3GPP TSG-RAN WG3 Meeting #125 R3-244649

Maastricht, NL, 19th – 23rd Aug 2024

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.423** | **CR** | **1322** | **rev** | **1** | **Current version:** | **18.2.0** |  |
|  | | | | | | | | |
| *For* [***HELP***](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:*** | Introduction of barring exemption for (e)RedCap and 2RX XR UEs [EM\_Call\_Exemption] | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
| ***Source to WG:*** | ZTE Corporation, China Telecom, China Unicom, Nokia, Qualcomm Incorporated, Ericson, Huawei, CMCC, CATT | | | | | | | | | | | | | | | | |
| ***Source to TSG:*** | R3 | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
| ***Work item code:*** | TEI18 | | | | | | | | |  | ***Date:*** | | | 2024-08-22 | | | |
|  |  | | | | |  | | | | |  | | |  | | | |
| ***Category:*** | **B** |  | | | | | | | | | ***Release:*** | | | Rel-18 | | | |
|  | *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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | | | | |
|  |  | | | | | | | | | | | | | | | | |
| ***Reason for change:*** | | In the RAN2 #125bis meeting, RAN2 sent an LS R3-243012 to RAN3, to introduce a mechanism to allow RedCap UEs to have access to the cell to make an emergency call or receive emergency information broadcast.  However, in the RAN2 #126 meeting, RAN2 re-discussed this mechanism and decided to use a common solution for (e)RedCap and 2RX XR UEs.  Agreements  1 NES (i.e. ingoring MIB barring) will not be considered in our common solution discussion. FFS if anything specific for NES will need to be done. If anything needs to be done, it would not be part of the common solution.  2 For Rel-18, we introduce 1 bit that enables EM call for RedCap, eRedCap, and 2Rx XR. One RRC Rel-18 with magic sentence that it is early implementable in Rel-17. A CR for 38.304 doesn’t need to have the magic sentence.  3 This replaces the previous agreement and we will notify RAN3 verbally via delegates  Based on the above RAN2 agreement, the endorsed CRs included in the LS R3-243012 are withdrawn, and a set of new RAN2 CRs are agreed in R2-2405956, R2-2405957 and R2-2405958.  So that, RAN3 shall enhance TS38.423 and TS38.473 accordingly.  Rev1：Add co-source companies, Remove “for (e)Redcap and 2RX XR UEs” in the text procedure | | | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | | | |
| ***Summary of change:*** | | Add a new IE in the in the IE”Served Cell Information NR” for (e)RedCap and 2RX XR UEs to have access to the cell to make an emergency call or receive emergency information broadcast.  **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).  This CR has impact on the functional point of view, the impact can be considered isolated because it only impacts the barring exemption for (e)RedCap and 2RX XR UEs for emergency calls. | | | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | | | |
| ***Consequences if not approved:*** | | The (e)RedCap and 2RX XR UEs cannot make emergency calls in a cell where access for these UE are enabled but these UEs with 1Rx or 2Rx branches are barred. | | | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | | | |
| ***Clauses affected:*** | | 9.2.2.11 | | | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | | | |
|  | | **Y** | | **N** |  | | | | | | |  | | | | | |
| ***Other specs*** | | **X** | |  | Other core specifications | | | | | | | TS 38.331 CR 4570  TS 38.304 CR 0380  TS 38.473 CR 1415  TS 38.470 CR 0153 | | | | | |
| ***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: R3-244053 | | | | | | | | | | | | | | | |

<<<<<<<<<<<<<<<<<<<< Start of the Changes >>>>>>>>>>>>>>>>>>>>

### 8.4.1 Xn Setup

#### 8.4.1.1 General

The purpose of the Xn Setup procedure is to exchange application level configuration data needed for two NG-RAN nodes to interoperate correctly over the Xn-C interface.

NOTE 1: If Xn-C signalling transport is shared among multiple Xn-C interface instances, one Xn Setup procedure is issued per Xn-C interface instance to be setup, i.e. several Xn Setup procedures may be issued via the same TNL association after that TNL association has become operational.

NOTE 2: Exchange of application level configuration data also applies between two NG-RAN nodes in case the SN (i.e. the gNB) does not broadcast system information other than for radio frame timing and SFN, as specified in the TS 37.340 [8]. How to use this information when this option is used is not explicitly specified.

The procedure uses non UE-associated signalling.

#### 8.4.1.2 Successful Operation



Figure 8.4.1.2: Xn Setup, successful operation

The NG-RAN node1 initiates the procedure by sending the XN SETUP REQUEST message to the candidate NG-RAN node2. The candidate NG-RAN node2 replies with the XN SETUP RESPONSE message.

The *AMF Region Information* IE in the XN SETUP REQUEST message shall contain a complete list of Global AMF Region IDs to which the NG-RAN node1 belongs. The *AMF Region Information* IE in the XN SETUP RESPONSE message shall contain a complete list of Global AMF Region IDs to which the NG-RAN node2 belongs.

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If the *eRedCap Broadcast Information* IE is included in the *Served Cell Information NR* IE in the XN SETUP REQUEST message or the XN SETUP RESPONSE message, the receiving NG-RAN node may use this information to determine a suitable target in case of subsequent outgoing mobility involving eRedCap UEs.

If the *Mobile IAB Cell* IE is included in the *Served Cell Information NR* IE in the XN SETUP REQUEST message or in the XN SETUP RESPONSE message, the receiving NG-RAN node may use it accordingly.

If the *XR Broadcast Information* IE is included in the *Served Cell Information NR* IE in the XN SETUP REQUEST message or the XN SETUP RESPONSE message, the receiving NG-RAN node shall, if supported, consider the indicated cell does not allow 2Rx XR UEs in case of subsequent outgoing mobility involving XR UEs.

If the *Barring Exemption for Emergency Call Information* IE is included in the *Served Cell Information NR* IE in the XN SETUP REQUEST message or the XN SETUP RESPONSE message, the receiving NG-RAN node may use this information to determine a suitable target in case of subsequent outgoing mobility during emergency call.

<<<<<<<<<<<<<<<<<<<< Next of the Changes >>>>>>>>>>>>>>>>>>>>

### 8.4.2 NG-RAN node Configuration Update

#### 8.4.2.1 General

The purpose of the NG-RAN node Configuration Update procedure is to update application level configuration data needed for two NG-RAN nodes to interoperate correctly over the Xn-C interface.

NOTE: Update of application level configuration data also applies between two NG-RAN nodes in case the SN (i.e. the gNB) does not broadcast system information other than for radio frame timing and SFN, as specified in the TS 37.340 [8]. How to use this information when this option is used is not explicitly specified.

The procedure uses non UE-associated signalling.

#### 8.4.2.2 Successful Operation



Figure 8.4.2.2-1: NG-RAN node Configuration Update, successful operation

The NG-RAN node1 initiates the procedure by sending the NG-RAN NODE CONFIGURATION UPDATE message to a peer NG-RAN node2.

If Supplementary Uplink is configured at the NG-RAN node1, the NG-RAN node1 shall include in the NG-RAN NODE CONFIGURATION UPDATE message the *SUL Information* IE and the *Supported SUL band List* IE for each cell added in the *Served NR Cells To Add* IE and in the *Served NR Cells To Modify* IE.

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**Update of Served Cell Information NR:**

- If *Served Cells NR To Add* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node2 shall add cell information according to the information in the *Served Cell Information* *NR* IE.

- If *Served Cells NR To Modify* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node2 shall modify information of cell indicated by *Old NR-CGI* IE according to the information in the *Served Cell Information* *NR* IE.

- When either served cell information or neighbour information of an existing served cell in NG-RAN node1 need to be updated, the whole list of neighbouring cells, if any, shall be contained in the *Neighbour Information NR* IE. The NG-RAN node2 shall overwrite the served cell information and the whole list of neighbour cell information for the affected served cell.

- If the *Deactivation Indication* IE set to "deactivated" is contained in the *Served Cells NR To Modify* IE, it indicates that the concerned cell was switched off to lower energy consumption.

- If *Served Cells NR To Delete* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, NG-RAN node2 shall delete information of cell indicated by *Old NR-CGI* IE.

- If the *Intended TDD DL-UL Configuration NR* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 should take this information into account for cross-link interference management and/or NR-DC power coordination with the NG-RAN node1. The NG-RAN node2 shall consider the received *Intended TDD DL-UL Configuration NR* IE content valid until reception of a new update of the IE for the same NG-RAN node2.

- If the *NR Cell PRACH Configuration* IE is contained in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE may use this information for RACH optimisation.

- If the *SFN Offset* IE is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE shall, if supported, use this information to update the SFN0 time offset of the reported cell.

- If the *Supported MBS FSA ID List* IE is contained in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node receiving the IE may use it according to TS 38.300 [9].

- If the *RedCap Broadcast Information* IE is contained in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 may use this information to determine a suitable target in case of subsequent outgoing mobility involving RedCap UEs.

- If the *eRedCap Broadcast Information* IE is contained in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 may use this information to determine a suitable target in case of subsequent outgoing mobility involving eRedCap UEs.

- If the *Mobile IAB Cell* IE is included in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message or the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the receiving NG-RAN node may use it accordingly.

- If the *XR Broadcast Information* IE is contained in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 shall, if supported, consider the indicated cell does not allow 2Rx XR UEs in case of subsequent outgoing mobility involving XR UEs.

- If the *Barring Exemption for Emergency Call Information* IE is included in the *Served Cell Information NR* IE in the NG-RAN NODE CONFIGURATION UPDATE message or the NG-RAN NODE CONFIGURATION UPDATE ACKNOWLEDGE message, the receiving NG-RAN node may use this information to determine a suitable target in case of subsequent outgoing mobility during emergency call

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9.2.2.11 Served Cell Information NR

This IE contains cell configuration information of an NR cell that a neighbouring NG-RAN node may need for the Xn AP interface.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| NR-PCI | M |  | INTEGER (0..1007, …) | NR Physical Cell ID | – |  |
| NR CGI | M |  | 9.2.2.7 |  | – |  |
| TAC | M |  | 9.2.2.5 | Tracking Area Code | – |  |
| ---------------------------------------------Skip unchanged part----------------------------------- | | | | | | |
| RedCap Broadcast Information | O |  | BIT STRING (SIZE(8)) | The presence of this IE indicates that the *intraFreqReselectionRedC*ap is broadcast in the *SIB1* message of the corresponding cell, see TS 38.331 [10].  Each position in the bitmap indicates which RedCap UEs are allowed access, according to the setting of RedCap barring indicators in the *SIB1* message, see TS 38.331 [10].  First bit = 1Rx,  second bit = 2Rx,  third bit = halfDuplex,  other bits reserved for future use. Value '1' indicates 'access allowed'. Value '0' indicates 'access not allowed”. | YES | ignore |
| eRedCap Broadcast Information | O |  | BIT STRING (SIZE(8)) | The presence of this IE indicates that the *intraFreqReselection-eRedCap* IE is broadcast in SIB1 of the corresponding cell, see TS 38.331 [10].  Each position in the bitmap indicates which eRedCap UEs are allowed access, according to the setting of the barring indicators in SIB1, see TS 38.331 [10].  First bit = 1Rx,  second bit = 2Rx,  third bit = half-duplex,  other bits reserved for future use. Value '1' indicates 'access allowed'. Value '0' indicates 'access not allowed'. | YES | ignore |
| Mobile IAB Cell | O |  | 9.2.2.106 |  | YES | ignore |
| XR Broadcast Information | O |  | ENUMERATED (true, …) | Corresponds to information provided in the cellBarred2RxXR contained in the SIB1 message as defined in TS 38.331 [10]. | YES | ignore |
| Barring Exemption for Emergency Call Information | O |  | ENUMERATED (true, …) | Corresponds to information provided in the *barringExemptEmergencyCall*  contained in the *SIB1* message as defined in 38.331 [10]. | YES | ignore |

| **Range bound** | **Explanation** |
| --- | --- |
| maxnoofBPLMNs | Maximum no. of broadcast PLMNs by a cell. Value is 12. |
| maxnoofMBSFSAs | Maximum no. of MBS FSAs by one gNB. Value is 256. |
| maxnoofNR-UChannelIDs | Maximum no. NR-U channel IDs in a cell. Value is 16. |
| maxnoofMTCItems | Maximum no. of measurement timing configurations associated with the neighbour cell. Value is 16. |
| maxnoofCSIRSconfigurations | Maximum number of CSI RS configurations reported in the MTC. Value is 96 |
| maxnoofCSIRSneighbourCells | Maximum number of cells neighbouring a CSI-RS coverage area. Value is 16 |
| maxnoofCSIRSneighbourCellsInMTC | Maximum number of CSI-RS coverage areas neighbouring a specific CSI-RS coverage area. Value is 16 |

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### 9.3.5 Information Element definitions

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-- Information Element Definitions

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

XnAP-IEs {

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

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

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

---------------------------------------------Skip unchanged part-----------------------------------

id-ECNMarkingorCongestionInformationReportingRequest,

id-TAISliceUnavailableCellList,

id-MobileIABCell,

id-XR-Bcast-Information,

id-MaximumDataBurstVolume,

id-CPAC-Preparation-Type,

id-MN-only-MDT-collection,

id-BarringExemptionforEmerCallInfo,

maxEARFCN,

maxnoofAllowedAreas,

maxnoofAMFRegions,

maxnoofAoIs,

maxnoofBPLMNs,

---------------------------------------------Skip unchanged part-----------------------------------

BAPControlPDURLCCH-Item-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

...

}

BarringExemptionforEmerCallInfo ::= ENUMERATED {true,...}

BluetoothMeasurementConfiguration ::= SEQUENCE {

bluetoothMeasConfig BluetoothMeasConfig,

bluetoothMeasConfigNameList BluetoothMeasConfigNameList OPTIONAL,

bt-rssi ENUMERATED {true, ...} OPTIONAL,

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

...

}

---------------------------------------------Skip unchanged part-----------------------------------

-- Served Cells NR IEs

ServedCellInformation-NR ::= SEQUENCE {

nrPCI NRPCI,

cellID NR-CGI,

tac TAC,

ranac RANAC OPTIONAL,

broadcastPLMN BroadcastPLMNs,

nrModeInfo NRModeInfo,

measurementTimingConfiguration OCTET STRING,

connectivitySupport Connectivity-Support,

iE-Extensions ProtocolExtensionContainer { {ServedCellInformation-NR-ExtIEs} } OPTIONAL,

...

}

ServedCellInformation-NR-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

{ ID id-BPLMN-ID-Info-NR CRITICALITY ignore EXTENSION BPLMN-ID-Info-NR PRESENCE optional }|

{ ID id-ConfiguredTACIndication CRITICALITY ignore EXTENSION ConfiguredTACIndication PRESENCE optional }|

{ ID id-SSB-PositionsInBurst CRITICALITY ignore EXTENSION SSB-PositionsInBurst PRESENCE optional }|

{ ID id-NRCellPRACHConfig CRITICALITY ignore EXTENSION NRCellPRACHConfig PRESENCE optional }|

{ ID id-NPN-Broadcast-Information CRITICALITY reject EXTENSION NPN-Broadcast-Information PRESENCE optional }|

{ ID id-CSI-RSTransmissionIndication CRITICALITY ignore EXTENSION CSI-RSTransmissionIndication PRESENCE optional }|

{ ID id-SFN-Offset CRITICALITY ignore EXTENSION SFN-Offset PRESENCE optional }|

{ ID id-Supported-MBS-FSA-ID-List CRITICALITY ignore EXTENSION Supported-MBS-FSA-ID-List PRESENCE optional }|

{ ID id-NR-U-ChannelInfo-List CRITICALITY ignore EXTENSION NR-U-ChannelInfo-List PRESENCE optional }|

{ ID id-Additional-Measurement-Timing-Configuration-List CRITICALITY ignore EXTENSION Additional-Measurement-Timing-Configuration-List PRESENCE optional }|

{ ID id-Redcap-Bcast-Information CRITICALITY ignore EXTENSION Redcap-Bcast-Information PRESENCE optional }|

{ ID id-eRedcap-Bcast-Information CRITICALITY ignore EXTENSION ERedcap-Bcast-Information PRESENCE optional }|

{ ID id-MobileIABCell CRITICALITY ignore EXTENSION MobileIABCell PRESENCE optional }|

{ ID id-XR-Bcast-Information CRITICALITY ignore EXTENSION XR-Bcast-Information PRESENCE optional }|

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

...

}

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### 9.3.7 Constant definitions

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

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-- Constant definitions

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

XnAP-Constants {

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

ngran-Access (22) modules (3) xnap (2) version1 (1) xnap-Constants (4) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

---------------------------------------------Skip unchanged part-----------------------------------

id-NodeAssociatedInfoResult ProtocolIE-ID ::= 463

id-SLPositioning-Ranging-Services-Info ProtocolIE-ID ::= 464

id-XR-Bcast-Information ProtocolIE-ID ::= 465

id-PDUSessionsListToBeReleased-UPError ProtocolIE-ID ::= 466

id-MaximumDataBurstVolume  ProtocolIE-ID ::= 467

id-CPAC-Preparation-Type ProtocolIE-ID ::= 468

id-UserPlaneFailureIndication ProtocolIE-ID ::= 469

id-MN-only-MDT-collection ProtocolIE-ID ::= 470

id-BarringExemptionforEmerCallInfo ProtocolIE-ID ::= xxx

END

-- ASN1STOP

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