**3GPP TSG-RAN WG3 #119bis R3-232013**

**17th – 26th April 2023**

**Online**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.473** | **CR** | 1146 | **rev** | **1** | **Current version:** | **17.4.1** |  |
|  |
| *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:***  | Introduction of the UE hashed ID to 38.473 |
|  |  |
| ***Source to WG:*** | ZTE, Nokia, Nokia Shanghai Bell, China Telecom, CATT, Huawei, Ericsson, Qualcomm |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | NR\_redcap-Core |  | ***Date:*** | 2023-04-07 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | In Rel-17, NR supports to configure eDRX for RedCap UE in RRC INACTIVE/IDLE. If IDLE eDRX cycle is longer than 10.24s, the PH, PTW\_start and PTW\_end shall be calculated for paging as specified in TS 38.304, and the UE\_ID\_H (13 most significant bits of the Hashed ID) is needed for these calculation. In F1 paging message, The 5G-S-TMSI is included in UE identifier CHOICE for CN paging, the UE hashed ID can be derived by the 5G-S-TMSI .However, the UE hashed ID information is missing in F1 paging message for paging UE in RRC INACTIVE. |
|  |  |
| ***Summary of change:*** | Introduce the UE hashed ID IE into the F1 paging message. Impact Analysis:This change only impacts the PH, PTW calculation for paging UE configured with long eDRX cycle.This CR is BC. |
|  |  |
| ***Consequences if not approved:*** | NG-RAN cannot determine the PH and PTW, which can cause the UE to fail to be paged. |
|  |  |
| ***Clauses affected:*** | 8.7.1.2, 9.3.1.39, 9.2.6.1, 9.3.1.x (new), 9.4.4, 9.4.5, 9.4.7 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **Y** |  |  Other core specifications  | TS38.423 CR 1015TS38.413 CR 0976 |
| ***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: R3-231363 |

<<<<<<<<<<<<<<<<<<<< START OF CHANGES >>>>>>>>>>>>>>>>>>>>

#### 8.7.1.2 Successful Operation



Figure 8.7.1.2-1: Paging procedure. Successful operation.

The gNB-CU initiates the procedure by sending a PAGING message.

The *Paging DRX* IE may be included in the PAGING message, and if present the gNB-DU may use it to determine the final paging cycle for the UE.

The *Paging Priority* IE may be included in the PAGING message, and if present the gNB-DU may use it according to TS 23.501 [21].

At the reception of the PAGING message, the gNB-DU shall perform paging of the UE in cells which belong to cells as indicated in the *Paging Cell List* IE.

The *Paging Origin* IE may be included in the PAGING message, and if present the gNB-DU shall transfer it to the UE.

The *RAN UE Paging DRX* IE may be included in the PAGING message, and if present the gNB-DU may use it according to TS 38.304 [24].

The *CN UE Paging DRX* IE may be included in the PAGING message, and if present the gNB-DU may use it according to TS 38.304 [24].

The *NR Paging eDRX Information* IE may be included in the PAGING message, and if present the gNB-DU may use it according to TS 38.304 [24].

The *NR Paging eDRX Information for RRC INACTIVE* IE may be included in the PAGING message, and if present the gNB-DU shall, if supported, use it according to TS 38.304 [24].

The *Paging Cause* IE may be included in the PAGING message. If present the gNB-DU shall, if supported, send it to UE according to TS 38.331 [8].

The *PEIPS Assistance Information* IE may be included in the PAGING message, and if present the gNB-DU shall, if supported, use it for paging subgrouping of the UE, as specified in TS 38.300 [6].

The *UEID Subgrouping Support Indication* IE may be included in *UE Paging Capability* IE in the PAGING message, and if present the gNB-DU shall, if supported, use it for paging subgrouping of the UE, as specified in TS 38.300 [6].

The *RedCap Indication* IE may be included in the *UE Paging Capability* IE in the PAGING message, and if present the gNB-DU shall, if supported, use it for paging of RedCap UEs.

The *Last Used Cell Indication* IE may be included in the *Paging Cell Item IEs* IE of the PAGING message, and if present the gNB-DU shall, if supported, consider the cell identified by the *NR CGI* IE as the last used cell of the paged UE, and use it as specified in TS 38.331 [8].

The *PEI Subgrouping Support Indication* IE may be included in the *Paging Cell Item IEs* IE in the PAGING message, and if present the gNB-DU shall, if supported, consider that the cell identified by the *NR CGI* IE is supported by the UE to receive the paging early indication as described in TS 38.300 [6] and TS 38.304 [24].

The *UE Paging Capability* IE may be included in the PAGING message, and if present the gNB-DU shall, if supported, take it into account when paging the UE.

The *Extended UE Identity Index Value* IE may be included in the PAGING message, and if present the gNB-DU shall, if supported, use it according to TS 38.304 [24].

The *Hashed UE Identity Index Value* IE may be included in the PAGING message, and if present the gNB-DU shall, if supported, use it according to TS 38.304 [24].

<<<<<<<<<<<<<<<<<<<< NEXT OF CHANGES >>>>>>>>>>>>>>>>>>>>

#### 9.2.6.1 PAGING

This message is sent by the gNB-CU and is used to request the gNB-DU to page UEs.

Direction: gNB-CU → gNB-DU

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | ignore |
| UE Identity Index value | M |  | 9.3.1.39 |  | YES | reject |
| CHOICE *Paging Identity* | M |  |  |  | YES | reject |
| *>RAN UE Paging identity* |  |  |  |  |  |  |
| >>RAN UE Paging identity | M |  | 9.3.1.43 |  | - |  |
| *>CN UE paging identity* |  |  |  |  |  |  |
| >>CN UE paging identity  | M |  | 9.3.1.44 |  | - |  |
| Paging DRX | O |  | 9.3.1.40 | It is defined as the minimum between the RAN UE Paging DRX and CN UE Paging DRX | YES | ignore |
| Paging Priority | O |  | 9.3.1.41 |  | YES | ignore |
| **Paging Cell List**  |  | *1* |  |  | YES | ignore |
| **>Paging Cell Item IEs** |  | *1 .. <maxnoofPagingCells>* |  |  | EACH | ignore |
| >>NR CGI | M |  | 9.3.1.12 |  | - |  |
| >>Last Used Cell Indication | O |  | ENUMERATED(true, …) |  | YES | ignore |
| >>PEI Subgrouping Support Indication | O |  | ENUMERATED(true, …) |  | YES | ignore |
| Paging Origin | O |  | 9.3.1.79 |  | YES | ignore |
| RAN UE Paging DRX | O |  | Paging DRX9.3.1.40 | This IE indicates the RAN paging cycle as defined in TS 38.304 [24]. | YES | ignore |
| CN UE Paging DRX | O |  | Paging DRX9.3.1.40 | This IE indicates the UE specific paging cycle as defined in TS 38.304 [24]. | YES | ignore |
| NR Paging eDRX Information | O |  | 9.3.1.258 |  | YES | ignore |
| NR Paging eDRX Information for RRC INACTIVE | O |  | 9.3.1.259 |  | YES | ignore |
| Paging Cause | O |  | ENUMERATED(voice, …)  | This IE indicates the paging cause is IMS voice, refer to TS 23.501[21]. | YES | ignore |
| PEIPS Assistance Information | O |  | 9.3.1.269 |  | YES | ignore |
| UE Paging Capability  | O |  | 9.3.1.270 |  | YES | ignore |
| Extended UE Identity Index Value | O |  | 9.3.1.285 |  | YES | ignore |
| Hashed UE Identity Index Value | O |  | 9.3.1.x |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofPagingCells | Maximum no. of paging cells, the maximum value is 512.  |

#### 9.3.1.x Hashed UE Identity Index Value

This IE is the 13 Most Significant Bits (MSBs) of the Hashed ID defined in TS 38.304 [24].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Hashed UE Identity Index Value | M |  | BIT STRING (SIZE(13, …)) |  |

<<<<<<<<<<<<<<<<<<<< NEXT OF CHANGES >>>>>>>>>>>>>>>>>>>>

### 9.4.4 PDU Definitions

-- ASN1START

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

--

-- PDU definitions for F1AP.

--

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

F1AP-PDU-Contents {

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

ngran-access (22) modules (3) f1ap (3) version1 (1) f1ap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules.

--

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

Skip unchanged part

 UplinkTxDirectCurrentTwoCarrierListInfo,

 SRSPosRRCInactiveQueryIndication,

 MC-PagingCell-Item,

 ExtendedUEIdentityIndexValue,

 HashedUEIdentityIndexValue

Skip unchanged part

FROM F1AP-IEs

 PrivateIE-Container{},

 ProtocolExtensionContainer{},

 ProtocolIE-Container{},

Skip unchanged part

 id-PosSItypeList,

 id-DAPS-HO-Status,

 id-SRBMappingInfo,

 id-UplinkTxDirectCurrentTwoCarrierListInfo,

 id-SRSPosRRCInactiveQueryIndication,

 id-ExtendedUEIdentityIndexValue,

 id-HashedUEIdentityIndexValue,

 maxCellingNBDU,

 maxnoofCandidateSpCells,

Skip unchanged part

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

--

-- Paging PROCEDURE

--

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

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

--

-- Paging

--

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

Paging ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{ PagingIEs}},

 ...

}

PagingIEs F1AP-PROTOCOL-IES ::= {

 { ID id-UEIdentityIndexValue CRITICALITY reject TYPE UEIdentityIndexValue PRESENCE mandatory }|

 { ID id-PagingIdentity CRITICALITY reject TYPE PagingIdentity PRESENCE mandatory }|

 { ID id-PagingDRX CRITICALITY ignore TYPE PagingDRX PRESENCE optional }|

 { ID id-PagingPriority CRITICALITY ignore TYPE PagingPriority PRESENCE optional }|

 { ID id-PagingCell-List CRITICALITY ignore TYPE PagingCell-list PRESENCE mandatory }|

 { ID id-PagingOrigin CRITICALITY ignore TYPE PagingOrigin PRESENCE optional }|

 { ID id-RANUEPagingDRX CRITICALITY ignore TYPE PagingDRX PRESENCE optional }|

 { ID id-CNUEPagingDRX CRITICALITY ignore TYPE PagingDRX PRESENCE optional }|

 { ID id-NRPagingeDRXInformation CRITICALITY ignore TYPE NRPagingeDRXInformation PRESENCE optional }|

 { ID id-NRPagingeDRXInformationforRRCINACTIVE CRITICALITY ignore TYPE NRPagingeDRXInformationforRRCINACTIVE PRESENCE optional }|

 { ID id-PagingCause CRITICALITY ignore TYPE PagingCause PRESENCE optional }|

 { ID id-PEIPSAssistanceInfo CRITICALITY ignore TYPE PEIPSAssistanceInfo PRESENCE optional }|

 { ID id-UEPagingCapability CRITICALITY ignore TYPE UEPagingCapability PRESENCE optional }|

 { ID id-ExtendedUEIdentityIndexValue CRITICALITY ignore TYPE ExtendedUEIdentityIndexValue PRESENCE optional}|

 { ID id-HashedUEIdentityIndexValue CRITICALITY ignore TYPE HashedUEIdentityIndexValue PRESENCE optional},

 ...

}

PagingCell-list::= SEQUENCE (SIZE(1.. maxnoofPagingCells)) OF ProtocolIE-SingleContainer { { PagingCell-ItemIEs } }

PagingCell-ItemIEs F1AP-PROTOCOL-IES ::= {

 { ID id-PagingCell-Item CRITICALITY ignore TYPE PagingCell-Item PRESENCE mandatory} ,

 ...

}

Skip unchanged part

### 9.4.5 Information Element Definitions

Skip unchanged part

-- H

////////skip unrelated/////////////////////////////////////////

HashedUEIdentityIndexValue ::= BIT STRING (SIZE(13, ...))

Skip unchanged part

### 9.4.7 Constant Definitions

-- ASN1START

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

--

-- Constant definitions

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

Skip unchanged part

id-ServingCellMO-List ProtocolIE-ID ::= 695

id-ServingCellMO-List-Item ProtocolIE-ID ::= 696

id-ServingCellMO-encoded-in-CGC-List ProtocolIE-ID ::= 697

id-HashedUEIdentityIndexValue ProtocolIE-ID ::= XXX

END

-- ASN1STOP

<<<<<<<<<<<<<<<<<<<< END OF CHANGES >>>>>>>>>>>>>>>>>>>>