3GPP TSG-RAN WG3 #121 R3-234567

21th – 25th Aug 2023

Toulouse, France

Agenda Item: 21.2

Source: ZTE

Title: (TP to 38.423) Introduction of RRC Inactive long eDRX enhancement

Document for: Approval

# Introduction

This TP captures the agreement.

# Text proposal to TS38.423

================<Start of change>=================

### 8.2.5 RAN Paging

#### 8.2.5.1 General

The purpose of the RAN Paging procedure is to enable the NG-RAN node1 to request paging of a UE in the NG-RAN node2.

The procedure uses non UE-associated signalling.

#### 8.2.5.2 Successful operation



Figure 8.2.5.2-1: RAN Paging: successful operation

The RAN Paging procedure is triggered by the NG-RAN node1 by sending the RAN PAGING message to the NG-RAN node2,in which the necessary information e.g. UE RAN Paging Identity should be provided.

If the *Paging Priority* IE is included in the RAN PAGING message, the NG-RAN node2 may use it to prioritize paging.

If the *Assistance Data for RAN Paging* IE is included in the RAN PAGING message, the NG-RAN node2 may use it according to TS 38.300 [9].

If the *UE Radio Capability for Paging* IE is included in the RAN PAGING message, the NG-RAN node2 may use it to apply specific paging schemes.

If the *Extended UE Identity Index Value* IE is included in the RAN PAGING message, the NG-RAN node2 may use it according to TS 36.304 [34], and for eDRX or the UE\_ID based subgrouping according to TS 38.304 [33]. When available, NG-RAN node1 may include the *Extended UE Identity Index Value* IE in the RAN PAGING message towards the NG-RAN node2.

When available, the NG-RAN node1 shall include the *E-UTRA Paging eDRX Information* IE in the RAN PAGING message towards the NG-RAN node2. If the *E-UTRA Paging eDRX Information* IE is included in the RAN PAGING message, the NG-RAN node2 shall, if supported, use it according to TS 36.304 [34].

When available, the NG-RAN node1 shall include the *UE Specific DRX* IE in the RAN PAGING message towards the NG-RAN node2. If the *UE specific DRX* IE is included in the RAN PAGING message, the NG-RAN node2 shall, if supported, use it according to TS 36.304 [34].

When available, the NG-RAN node1 shall include the *NR Paging eDRX Information* IE in the RAN PAGING message towards the NG-RAN node2. If the *NR Paging eDRX Information* IE is included in the RAN PAGING message, the NG-RAN node2 shall, if supported, use it according to TS 38.304 [33].

If the *NR* *Paging eDRX Information for RRC INACTIVE* IE is included in the RAN PAGING message, the NG-RAN node2 shall, if supported, use it according to TS 38.304 [33].

If the *NR* *Paging Long eDRX Information for RRC INACTIVE* IE is included in the RAN PAGING message, the NG-RAN node2 shall, if supported, use it according to TS 38.304 [33].

When available, the NG-RAN node1 shall include the *Paging Cause* IE in the RAN PAGING message towards the NG-RAN node2. If the *Paging Cause* IE is included in the RAN PAGING message, the NG-RAN node2 shall, if supported, use it according to TS 38.331 [10].

If the *PEIPS Assistance Information* IE is included in the RAN PAGING message, the NG-RAN node2 shall, if supported, use it according to TS 38.300 [9].

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9.1.1.7 RAN PAGING

This message is sent by the NG-RAN node1 to NG-RAN node2 to page a UE.

Direction: NG-RAN node1 → NG-RAN node2.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| Message Type | M |  | 9.2.3.1 |  | YES | reject |
| CHOICE *UE Identity Index Value* | M |  |  |  | YES | reject |
| *>Length-10* |  |  |  |  |  |  |
| >>Index Length-10 | M |  | BIT STRING (SIZE(10)) | Coded as specified in TS 38.304 [33] and TS 36.304 [34]. | – |  |
| UE RAN Paging Identity | M |  | 9.2.3.43 |  | YES | ignore |
| Paging DRX | M |  | 9.2.3.66 | Includes the RAN paging cycle as defined in TS 36.304 [34] and 38.304 [33]. | YES | ignore |
| RAN Paging Area | M |  | 9.2.3.38 |  | YES | reject |
| Paging Priority | O |  | 9.2.3.44 |  | YES | ignore |
| Assistance Data for RAN Paging | O |  | 9.2.3.41 |  | YES | ignore |
| UE Radio Capability for Paging | O |  | 9.2.3.91 |  | YES | ignore |
| Extended UE Identity Index Value | O |  | 9.2.3.141 | Coded as specified in TS 36.304 [34]. | YES | ignore |
| E-UTRA Paging eDRX Information | O |  | 9.2.3.142 |  | YES | ignore |
| UE specific DRX | O |  | 9.2.3.143 | Includes the UE specific paging cycle as defined in TS 36.304 [34] and 38.304 [33]. | YES | ignore |
| NR Paging eDRX Information | O |  | 9.2.3.161 |  | YES | ignore |
| NR Paging eDRX Information for RRC INACTIVE | O |  | 9.2.3.162 |  | YES | ignore |
| Paging Cause | O |  | ENUMERATED (voice, …) |  | YES | ignore |
| PEIPS Assistance Information | O |  | 9.2.3.166 |  | YES | ignore |
| NR Paging Long eDRX Information for RRC INACTIVE | O |  | 9.2.3.XXX  | This IE applies only if the UE is configured with eDRX longer than 10.24s | YES | ignore |

================<Next change>=================

#### 9.2.3.XXX NR Paging Long eDRX Information for RRC INACTIVE

This IE indicates the NR Paging long eDRX parameters as defined in TS 38.304 [33].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| NR Paging Long eDRX Cycle for RRC INACTIVE | M |  | ENUMERATED (hf2, hf4, hf8, hf16, hf32, hf64, hf128, hf256, hf512, hf1024, …) | Tlong-eDRX, RAN defined in TS 38.304 [33]. Unit: [number of hyperframes]. |
| NR Paging Time Window for RRC\_INACTIVE | O |  | ENUMERATED (s1, s2, s3, s4, s5, s6, s7, s8, s9, s10, s11, s12, s13, s14, s15, s16, s17, s18, s19, s20, s21, s22, s23, s24, s25, s26, s27, s28, s29, s30, s31, s32, …) | Unit: [1.28 seconds] |

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#### 9.2.3.162 NR Paging eDRX Information for RRC INACTIVE

This IE indicates the NR Paging eDRX parameters for RRC\_INACTIVE as defined in TS 38.304 [33].

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |  |  |
| NR Paging eDRX Cycle Inactive | M |  | ENUMERATED (hfquarter, hfhalf, hf1, …) | TeDRX, RAN defined in TS 38.304 [33]. Unit: [number of hyperframes]. |  |  |
|  |  |  |  |  |  |  |

***------Next change-------***

### 9.3.4 PDU Definitions

-- ASN1START

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

--

-- 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

<Skip unchanged part>

 MDTPLMNModificationList,

 F1-terminatingIAB-donorIndicator,

 SRB-ID,

 AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated,

 HashedUEIdentityIndexValue,

 NRPagingLongeDRXInformationforRRCINACTIVE

FROM XnAP-IEs

<Skip unchanged part>

 id-ManagementBasedMDTPLMNModificationList,

 id-F1-terminatingIAB-donorIndicator,

 id-AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated,

 id-HashedUEIdentityIndexValue,

 id-NRPagingLongeDRXInformationforRRCINACTIVE,

 maxnoofCellsinNG-RANnode,

 maxnoofDRBs,

 maxnoofPDUSessions,

 maxnoofQoSFlows,

 maxnoofServedCellsIAB,

<Skip unchanged part>

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

--

-- RAN PAGING

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

RANPaging ::= SEQUENCE {

 protocolIEs ProtocolIE-Container {{RANPaging-IEs}},

 ...

}

RANPaging-IEs XNAP-PROTOCOL-IES ::= {

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

 { ID id-UERANPagingIdentity CRITICALITY ignore TYPE UERANPagingIdentity PRESENCE mandatory}|

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

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

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

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

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

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

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

 { ID id-UESpecificDRX CRITICALITY ignore TYPE UESpecificDRX 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-PEIPSassistanceInformation CRITICALITY ignore TYPE PEIPSassistanceInformation PRESENCE optional }|

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

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

 ...

}

9.3.5 Information Element definitions

-- ASN1START

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

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-- Information Element Definitions

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

<Skip unchanged part>

 id-BeamMeasurementsReportConfiguration,

 id-CoverageModificationCause,

 id-UERLFReportContainerLTEExtension,

 id-ExcessPacketDelayThresholdConfiguration,

 id-HashedUEIdentityIndexValue,

 maxEARFCN,

 maxnoofAllowedAreas,

 maxnoofAMFRegions,

 maxnoofAoIs,

 maxnoofBPLMNs,

 maxnoofCAGs,

 maxnoofCAGsperPLMN,

<Skip unchanged part>

NRPagingeDRXInformation ::= SEQUENCE {

 nRPaging-eDRX-Cycle NRPaging-eDRX-Cycle,

 nRPaging-Time-Window NRPaging-Time-Window OPTIONAL,

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

 ...

}

NRPagingeDRXInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

NRPaging-eDRX-Cycle ::= ENUMERATED {

 hfquarter, hfhalf, hf1, hf2, hf4,

 hf8, hf16,

 hf32, hf64, hf128, hf256,

 hf512, hf1024,

 ...

}

NRPaging-Time-Window ::= ENUMERATED {

 s1, s2, s3, s4, s5,

 s6, s7, s8, s9, s10,

 s11, s12, s13, s14, s15, s16,

 ...,s17, s18, s19, s20, s21, s22,

 s23, s24, s25, s26, s27, s28, s29,

 s30, s31, s32

}

NRPagingeDRXInformationforRRCINACTIVE ::= SEQUENCE {

 nRPaging-eDRX-Cycle-Inactive NRPaging-eDRX-Cycle-Inactive,

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

 ...

}

NRPagingeDRXInformationforRRCINACTIVE-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

NRPaging-eDRX-Cycle-Inactive ::= ENUMERATED {

 hfquarter, hfhalf, hf1,

 ...

}

NRPagingLongeDRXInformationforRRCINACTIVE ::= SEQUENCE {

 nRPaging-long-eDRX-Cycle-Inactive NRPaging-long-eDRX-Cycle-Inactive,

 nRPaging-Time-Window-Inactive NRPaging-Time-Window-Inactive OPTIONAL,

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

 ...

}

NRPagingLongeDRXInformationforRRCINACTIVE-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

NRPaging-long-eDRX-Cycle-Inactive ::= ENUMERATED {

 hf2, hf4, hf8, hf16,

 hf32, hf64, hf128, hf256,

 hf512, hf1024,

 ...

}

NRPaging-Time-Window-Inactive ::= ENUMERATED {

 s1, s2, s3, s4, s5,

 s6, s7, s8, s9, s10,

 s11, s12, s13, s14, s15, s16,

 s17, s18, s19, s20, s21, s22,

 s23, s24, s25, s26, s27, s28, s29,

 s30, s31, s32, ...

}

NRPCI ::= INTEGER (0..1007, ...)

<Skip unchanged part>

9.3.7 Constant definitions

-- ASN1START

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

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-- Constant definitions

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

<Skip unchanged part>

id-CoverageModificationCause ProtocolIE-ID ::= 368

id-AdditionalListofPDUSessionResourceChangeConfirmInfo-SNterminated ProtocolIE-ID ::= 369

id-UERLFReportContainerLTEExtension ProtocolIE-ID ::= 370

id-ExcessPacketDelayThresholdConfiguration ProtocolIE-ID ::= 371

id-HashedUEIdentityIndexValue ProtocolIE-ID ::= 372

id-NRPagingLongeDRXInformationforRRCINACTIVE ProtocolIE-ID ::= xxx

END

-- ASN1STOP

***------End of changes-------***