**3GPP TSG-RAN WG3 Meeting #123 *R3-240997***

**Athens, Greece, 26 February – 01 March 2024**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.413** | **CR** | **1086** | **rev** | **1** | **Current version:** | **18.0.0** |  |
|  |
| *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 | **x** |

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|  |
| ***Title:***  | ASN.1 corrections for MDT enhancements to support NPN |
|  |  |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell, Ericsson |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | NR\_ENDC\_SON\_MDT\_enh2-Core |  | ***Date:*** | 2024-02-26 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***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 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:*** | The ASN.1 structure for the *Area Scope of MDT* IE is inconsistent. |
|  |  |
| ***Summary of change:*** | 1. ASN.1: Within the *MDT Configuration-NR* IE, the *Area Scope of MDT* IE was extended by CR0990 with 4 additional choices. All the new choices are encoded as a SEQUENCE (like the legacy choices) except PNI-NPN Based MDT which is encoded directly as a list. Therefore, the ASN.1 for PNI-NPN Based MDT is modified so that it is encoded as an extensible SEQUENCE like the other choice options.
2. ASN.1: Similarly, the ASN.1 for the *PNI-NPN Area Scope of MDT* IE is modified so that it is encoded as an extensible SEQUENCE.
3. 9.3.3.65: The *PNI NPN Area Scope of MDT* IE is renamed to *CAG List for MDT* to reflect its actual content and make it more suitable for reuse.
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|  |  |
| ***Consequences if not approved:*** | ASN.1 structure for the *Area Scope of MDT* IE remains inconsistent.  |
|  |  |
| ***Clauses affected:*** | 9.3.1.169, 9.3.3.65, 9.4.5 |
|  |  |
|  | **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:*** | r1: reverting the change of semantics description for *PNI-NPN Area Scope of MDT* IE in 9.3.1.169r0: submission to RAN3#123 |

*start of changes*

#### 9.3.1.169 MDT Configuration-NR

This IE defines the MDT configuration parameters of NR.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| MDT Activation | M |  | ENUMERATED (Immediate MDT only, Logged MDT only, Immediate MDT and Trace, …) |  | - |  |
| CHOICE*Area Scope of MDT* | M |  |  |  | - |  |
| *>Cell based* |  |  |  | If *PNI-NPN Area Scope of MDT* IE is present, this IE covers non-CAG cells only, where non-CAG cells refer to cells that only provide public access. |  |  |
| **>>Cell ID List for MDT** |  | *1..<maxnoofCellIDforMDT>* |  |  |  |  |
| >>>NR CGI | M |  | 9.3.1.7 |  | - |  |
| *>TA based* |  |  |  | If *PNI-NPN Area Scope of MDT* IE is present, this IE covers non-CAG cells only, where non-CAG cells refer to cells that only provide public access. |  |  |
| **>>TA List for MDT** |  | *1..<maxnoofTAforMDT>* |  |  |  |  |
| >>>TAC | M |  | 9.3.3.10 | The TAI is derived using the current serving PLMN. | - |  |
| *>PLMN wide* |  |  | NULL |  |  |  |
| *>TAI based* |  |  |  | If *PNI-NPN Area Scope of MDT* IE is present, this IE covers non-CAG cells only, where non-CAG cells refer to cells that only provide public access. |  |  |
| **>>TAI List for MDT** |  | *1..<maxnoofTAforMDT>* |  |  |  |  |
| >>>TAI | M |  |  |  | - |  |
| *>PNI-NPN Based MDT* |  |  |  |  | YES | ignore |
| >>CAG List for MDT |  |  | 9.3.3.65 |  | - |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| *>SNPN Cell Based MDT* |  |  |  |  | YES | ignore |
| **>>SNPN Cell ID List for MDT** |  | *1..<maxnoofCellIDforMDT>* |  |  | - |  |
| >>>NR CGI | M |  | 9.3.1.7 |  | - | - |
| >>>NID | M |  | 9.3.3.42 | Identifies an SNPN together with the PLMNIdentity in the *NR CGI* IE. | - | - |
| *>SNPN TAI Based MDT* |  |  |  |  | YES | ignore |
| **>>SNPN TAI List** |  | *1..<maxnoofTAforMDT>* |  |  | - | - |
| >>>TAI | M |  | 9.3.3.11 |  | - | - |
| >>>NID | M |  | 9.3.3.42 | Identifies an SNPN together with the PLMNIdentity in the *TAI* IE. | - | - |
| *>SNPN Based MDT* |  |  |  |  | YES | ignore |
| **>>MDT SNPN List** |  | *1..<maxnoofMDTSNPNs>* |  |  | - |  |
| >>>PLMN Identity | M |  | 9.3.3.5 |  | - |  |
| >>>NID | M |  | 9.3.3.42 | Identifies an SNPN together with the *PLMN Identity* IE. | - |  |
| CHOICE *MDT Mode* | M |  |  |  | - |  |
| *>Immediate MDT* |  |  |  |  |  |  |
| >>Measurements to Activate  | M |  | BITSTRING(SIZE(8)) | Each position in the bitmap indicates a MDT measurement, as defined in TS 37.320 [41]. First Bit = M1,Second Bit= M2,Third Bit = M4,Fourth Bit = M5,Fifth Bit = M6,Sixth Bit = M7,Seventh Bit = logging of M1 from event triggered measurement reports according to existing RRM configuration, other bits reserved for future use.Value “1” indicates “activate” and value “0” indicates “do not activate”. | - |  |
| >>M1 Configuration | C-ifM1 |  | 9.3.1.171 |  | - |  |
| >>M4 Configuration | C-ifM4 |  | 9.3.1.172 |  | - |  |
| >>M5 Configuration | C-ifM5 |  | 9.3.1.173 |  | - |  |
| >>M6 Configuration | C-ifM6 |  | 9.3.1.174 |  | - |  |
| >>M7 Configuration | C-ifM7 |  | 9.3.1.175 |  | - |  |
| >>Bluetooth Measurement Configuration | O |  | 9.3.1.177 |  | - |  |
| >>WLAN Measurement Configuration | O |  | 9.3.1.178 |  | - |  |
| >>MDT Location Information | O |  | 9.3.1.176 |  | - |  |
| >>Sensor Measurement Configuration | O |  | 9.3.1.179 |  | - |  |
| *>Logged MDT* |  |  |  |  |  |  |
| >>Logging Interval | M |  | ENUMERATED (320ms, 640ms, 1280ms, 2560ms, 5120ms, 10240ms, 20480ms, 30720ms, 40960ms, 61440ms, infinity, …) | Corresponds to the *LoggingInterval* IE as defined in TS 38.331 [18].  | - |  |
| >>Logging Duration | M |  | ENUMERATED (10, 20, 40, 60, 90,120, …) | Corresponds to the *LoggingDuration* IE as defined in TS 38.331 [18]. Unit: [minute]. | - |  |
| >>CHOICE *Report Type* | M |  |  |  | - |  |
| *>>>Periodical* |  |  | NULL |  |  |  |
| *>>>Event Triggered* |  |  |  |  |  |  |
| >>>>Event Trigger Logged MDT Configuration | M |  | 9.3.1.180 |  | - |  |
| >>Bluetooth Measurement Configuration | O |  | 9.3.1.177 |  | - |  |
| >>WLAN Measurement Configuration | O |  | 9.3.1.178 |  | - |  |
| >>Sensor Measurement Configuration | O |  | 9.3.1.179 |  | - |  |
| >>Area Scope of Neighbour Cells | O |  | 9.3.1.182 |  | - |  |
| >>Early Measurement | O |  | ENUMERATED(true, ...) | This IE indicates whether the UE is allowed to log measurements on early measurement related frequencies in logged MDT as specified in TS 38.331 [18]. | YES | ignore |
| Signalling Based MDT PLMN List | O |  | MDT PLMN List9.3.1.168 |  | - |  |
| **PNI-NPN Area Scope of MDT** |  | *0..1* |  | This IE is ignored if the *PLMN Wide* IE is present | YES | ignore |
| >CAG List for MDT | M |  | 9.3.3.65 |  | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofCellIDforMDT | Maximum no. of Cell ID subject for MDT scope. Value is 32. |
| maxnoofTAforMDT | Maximum no. of TA subject for MDT scope. Value is 8. |
|  |  |
| maxnoofMDTSNPNs | Maximum no. of SNPNs in the MDT SNPN list. Value is 16. |

*next change*

#### 9.3.3.65 CAG List for MDT

This IE is used to identify the list of Public Network Integrated NPNs for MDT.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **CAG List for MDT** |  | *1..<maxnoofCAGforMDT>* |  |  |
| >PLMN Identity | M |  | 9.3.3.5 |  |
| >CAG ID | M |  | 9.3.3.43 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofCAGforMDT | Maximum no. of CAG IDs for MDT area scope. Value is 256. |

*next change*

### 9.4.5 Information Element Definitions

-- ASN1START

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

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-- Information Element Definitions

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

\*\* unmodified text skipped \*\*

AreaScopeOfMDT-NR ::= CHOICE {

 cellBased CellBasedMDT-NR,

 tABased TABasedMDT,

 pLMNWide NULL,

 tAIBased TAIBasedMDT,

 choice-Extensions ProtocolIE-SingleContainer { {AreaScopeOfMDT-NR-ExtIEs} }

}

AreaScopeOfMDT-NR-ExtIEs NGAP-PROTOCOL-IES ::= {

{ ID id-PNI-NPNBasedMDT CRITICALITY ignore TYPE PNI-NPNBasedMDT PRESENCE mandatory }|

{ ID id-SNPN-CellBasedMDT CRITICALITY ignore TYPE SNPN-CellBasedMDT PRESENCE mandatory }|

{ ID id-SNPN-TAIBasedMDT CRITICALITY ignore TYPE SNPN-TAIBasedMDT PRESENCE mandatory }|

{ ID id-SNPN-BasedMDT CRITICALITY ignore TYPE SNPN-BasedMDT PRESENCE mandatory },

 ...

}

\*\* unmodified text skipped \*\*

CAGListforMDT ::= SEQUENCE {

 plmnID PLMNIdentity,

 cAGID CAG-ID,

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

 ...

}

CAGListforMDT-ExtIEs NGAP-PROTOCOL-EXTENSION ::={

 ...

}

\*\* unmodified text skipped \*\*

PNI-NPN-AreaScopeofMDT ::= SEQUENCE {

 cAGListforMDT CAGListforMDT,

 iE-Extensions ProtocolExtensionContainer { {PNI-NPN-AreaScopeofMDT-ExtIEs} } OPTIONAL,

 ...

}

PNI-NPN-AreaScopeofMDT-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

PNI-NPNBasedMDT::= SEQUENCE {

 cAGListforMDT CAGListforMDT,

 iE-Extensions ProtocolExtensionContainer { {PNI-NPNBasedMDT-ExtIEs} } OPTIONAL,

 ...

}

PNI-NPNBasedMDT-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

\*\* unmodified text skipped \*\*

SNPN-CellBasedMDT::= SEQUENCE {

 sNPNcellIdListforMDT SNPNCellIdListforMDT,

 iE-Extensions ProtocolExtensionContainer { {SNPN-CellBasedMDT-ExtIEs} } OPTIONAL,

 ...

}

SNPN-CellBasedMDT-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

SNPNCellIdListforMDT ::= SEQUENCE (SIZE(1..maxnoofCellIDforMDT)) OF SNPNCellIdListforMDTItem

SNPNCellIdListforMDTItem ::= SEQUENCE {

 nR-CGI NR-CGI,

 nID NID,

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

 ...

}

SNPNCellIdListforMDTItem-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

SNPN-TAIBasedMDT::= SEQUENCE {

 sNPNTAIListforMDT SNPNTAIListforMDT,

 iE-Extensions ProtocolExtensionContainer { {SNPN-TAIBasedMDT-ExtIEs} } OPTIONAL,

 ...

}

SNPN-TAIBasedMDT-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

SNPNTAIListforMDT ::= SEQUENCE (SIZE(1.. maxnoofTAforMDT)) OF SNPNTAIListforMDTItem

SNPNTAIListforMDTItem ::= SEQUENCE {

 tAI TAI,

 nID NID,

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

 ...

}

SNPNTAIListforMDTItem-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

SNPN-BasedMDT::= SEQUENCE {

 sNPNListforMDT SNPNListforMDT,

 iE-Extensions ProtocolExtensionContainer { {SNPN-BasedMDT-ExtIEs} } OPTIONAL,

 ...

}

SNPN-BasedMDT-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

SNPNListforMDT ::= SEQUENCE (SIZE(1.. maxnoofMDTSNPNs)) OF SNPNListforMDTItem

SNPNListforMDTItem ::= SEQUENCE {

 pLMNIdentity PLMNIdentity,

 nID NID,

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

 ...

}

SNPNListforMDTItem-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

*end of changes*