,

 id-TNLAssociationTransportLayerAddressgNBCUUP,

 id-Cause,

 id-QoSMonitoringRequest,

 id-QosMonitoringReportingFrequency,

 id-PDCP-StatusReportIndication,

 id-RedundantCommonNetworkInstance,

 id-redundant-nG-UL-UP-TNL-Information,

 id-redundant-nG-DL-UP-TNL-Information,

 id-RedundantQosFlowIndicator,

 id-TSCTrafficCharacteristics,

 id-ExtendedPacketDelayBudget,

 id-CNPacketDelayBudgetDownlink,

 id-CNPacketDelayBudgetUplink,

 id-AdditionalPDCPduplicationInformation,

 id-RedundantPDUSessionInformation,

 id-RedundantPDUSessionInformation-used,

 id-QoS-Mapping-Information,

 id-MDTConfiguration,

 id-TraceCollectionEntityURI,

 id-EHC-Parameters,

 id-DAPSRequestInfo,

 id-EarlyForwardingCOUNTReq,

 id-EarlyForwardingCOUNTInfo,

 id-AlternativeQoSParaSetList,

 id-MCG-OfferedGBRQoSFlowInfo,

 id-Number-of-tunnels,

 id-DataForwardingtoE-UTRANInformationList,

 id-MaxCIDEHCDL,

 maxnoofQoSParaSets,

 maxnoofErrors,

 maxnoofSliceItems,

 maxnoofEUTRANQOSParameters,

 maxnoofNGRANQOSParameters,

 maxnoofDRBs,

 maxnoofPDUSessionResource,

 maxnoofQoSFlows,

 maxnoofUPParameters,

 maxnoofCellGroups,

 maxnooftimeperiods,

 maxnoofNRCGI,

 maxnoofTLAs,

 maxnoofGTPTLAs,

 maxnoofSPLMNs,

 maxnoofMDTPLMNs,

 maxnoofExtSliceItems,

 maxnoofDataForwardingTunneltoE-UTRAN

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EHC-Common-Parameters ::= SEQUENCE {

 ehc-CID-Length ENUMERATED { bits7, bits15, ...},

 iE-Extensions ProtocolExtensionContainer { { EHC-Common-Parameters-ExtIEs } } OPTIONAL

}

EHC-Common-Parameters-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

EHC-Downlink-Parameters ::= SEQUENCE {

 drb-ContinueEHC-DL ENUMERATED { true, ...},

 iE-Extensions ProtocolExtensionContainer { { EHC-Downlink-Parameters-ExtIEs } } OPTIONAL

}

EHC-Downlink-Parameters-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

{ID id-MaxCIDEHCDL CRITICALITY ignore EXTENSION MaxCIDEHCDL PRESENCE optional },

 ...

}

EHC-Uplink-Parameters ::= SEQUENCE {

 drb-ContinueEHC-UL ENUMERATED { true, ...},

 iE-Extensions ProtocolExtensionContainer { { EHC-Uplink-Parameters-ExtIEs } } OPTIONAL

}

EHC-Uplink-Parameters-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

EHC-Parameters ::= SEQUENCE {

 ehc-Common EHC-Common-Parameters,

 ehc-Downlink EHC-Downlink-Parameters OPTIONAL,

 ehc-Uplink EHC-Uplink-Parameters OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { EHC-Parameters-ExtIEs } } OPTIONAL

}

EHC-Parameters-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

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-- M

MaxDataBurstVolume ::= INTEGER (0..4095, ..., 4096.. 2000000)

MaximumIPdatarate ::= SEQUENCE {

 maxIPrate MaxIPrate,

 iE-Extensions ProtocolExtensionContainer { {MaximumIPdatarate-ExtIEs} } OPTIONAL,

 ...

}

MaximumIPdatarate-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

MaxIPrate ::= ENUMERATED {

 bitrate64kbs,

 max-UErate,

 ...

}

MaxPacketLossRate ::= INTEGER (0..1000, ...)

MaxCIDEHCDL ::= INTEGER (1,..32767, ...)

MRDC-Data-Usage-Report-Item ::= SEQUENCE {

 startTimeStamp OCTET STRING (SIZE(4)),

 endTimeStamp OCTET STRING (SIZE(4)),

 usageCountUL INTEGER (0..18446744073709551615),

 usageCountDL INTEGER (0..18446744073709551615),

 iE-Extensions ProtocolExtensionContainer { { MRDC-Data-Usage-Report-Item-ExtIEs} } OPTIONAL,

...

}

MRDC-Data-Usage-Report-Item-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

MRDC-Usage-Information ::= SEQUENCE {

 data-Usage-per-PDU-Session-Report Data-Usage-per-PDU-Session-Report OPTIONAL,

 data-Usage-per-QoS-Flow-List Data-Usage-per-QoS-Flow-List OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { MRDC-Usage-Information-ExtIEs} } OPTIONAL,

...

}

MRDC-Usage-Information-ExtIEs E1AP-PROTOCOL-EXTENSION ::= {

 ...

}

**<<<<<<<<<<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>>>>>>>**

id-TraceCollectionEntityURI ProtocolIE-ID ::= 116

id-URIaddress ProtocolIE-ID ::= 117

id-EHC-Parameters ProtocolIE-ID ::= 118

id-DRBs-Subject-To-Early-Forwarding-List ProtocolIE-ID ::= 119

id-DAPSRequestInfo ProtocolIE-ID ::= 120

id-CHOInitiation ProtocolIE-ID ::= 121

id-EarlyForwardingCOUNTReq ProtocolIE-ID ::= 122

id-EarlyForwardingCOUNTInfo ProtocolIE-ID ::= 123

id-AlternativeQoSParaSetList ProtocolIE-ID ::= 124

 id-ExtendedSliceSupportList ProtocolIE-ID ::= 125

id-MCG-OfferedGBRQoSFlowInfo ProtocolIE-ID ::= 126

id-Number-of-tunnels ProtocolIE-ID ::= 127

id-DRB-Measurement-Results-Information-List ProtocolIE-ID ::= 128

id-Extended-GNB-CU-CP-Name ProtocolIE-ID ::= 129

id-Extended-GNB-CU-UP-Name ProtocolIE-ID ::= 130

id-DataForwardingtoE-UTRANInformationList ProtocolIE-ID ::= 131

id-QosMonitoringReportingFrequency ProtocolIE-ID ::= 132

id-QoSMonitoringDisabled ProtocolIE-ID ::= 133

id-AdditionalHandoverInfo ProtocolIE-ID ::= 134

id-Extended-NR-CGI-Support-List ProtocolIE-ID ::= 135

id-MaxCIDEHCDL ProtocolIE-ID ::= XXX

**<<<<<<<<<<<<<<<<<<<<<<<<<<<<< End of Changes>>>>>>>>>>>>>>>>>>>>>>>>>>**