**3GPP TSG-SA5 Meeting #131e *S5-203414d1***

**25 May to 03 June 2020, E-meeting**

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| *CR-Form-v11.4* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.541** | **CR** | **0286** | **rev** | **1** | **Current version:** | **16.4.1** |  |
|  | | | | | | | | |
| *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 | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Add IOC for configurable 5QIs | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Intel | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNRM | | | | |  | ***Date:*** | | | 2020-05-14 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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 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-12 (Release 12) Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In 5G QoS model, there could be standardized 5QIs and non-standardized 5QIs. And the non-standardized 5QIs including their QoS characteristics may need to pre-configured to the 5G NFs by OAM system (see 23.501). | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add an IOC for configurable 5QIs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The configuration of non-standardzied 5QIs is not supported in 5GS. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 4.2.1, 4.3.2, 4.3.3, 4.4.1, 5.2.1, 5.3.14, 5.3.x (new), 5.3.y (new), 5.3.z (new), 5.4.1, C4.3, D4.3, E.5.16, E.5.17, F.4.3, G.4.3, H.5.20, H.5.x (new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

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| **First Modified Sections** |

### 4.2.1 Class diagram for gNB and en-gNB

#### 4.2.1.1 Relationships

This clause depicts the set of classes (e.g. IOCs) that encapsulates the information relevant for this gNB and en-gNB. For the UML semantics, see 3GPP TS 32.156 [43]. Subsequent clauses provide more detailed specification of various aspects of these classes.

The model fragments are for management representation of gNB and en-gNB for all NG-RAN deployment scenario as listed below.

- Non-split NG-RAN deployment scenario, represents the gNB defined in TS 38.401[4].

- 2-split NG-RAN deployment scenario, represents the gNB consist of gNB-CU and gNB-DU defined in TS 38.401[4] clause 6.1.1.

- 3-split NG-RAN deployment scenario, represents the gNB consist of gNB-CU-CP, gNB-CU-UP and gNB-DU defined in TS 38.401[4] clause 6.1.2.



Figure 4.2.1.1-1: NRM for all deployment scenarios

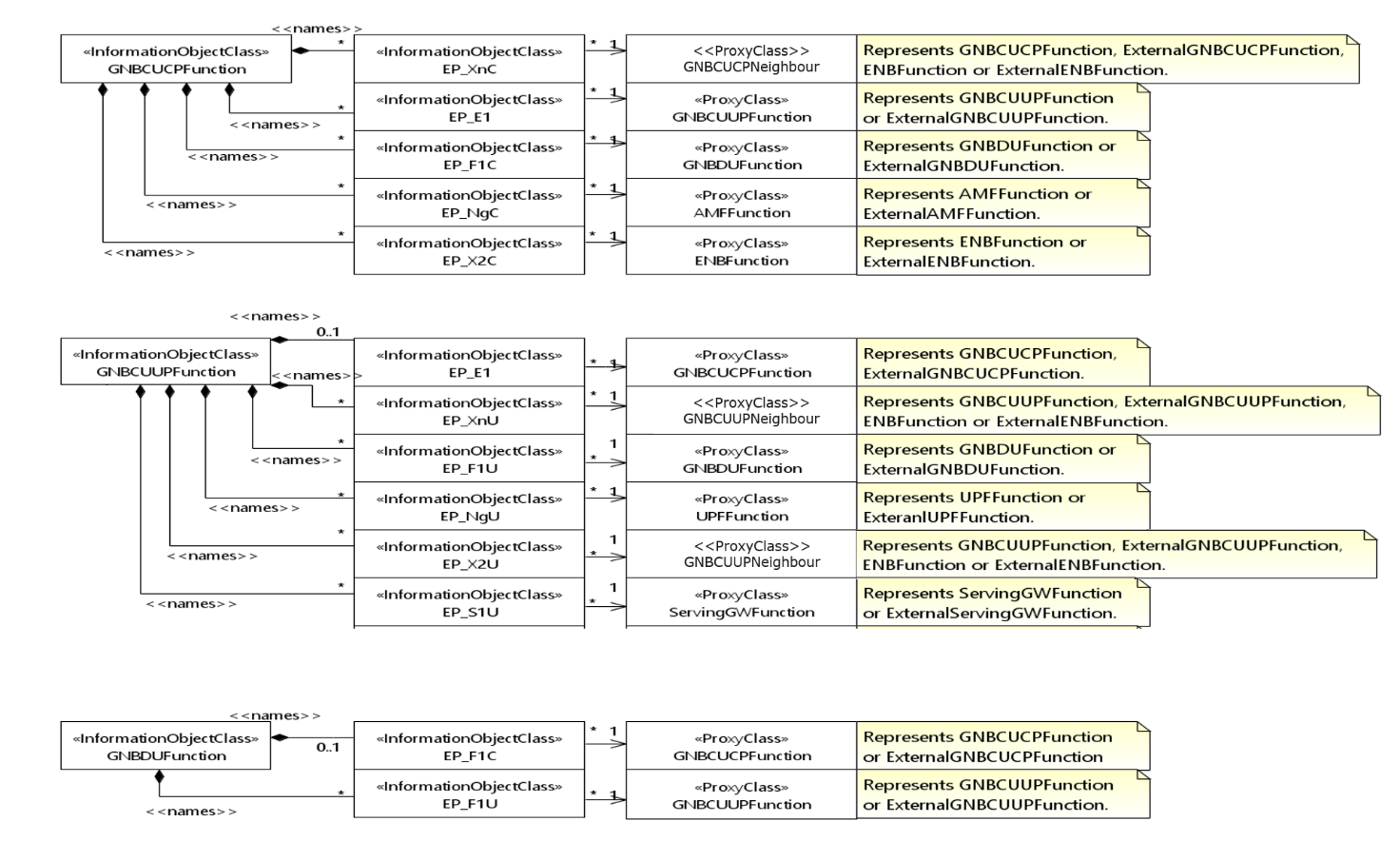


Figure 4.2.1.1-2: NRM for EPs for all deployment scenarios



Figure 4.2.1.1-3: NRM for <<IOC>>NRSectorCarrier and <<IOC>>BWP for all deployment scenarios



Figure 4.2.1.1-4: Cell Relation view for all deployment scenarios

NOTE 1: The above NRM fragment uses SubNetwork to hold both NR and LTE external entities and frequencies.



Figure 4.2.1.1-5: Cell Relation view for all deployment scenarios

NOTE 2: The above NRM fragment uses NRNetwork to hold NR external entities and frequency and using EUtraNetwork to hold LTE external entities and frequency. The NRNetwork and EUtraNetwork are subclasses of SubNetwork (defined in TS 28.622 [30]) with no additional attributes. The reason using NRNetwork and EUtraNetwork is for a clean separation of NR external entities and frequency and LTE external entities and frequency.



Figure 4.2.1.1-6: NRM fragement for RRM Policies

The Figure 4.2.1.1-Xa and Figure 4.2.1.1-Xb show the NRM fragment for configurable 5QIs in NG-RAN.



Figure 4.2.1.1-Xa: Configurable 5QIs managed via SubNetwork for NG-RAN



Figure 4.2.1.1-Xb: Configurable 5QIs managed via *ManagedFunctions* for NG-RAN

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| **Next Modified Section** |

### 4.3.2 GNBCUCPFunction

#### 4.3.2.1 Definition

For non-split NG-RAN deployment scenario, this IOC together with GNBCUUPFunction IOC and GNBDUFunction IOC provide the management representation of gNB defined in clause 6.1.1 in 3GPP TS 38.401 [4].

For 2-split NG-RAN deployment scenario, this IOC together with GNBCUUPFunction IOC provide management representation of the gNB-CU defined in clause 6.1.1 in 3GPP TS 38.401 [4].

For 3-split NG-RAN deployment scenario, this IOC provides management representation of gNB-CU-CP defined in clause 6.1.2 in 3GPP TS 38.401 [4].

The following table identifies the necessary end points required for the representation of gNB and en-gNB, of all deployment scenarios.

|  |  |  |  |
| --- | --- | --- | --- |
| Req  **Role** | End point requirement for 3-split deployment scenario | End point requirement for 2-split deployment scenario | End point requirement for Non-split deployment scenario |
| gNB | <<IOC>>EP\_XnC, <<IOC>>EP\_NgC, <<IOC>>EP\_F1C,  <<IOC>>EP\_E1. | <<IOC>>EP\_XnC, <<IOC>>EP\_NgC, <<IOC>>EP\_F1C  <<IOC>>EP\_F1U. | <<IOC>>EP\_XnC, <<IOC>>EP\_NgC. |
| en-gNB | <<IOC>>EP\_X2C, <<IOC>>EP\_F1C, <<IOC>>EP\_E1. | <<IOC>>EP\_X2C, <<IOC>>EP\_F1C. | <<IOC>>EP\_X2C. |

#### 4.3.2.2 Attributes

The GNBCUCPFunction IOC includes attributes inherited from ManagedFunction IOC (defined in TS 28.622[30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| gNBId | M | T | T | F | T |
| gNBIdLength | M | T | T | F | T |
| gNBCUName | O | T | T | F | T |
| pLMNId | M | T | T | T | T |
| x2BlackList | CM | T | T | F | T |
| x2WhiteList | CM | T | T | F | T |
| xnBlackList | CM | T | T | F | T |
| xnWhiteList | CM | T | T | F | T |
| x2XnHOBlackList | CM | T | T | F | T |
| mappingSetIDBackhaulAddressList | CM | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| configurable5QISetRef | O | T | T | F | T |

#### 4.3.2.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| x2BlackList | Condition: ANR function is supported *AND* Multi-Radio Dual Connectivity with the EPC (see TS 37.340 [9] clause 4.1.2) is supported. |
| x2WhiteList | Condition: ANR function is supported *AND* Multi-Radio Dual Connectivity with the EPC (see TS 37.340 [9] clause 4.1.2) is supported. |
| xnBlackList | Condition: ANR function is supported. |
| xnWhiteList | Condition: ANR function is supported. |
| x2XnHOBlackList | Condition: ANR function is supported. |
| mappingSetIDBackhaulAddressList | Condition: Remote Interference Management function is supported. |

#### 4.3.2.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

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| **Next Modified Sections** |

### 4.3.3 GNBCUUPFunction

#### 4.3.3.1 Definition

For non-split NG-RAN deployment scenario, this IOC together with GNBCUCPFunction IOC and GNBDUFunction IOC provide the management representation of gNB defined in clause 6.1.1 in 3GPP TS 38.401 [4].

For 2-split NG-RAN deployment scenario, this IOC together with GNBCUCPFunction IOC provide management representation of gNB-CU defined in clause 6.1.1 in 3GPP TS 38.401 [4].

For 3-split NG-RAN deployment scenario, this IOC provides management representation of gNB-CU-UP defined in clause 6.1.2 in 3GPP TS 38.401 [4].

The following table identifies the necessary end points required for the representation of gNB and en-gNB, of all deployment scenarios.

|  |  |  |  |
| --- | --- | --- | --- |
| Req  **Role** | End point requirement for 3-split deployment scenario | End point requirement for 2-split deployment scenario | End point requirement for Non-split deployment scenario |
| gNB | <<IOC>>EP\_XnU, <<IOC>>EP\_NgU, <<IOC>>EP\_F1U, <<IOC>>EP\_E1. | <<IOC>>EP\_XnU, <<IOC>>EP\_NgU, <<IOC>>EP\_F1U. | <<IOC>>EP\_XnU, <<IOC>>EP\_NgU. |
| en-gNB | <<IOC>>EP\_X2U, <<IOC>>EP\_S1U, <<IOC>>EP\_F1U, <<IOC>>EP\_E1. | <<IOC>>EP\_X2U, <<IOC>>EP\_S1U, <<IOC>>EP\_F1U. | <<IOC>>EP\_X2U, <<IOC>>EP\_S1U. |

#### 4.3.3.2 Attributes

The GNBCUUPFunction IOC includes attributes inherited from ManagedFunction IOC (defined in TS 28.622[30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| gNB­CUUPId | M | T | F | T | T |
| pLMNInfoList | M | T | T | F | T |
| gNBId | M | T | T | F | T |
| gNBIdLength | M | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| configurable5QISetRef | O | T | T | F | T |

#### 4.3.3.3 Attribute constraints

None.

#### 4.3.3.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

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| **Next Modified Sections** |

### 4.4.1 Attribute properties

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| administrativeState | It indicates the administrative state of the NRCellDU. It describes the permission to use or prohibition against using the cell, imposed through the OAM services.  allowedValues: LOCKED, SHUTTING DOWN, UNLOCKED.  The meaning of these values is as defined in ITU‑T Recommendation X.731 [18].  See Annex A for Relation between the "Pre-operation state of the gNB-DU Cell" and administrative state relevant in case of 2-split and 3-split deployment scenarios. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: LOCKED  isNullable: False |
| operationalState | It indicates the operational state of the NRCellDU instance. It describes whether the resource is installed and partially or fully operable (Enabled) or the resource is not installed or not operable (Disabled).  allowedValues: ENABLED, DISABLED. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| cellState | It indicates the usage state of the NRCellDU instance. It describes whether the cell is not currently in use (Idle), or currently in use but not configured to carry traffic (Inactive) or is currently in use and is configured to carry traffic (Active).  The Inactive and Active definitions are in accordance with TS 38.401 [4]:  "Inactive: the cell is known by both the gNB-DU and the gNB-CU. The cell shall not serve UEs;  Active: the cell is known by both the gNB-DU and the gNB-CU. The cell should be able to serve UEs."  "allowedValues: IDLE, INACTIVE, ACTIVE. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| arfcnDL | NR Absolute Radio Frequency Channel Number (NR-ARFCN) for downlink  allowedValues:  See TS 38.104 [12] subclause 5.4.2. Note that allowed values of NR-ARFCN are specified for each band in subclause 5.4.2.3. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| arfcnUL | NR Absolute Radio Frequency Channel Number (NR-ARFCN) for uplink  allowedValues:  See TS 38.104 [12] subclause 5.4.2. Note that allowed values of NR-ARFCN are specified for each band in subclause 5.4.2.3. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| arfcnSUL | NR Absolute Radio Frequency Channel Number (NR-ARFCN) for supplementary uplink  allowedValues:  See TS 38.104 [12] subclause 5.4.2. Note that allowed values of NR-ARFCN are specified for each band in subclause 5.4.2.3. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| beamAzimuth | The azimuth of a beam transmission, which means the horizontal beamforming pointing angle (beam peak direction) in the (Phi) φ-axis in 1/10th degree resolution. See subclauses 3.2 in TS 38.104 [12] and 7.3 in TS 38.901 [53] as well as TS 28.662 [11]. The pointing angle is the direction equal to the geometric centre of the half-power contour of the beam relative to the reference plane. Zero degree implies explicit antenna bearing (boresight). Positive angle implies clockwise from the antenna bearing.  allowedValues: [-1800 ..1800] 0.1 degree | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Null  isNullable: True |
| beamHorizWidth | The Horizontal beamWidth of a beam transmission, which means the horizontal beamforming half-power (3dB down) beamwidth in the (Phi) φ-axis in 1/10th degree resolution. See subclauses 3.2 in TS 38.104 [12] and 7.3 in TS 38.901 [53].  allowedValues: [0..3599] 0.1 degree | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Null  isNullable: True |
| beamIndex | Index of the beam.  For example, please see subclause 6.6.2 of TS 38.331 [54] where the ssb-Index in the rsIndexResults element of MeasResultNR is defined. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Null  isNullable: True |
| beamTilt | The tilt of a beam transmission, which means the vertical beamforming pointing angle (beam peak direction) in the (Theta) θ-axis in 1/10th degree resolution. See subclauses 3.2 in TS 38.104 [12] and 7.3 in TS 38.901 [53] as well as TS 28.662 [11]. The pointing angle is the direction equal to the geometric centre of the half-power contour of the beam relative to the reference plane. Positive value implies downtilt.  allowedValues: [-900..900] 0.1 degree | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Null  isNullable: True |
| beamType | The type of the beam.  allowedValues: "SSB-BEAM" | type: string  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: Null  isNullable: True |
| beamVertWidth | The Vertical beamWidth of a beam transmission, which means the vertical beamforming half-power (3dB down) beamwidth in the (Theta) θ-axis in 1/10th degree resolution. See subclauses 3.2 in TS 38.104 [12] and 7.3 in TS 38.901 [53].  allowedValues: [0...1800] 0.1 degree | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Null  isNullable: True |
| bSChannelBwDL | BS Channel BW in MHz. for downlink  allowedValues:  See BS Channel BW in TS 38.104 [12], subclause 5.3.​ | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| bSChannelBwUL | BS Channel BW in MHz.for uplink  allowedValues:  See BS Channel BW in TS 38.104 [12], subclause 5.3.​ | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| bSChannelBwSUL | BS Channel BW in MHz.for supplementary uplink  allowedValues:  See BS Channel BW in TS 38.104 [12], subclause 5.3.​ | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| configuredMaxTxPower | This is the maximum possible for all downlink channels, used simultaneously in a cell, added together.  allowedValues:TBD | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| coverageShape | Identifies the sector carrier coverage shape described by the envelope of the contained SSB beams. The coverage shape is implementation dependent.  allowedValues: 0 : 65535 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| digitalTilt | Digitally-controlled tilt through beamforming. It represents the vertical pointing direction of the antenna relative to the antenna bore sight, representing the total non-mechanical vertical tilt of the selected coverageShape. Positive value gives downwards tilt and negative value gives upwards tilt.  allowedValues: [-900..900] 0.1 degree | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| digitalAzimuth | Digitally-controlled azimuth through beamforming. It represents the horizontal pointing direction of the antenna relative to the antenna bore sight, representing the total non-mechanical horizontal pan of the selected coverageShape. Positive value gives azimuth to the right and negative value gives an azimuth to the left.  allowedValues: [-1800 ..1800] 0.1 degree | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| cyclicPrefix | Cyclic prefix as defined in TS 38.211 [32], subclause 4.2.  allowedValues:  NORMAL, EXTENDED. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| localAddress | This parameter specifies the localAddress including IP address and VLAN ID used for initialization of the underlying transport.  First string is IP address, IP address can be an IPv4 address (See RFC 791 [37]) or an IPv6 address (See RFC 2373 [38]).  Second string is VLAN Id. (See IEEE 802.1Q [39]), | type: String  multiplicity: 2  isOrdered: True  isUnique: N/A  defaultValue: None  isNullable: False |
| remoteAddress | Remote address including IP address used for initialization of the underlying transport.  IP address can be an IPv4 address (See RFC 791 [37]) or an IPv6 address (See RFC 2373 [38]). | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| gNBId | It identifies a gNB within a PLMN. The gNB ID is part of the NR Cell Identifier (NCI) of the gNB cells.  See "gNB Identifier (gNB ID)" of subclause 8.2 of TS 38.300 [3]). See "Global gNB ID" in subclause 9.3.1.6 of TS 38.413 [5].  allowedValues: 0..4294967295 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| gNBIdLength | This indicates the number of bits for encoding the gNB ID. See "Global gNB ID" in subclause 9.3.1.6 of TS 38.413 [5].  allowedValues: 22 .. 32. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| gNB­DUId | It uniquely identifies the DU at least within a gNB-CU. See 'gNB-DU ID' in subclause 9.3.1.9 of 3GPP TS 38.473 [8].  allowedValues: 0..236-1 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| gNB­CUUPId | It uniquely identifies the gNB-CU-UP at least within a gNB-CU-CP. See 'gNB-CU-UP ID' in subclause 9.3.1.15 of 3GPP TS 38.463 [48].  allowedValues: 0..236-1 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| gNBCUName | It identifies the Central Entity of a NR node, see subclause 9.2.1.4 of 3GPP TS 38.473 [8].  allowedValues: Not applicable | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| gNBDUName | It identifies the Distributed Entity of a NR node, see subclause 9.2.1.5 of 3GPP TS 38.473 [8].  allowedValues: Not applicable | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| cellLocalId | It identifies a NR cell of a gNB.  It, together with the gNB Identifier (using gNBId of the parent GNBCUCPFunction or GNBDUFunction or ExternalCUCPFunction), identifies a NR cell within a PLMN. This is the NR Cell Identity (NCI). See subclause 8.2 of TS 38.300 [3]),  The NCI can be constructed by encoding the gNB Identifier using gNBId (of the parent GNBCUCPFunction or GNBDUFunction or ExternalCUCPFunction) and cellLocalId where the gNB Identifier field is of length specified by gNBIdLength (of the parent GNBCUCPFunction or GNBDUFunction or ExternalCUCPFunction). See "Global gNB ID" in subclause 9.3.1.6 of TS 38.413 [5].  The NR Cell Global identifier (NCGI) is constructed from the PLMN identity the cell belongs to and the NR Cell Identifier (NCI) of the cell.  See relation between NCI and NCGI subclause 8.2 of TS 38.300 [3].  allowedValues: Not applicable | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| nRPCI | This holds the Physical Cell Identity (PCI) of the NR cell.  allowedValues:  See 3GPP TS 36.211 subclause 6.11 for legal values of pci. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| nRTAC | This holds the identity of the common Tracking Area Code for the PLMNs.  allowedValues:  a) It is the TAC or Extended-TAC.  b) A cell can only broadcast one TAC or Extended-TAC. See TS 36.300, subclause 10.1.7 (PLMNID and TAC relation).  c) TAC is defined in subclause 19.4.2.3 of 3GPP TS 23.003  [13] and Extended-TAC is defined in subclause 9.3.1.29 of 3GPP TS 38.473 [8].  d) For a 5G SA (Stand Alone), it has a non-null value. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: NULL  isNullable: True |
| GNBCUCPFunction.pLMNId | It specifies the PLMN identifier to be used as part of the global RAN node identity.  allowedValues: Not applicable. | Type: PLMNId  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| GNBCUUPFunction.pLMNIdList | This is a list of PLMN identifiers. It defines from which set of PLMNs an UE must have as its serving PLMN to be allowed to use the GNB-CU-UP.  allowedValues: Not applicable. | type: PLMNId  multiplicity: 1..12  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| NRCellCU.pLMNInfoList | It defines which PLMNs that can be served by the NR cell,and which S-NSSAIs can be supported by the NR cell for corresponding PLMN in case of network slicing feature is supported  allowedValues: Not applicable. | type: PLMNInfo  multiplicity: 1..\*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| NRCellDU.pLMNInfoList | It defines which PLMNs that can be served by the NR cell, and which S-NSSAs can be supported by the NR cell for corresponding PLMN in case of network slicing feature is supported. The pLMNId of the first entry of the list is the PLMNId used to construct the nCGI for the NR cell.  allowedValues: Not applicable. | type: PLMNInfo  multiplicity: 1..\*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| ExternalNRCellCU.pLMNIdList | It defines which PLMNs that are assumed to be served by the NR Cell in another gNB-CU-CP. This list is either updated by the managed element itself (e.g. due to ANR, signalling over Xn etc) or by consumer over the standard interface.  allowedValues: Not applicable. | Type: PLMNId  multiplicity: 1..12  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| rRMPolicyMemberList | It represents the list of RRMPolicyMember (s) that the managed object is supporting. A RRMPolicyMember <<dataType>> include the PLMNId <<dataType>> and S-NSSAI <<dataType>>.  allowedValues: N/A | type: RRMPolicyMember  multiplicity: 1..\*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| resourceType | The resource type of interest for an RRM Policy.  allowedValues:  PRB (for NRCellDU)  RRC connected users (for NRCellCU)  DRB (for GNBCUUPFunction)  See NOTE 2, NOTE 3 and NOTE 4 | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| sNSSAIList | It represents the list of S-NSSAI the managed object is supporting. The S-NSSAI is defined in 3GPP TS 23.003 [13].  allowedValues: See 3GPP TS 23.003 [13] | type: S-NSSAI  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| sST | This attribute specifies the Slice/Service type (SST) of the network slice.  See clause 5.15.2 of 3GPP TS 23.501 [2]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| sD | This attribute specifies the Slice Differentiator (SD), which is optional information that complements the slice/service type(s) to differentiate amongst multiple Network Slices.  See clause 5.15.2 of 3GPP TS 23.501 [2]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| quotaType | The attribute indicates the type of the quota which allows to allocate resource as strictly usable for defined rRMPolicyMemberList (“strict quota”) or allows that resource to be used by other rRMPolicyMemberList(s) when defined rRMPolicyMemberList do not need them ( “float quota”).  allowedValues: STRICT, FLOAT. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rRMPolicyMaxRatio | The RRM policy setting the maximum percentage of radio resources to be allocated to the corresponding rRMPolicyMemberList.  This quota can be strict or float quota :  - Strict quota means the defined rRMPolicyMemberList cannot be allocated resource if its used resource reached maxRatio.  - Float quota means the defined rRMPolicyMemberList can use quota from other rRMPolicyMemberList(s) even if its resource has reached maxRatio, if there’s free quota from other rRMPolicyMemberList. In addition, resource of the defined rRMPolicyMemberList can be used by other rRMPolicyMemberList(s) when the defined rRMPolicyMemberList do not need them.  Value 0 indicates that there is no maximum limit.  allowedValues:  0 : 100 | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| rRMPolicyMarginMaxRatio | Maximum quota margin ratio is applicable when maximum quota policy ratio is of type “float quota”. It defines the resource quota within maximum quota to reserve buffers for new resource requirements for the defined rRMPolicyMemberList. With the margin ratio, unused resources of the maximum resource quota can be allocated to other rRMPolicyMemberList(s) when the free resources are more than resource amount indicated by the margin. The margin resource quota can only be used for the defined rRMPolicyMemberList.. Value 0 indicates that no margin is used.  allowedValues:  0 : 100 | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| rRMPolicyMinRatio | The RRM policy setting the minimum percentage of radio resources to be allocated to the corresponding rRMPolicyMemberList, especially in congestion situation.  This quota can be strict or float quota:  - Strict quota means resources are not allowed for other rRMPolicyMemberList(s) even when they are not used by the defined rRMPolicyMemberList.  -Float quota resources can be used by other rRMPolicyMemberList(s) when the defined rRMPolicyMemberList do not need them.  Value 0 indicates that there is no minimum limit.  allowedValues:  0 : 100  NOTE: The averaging time interval is implementation dependent. | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| rRMPolicyMarginMinRatio | Minimum quota margin ratio is applicable when minimum quota policy ratio is of type “float quota”. It defines the resource quota within minimum quota to reserve buffers for new resource requirements for the defined rRMPolicyMemberList. With the margin ratio, unused resources of the minimum resource quota can be allocated to other rRMPolicyMemberList(s) when the free resources are more than resource amount indicated by the margin. The margin resource quota can only be used for the defined rRMPolicyMemberList. Value 0 indicates that no margin is used.  allowedValues:  0 : 100 | type: Integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| subCarrierSpacing | Subcarrier spacing configuration for a BWP. See subclause 5 in TS 38.104 [12].  AllowedValues: [15, 30, 60, 120] depending on the frequency range FR1 or FR2. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| txDirection | Indicates if the transmission direction is downlink (DL), uplink (UL) or both downlink and uplink (DL and UL).  allowedValues:  DL, UL, DL and UL | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| bwpContext | It identifies whether the object is used for downlink, uplink or supplementary uplink.  allowedValues:  DL, UL, SUL | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| isInitialBwp | It identifies whether the object is used for initial or other BWP.  allowedValues:  INITIAL, OTHER | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| startRB | Offset in common resource blocks to common resource block 0 for the applicable subcarrier spacing for a BWP. This corresponds to N\_BWP\_start, see subclause 4.4.5 in TS 38.211 [32].  allowedValues:  0 to N\_grid\_size – 1, where N\_grid\_size equals the number of resource blocks for the BS channel bandwidth, given the subcarrier spacing of the BWP. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| numberOfRBs | Number of physical resource blocks for a BWP. This corresponds to N\_BWP\_size, see subclause 4.4.5 in TS 38.211 [32].  allowedValues:  1 to N\_grid\_size – startRB of the BWP. Se startRB for definition of N\_grid\_size. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| nRTCI | This is the Target NR Cell Identifier. It consists of NR Cell Identifier (NCI) and Physical Cell Identifier of the target NR cell (nRPCI).  The NRRelation.nRTCI identifies the target cell from the perspective of the NRCell, the name-containing instance of the subject NRCellCU instance.  allowedValues: Not applicable. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| adjacentCellRef | This attribute contains the DN of an adjacentNRCell (NRCellCU or ExternalNRCellCU)  allowedValues: Not applicable. | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| ssbFrequency | Indicates cell defining SSB frequency domain position  Frequency of the cell defining SSB transmission. The frequency provided in this attribute identifies the position of resource element RE=#0 (subcarrier #0) of resource block RB#10 of the SS block. The frequency must be positioned on the NR global frequency raster, as defined in TS 38.101 [42] subclause 5.4.2. and within bSChannelBwDL.  allowedValues: 0..3279165 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| nRFrequencyRef | This attribute contains the DN of the referenced NRFrequency.  allowedValues: Not applicable. | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| nRSectorCarrierRef | This attribute contains the DN of the referenced NRSectorCarrier.  allowedValues: Not applicable. | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| bWPRef | This attribute contains the DN of the referenced BWP.  allowedValues: Not applicable. | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| sectorEquipmentFunctionRef | This attribute contains the DN of the referenced NSectorEquipmentFunction.  allowedValues: Not applicable. | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| offsetMO | It is a list of offset values applicable to all measured cells with reference signal(s) indicated in this *MeasObjectNR*. See offsetMO of subclause 5.5.4 of TS 38.331 [31].  allowedValues: Not applicable. | type: QOffsetRangeList  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: N/A  isNullable: False |
| cellIndividualOffset | It is a list of offset values for the neighbour cell. Used when UE is in connected mode. The unit is 1dB. It is defined for rsrpOffsetSSB, rsrqOffsetSSB, sinrOffsetSSB, rsrpOffsetCSI-RS, rsrqOffsetCSI-RS and sinrOffsetCSI-RS. See TS 38.331 [31].  allowedValues: Not applicable. | type: Integer  multiplicity: 6  isOrdered: True  isUnique: N/A  defaultValue: 0  isNullable: False |
| blackListEntry | It specifies a list of PCI (physical cell identity) that are blacklisted in EUTRAN measurements as described in 3GPP TS 38.331 [31].  allowedValues: { 0…1007 } | type: Integer  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| blackListEntryIdleMode | It specifies a list of PCI (physical cell identity) that are blacklisted in SIB4 and SIB5.  allowedValues: { 0…1007 } | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| cellReselectionPriority | It is the absolute priority of the carrier frequency used by the cell reselection procedure. See *CellReselectionPriority* IE in TS 38.331 [31].  It corresponds to the parameter priority in 3GPP TS 38.304 [49].  Value 0 means lowest priority. The UE behaviour when no value is entered is specified in subclause 5.2.4.1 of 3GPP TS 38.304 [49].  The value must not already used by other RAT, i.e. equal priorities between RATs are not supported.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: 0None  isNullable: False |
| cellReselectionSubPriority | It indicates a fractional value to be added to the value of cellReselectionPriority to obtain the absolute priority of the concerned carrier frequency for E-UTRA and NR. See *CellReselectionSubPriority* IE in TS 38.331 [31].  allowedValues: { 0.2, 0.4, 0.6, 0.8 }. | type: Short  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| pMax | It calculates the parameter Pcompensation (defined in 3GPP TS 38.304 [49]), at cell reselection to an Cell. Its unit is 1 dBm. It corresponds to parameter PEMAX in 3GPP TS 38.101 [??].  allowedValues: { -30..33 }. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| qOffsetFreq | It is the frequency specific offset applied when evaluating candidates for cell reselection. See TS 38.331 [49]. Its unit is 1 dB.  allowedValues:  { -24, -22, -20, -18, -16, -14, -12, -10, -8, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 8, 10, 12, 14, 16, 20, 22, 24 } | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: 0  isNullable: False |
| qOffsetRangeList | It is used to indicate a cell, beam or measurement object specific offset to be applied when evaluating candidates for cell re-selection or when evaluating triggering conditions for measurement reporting. The value in dB. Value dB-24 corresponds to -24 dB, dB-22 corresponds to -22 dB and so on.  This is a list of enum values representing, in sequence: rsrpOffsetSSB, rsrqOffsetSSB, sinrOffsetSSB, rsrpOffsetCSI-RS, srqOffsetCSI-RS, sinrOffsetCSI-RS.  See Q-OffsetRangeList in subclause of subclause 6.3.1 of TS 38.311 [31].  allowedValues:  { -24, -22, -20, -18, -16, -14, -12, -10, -8, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24 } | type: ENUM  multiplicity: 6  isOrdered: True  isUnique: N/A  defaultValue: 0  isNullable: False |
| qQualMin | It indicates the minimum required quality level in the cell (dB). See qQualMin in TS 38.304 [49]. Unit is 1 dB.  Value 0 means that it is not sent and UE applies in such case the (default) value of negative infinity for Qqualmin. Sent in SIB3 or SIB5.  allowedValues: { -34..-3, 0 } | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| qRxLevMin | It indicates the required minimum received Reference Symbol Received Power (RSRP) level in the (E-UTRA) frequency for cell reselection. It corresponds to Qrxlevmin defined in 3GPP TS 38.304 [49]. It is broadcast in SIB3 or SIB5, depending on whether the related frequency is intra- or inter-frequency. Its unit is 1 dBm and resolution is 2.  allowedValues: { -140..-44 }. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| threshXHighP | This specifies the Srxlev threshold (in dB) used by the UE when reselecting towards a higher priority RAT/ frequency than the current serving frequency. Each frequency of NR and E-UTRAN might have a specific threshold. It corresponds to the ThreshX, HighPin 3GPP TS 38.304 [49]. Its unit is 1 dB and resolution is 2**.**  allowedValues: { 0..62 } | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| threshXHighQ | This specifies the Squal threshold (in dB) used by the UE when reselecting towards a higher priority RAT/ frequency than the current serving frequency. Each frequency of NR and E-UTRAN might have a specific threshold. It corresponds to the ThreshX, HighQ in TS 38.304 [49]. Its unit is 1 dB.  allowedValues: { 0..31 } | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| threshXLowP | This specifies the Srxlev threshold (in dB) used by the UE when reselecting towards a lower priority RAT/ frequency than the current serving frequency. Each frequency of NR might have a specific threshold. It corresponds to ThreshX,LowP in 3GPP TS 38.304 [49]. Its unit is 1 dB. Its resolution is 2.  allowedValues: { 0..62 } | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| threshXLowQ | This specifies the Squal threshold (in dB) used by the UE when reselecting towards a lower priority RAT/ frequency than the current serving frequency. Each frequency of NR might have a specific threshold. It corresponds to ThreshX,Low in TS 38.304 [49]. Its unit is 1 dB.  allowedValues: {0..31}. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| tReselectionNr | It is the cell reselection timer and corresponds to parameter TreselectionRAT for NR defined in 38.331 [4]. Its unit is in seconds.   allowedValues: {0..7}. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| tReselectionNRSfHigh | The attribute t-ReselectionNr (a parameter TreselectionNR in TS 38.304 [49]) is multiplied with this factor if the UE is in high mobility state. It corresponds to the parameter Speed dependent ScalingFactor for TreselectionNr for medium high state in 3GPP TS 38.304 [49]. The unit is one %.  Value mapping: 25 = 0.25 50 = 0.5 75 = 0.75 100 = 1.0  allowedValues: {25, 50, 75, 100}. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| tReselectionNRSfMedium | The attribute t-ReselectionNR (a parameter "TreselectionNR in TS 38.304 [49]”) is multiplied with this factor if the UE is in medium mobility state. It corresponds to the parameter Speed dependent ScalingFactor for TreselectionNr for medium mobility state in 3GPP TS 38.304 [49]. Its unit is one %.  Value mapping: 25 = 0.25 50 = 0.5 75 = 0.75 100 = 1.0   allowedValues: {25, 50, 75, 100}. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| absoluteFrequencySSB | The absolute frequency applicable for a downlink NR carrier frequency associated with the SSB.  allowedValues: {0.. 3279165}. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| sSBSubCarrierSpacing | This SSB is used for for synchronization. See subclause 5 in TS 38.104 [12]. Its units are in kHz.  allowedValues: {15, 30, 120, 240}.  Note that the allowed values of SSB used for representing data, by e.g. a BWP, are: 15, 30, 60 and 120 in units of kHz. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| multiFrequencyBandListNR | It is a list of additional frequency bands the frequency belongs to. The list is automatically set by the gNB.  allowedValues: {1..256 } | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ssbPeriodicity | Indicates cell defined SSB periodicity in number of subframes (ms).  The SSB periodicity in msec is used for the rate matching purpose.  allowedValues: 5, 10, 20, 40, 80, 160. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ssbOffset   |  | | --- | |  | | Indicates cell defining SSB time domain position. Defined as the offset of the measurement window, in number of subframes (ms), in which to receive SS/PBCH blocks, where allowed values depend on the ssbPeriodicity.  allowedValues:  ssbPeriodicity5 ms 0..4,  ssbPeriodicity10 ms 0..9,  ssbPeriodicity20 ms 0..19,  ssbPeriodicity40 ms 0..39,  ssbPeriodicity80 ms 0..79,  ssbPeriodicity160 ms 0..159. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ssbDuration   |  | | --- | |  | | Duration of the measurement window in which to receive SS/PBCH blocks. It is given in number of subframes (ms) (see 38.213 [41], subclause 4.1.  allowedValues: 1, 2, 3, 4, 5. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rimRSMonitoringStartTime | This field configures the UTC time when the gNB attempts to start RIM-RS monitoring.  allowedValues: containing the information same with xsd: dateTime. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rimRSMonitoringStopTime | This field configures the UTC time when the gNB stops RIM-RS monitoring.  allowedValues: containing the information same with xsd: dateTime. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| aggressorSetID | This attributer indicates the associated aggressor gNB Set ID of the cell. (See subclause 7.4.1.6 in TS 38.211 [32]).  Editor's Note: The definition of aggressorSetID needs further clarification with RAN1.  allowedValues:  The bit length of the set ID is maximum 22bit. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| victimSetID | This attributer indicates the associated Victim gNB Set ID of the cell. (See subclause 7.4.1.6 in TS 38.211 [32]).  Editor's Note: The definition of victimSetID needs further clarification with RAN1.  allowedValues:  The bit length of the set ID is maximum 22bit. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| mappingSetIDBackhaulAddressList | The attribute specifies a list of mappingSetIDBackhaulAddress which is defined as a datatype (see clause 4.3.47). Which is used to retrieve the backhaul address of the victim set.  allowedValues: Not applicable | type: MappingSetIDBackhaulAddress  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| backhaulAddress | The attribute specifies backhaulAddress which is defined as a datatype (see clause 4.3.48).  allowedValues: Not applicable | type: BackhaulAddress  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| setID | This specifies the set ID. (See subclause 7.4.1.6 in TS 38.211 [32]).  allowedValues:  The bit length of the set ID is maximum 22bit. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| tAI | Indicates the TAI (see subclause 9.3.3.11 in TS 38.413[5]), including PpLMNId ID and nRTAC. allowedValues: Not applicable | type: TAI  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| configurable5QISetRef | This is the DN of Configurable5QISet.  allowedValues: DN of the Configurable5QISet MOI. | type: String  multiplicity: 0..1  isOrdered: False  isUnique: True  defaultValue: None  isNullable: True |
| NOTE 1: Void  NOTE 2: The radio resource can be signaling resources (e.g. RRC connected users) or user plane resources (e.g. PRB, DRB).  NOTE 3: The averaging time interval is implementation dependent.  NOTE 4: A RRM Policy can make use of the defined policy RRMPolicyRatio or a vendor specific RRM Policy. | | |

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| **Next Modified Sections** |

### 5.2.1 Class diagram of 5GC NFs

#### 5.2.1.1 Relationships

This clause depicts the set of classes (e.g. IOCs) that encapsulates the information relevant for NRM of 5GC NFs definitions. This clause provides the overview of the relationships of relevant classes in UML. Subsequent clauses provide more detailed specification of various aspects of these classes.

The Figure 5.2.1.1-1 shows the 5GC NF NRM containment/naming relationship.

Figure 5.2.1.1-1: 5GC NRM containment/naming relationship

The Figure 5.2.1.1-2 shows the transport view of AMF NRM.



Figure 5.2.1.1-2: Transport view of AMF NRM

The Figure 5.2.1.1-3 shows the transport view of SMF NRM.

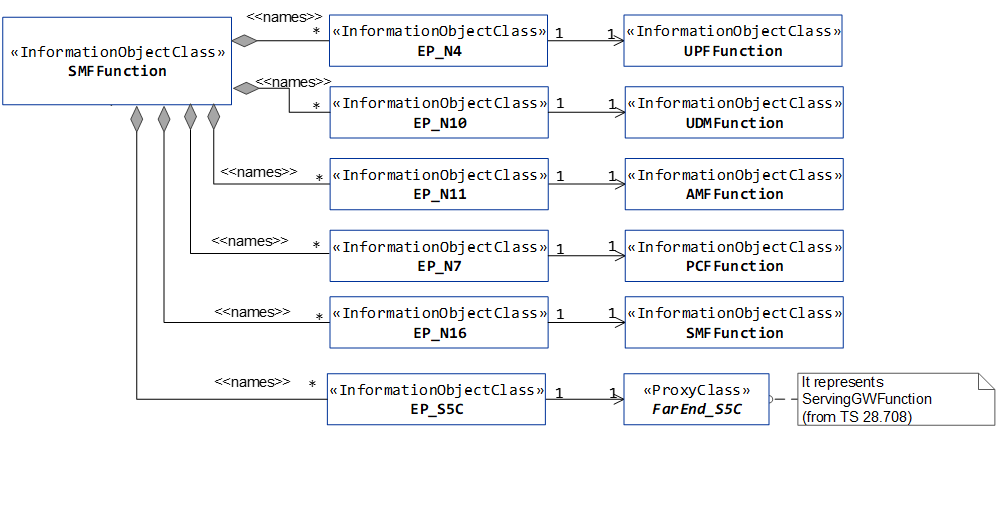


Figure 5.2.1.1-3: Transport view of SMF NRM

The Figure 5.2.1.1-4 shows the transport view of UPF NRM.

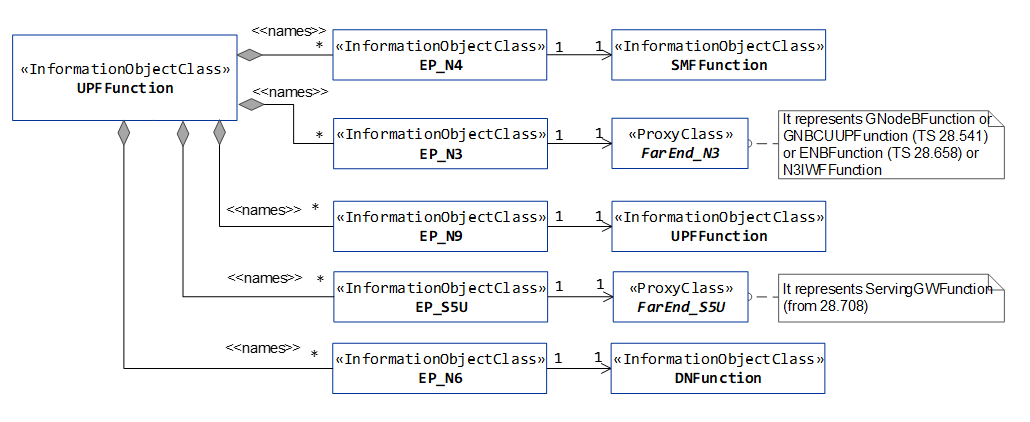


Figure 5.2.1.1-4: Transport view of UPF NRM

The Figure 5.2.1.1-5 shows the transport view of N3IWF NRM.



Figure 5.2.1.1-5: Transport view of N3IWF NRM

The Figure 5.2.1.1-6 shows the transport view of PCF NRM.

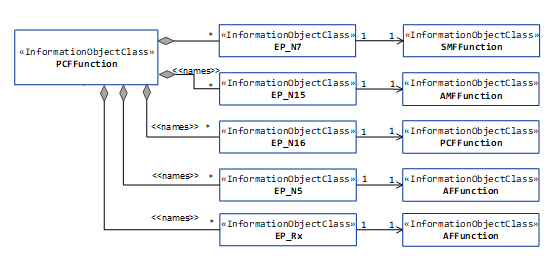


Figure 5.2.1.1-6: Transport view of PCF NRM

The Figure 5.2.1.1-7 shows the transport view of AUSF NRM.

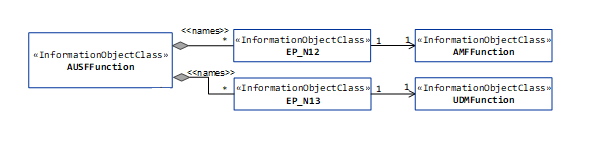


Figure 5.2.1.1-7: Transport view of AUSF NRM

The Figure 5.2.1.1-8 shows the transport view of UDM NRM.

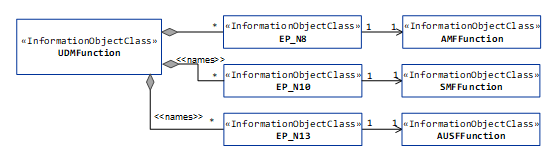


Figure 5.2.1.1-8: Transport view of UDM NRM

The Figure 5.2.1.1-9 shows the transport view of NRF NRM.



Figure 5.2.1.1-9: Transport view of NRF NRM

The Figure 5.2.1.1-10 shows the transport view of NSSF NRM.



Figure 5.2.1.1-10: Transport view of NSSF NRM

The Figure 5.2.1.1-11 shows the transport view of SMSF NRM.



Figure 5.2.1.1-11: Transport view of SMSF NRM

The Figure 5.2.1.1-12 shows the transport view of 5G location service related NRM.



Figure 5.2.1.1-12: Transport view of LMF NRM

The Figure 5.2.1.1-13 shows the transport view of 5G-EIR NRM.



Figure 5.2.1.1-13: Transport view of 5G-EIR NRM

The Figure 5.2.1.1-14 shows the transport view of SEPP NRM.

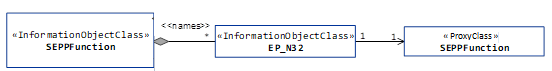


Figure 5.2.1.1-14: Transport view of SEPP NRM

The Figure 5.2.1.1-Xa and Figure 5.2.1.1-Xb show the NRM fragment for configurable 5QIs in 5GC.



Figure 5.2.1.1-Xa: Configurable 5QIs managed via SubNetwork for 5GC



Figure 5.2.1.1-Xb: Configurable 5QIs managed via *ManagedFunction* for 5GC

#### 5.2.1.2 Inheritance

This clause depicts the inheritance relationships that exist between IOCs.

Figure 5.2.1.2-1 shows the inheritance hierarchy from IOC ManagedFunction related to the 5GC NF NRM.



Figure 5.2.1.2-1: Inheritance hierarchy from IOC ManagedFunction related to the 5GC NF NRM

Figure 5.2.1.2-2 shows the inheritance hierarchy from IOC EP\_RP related to 5GC NF NRM.

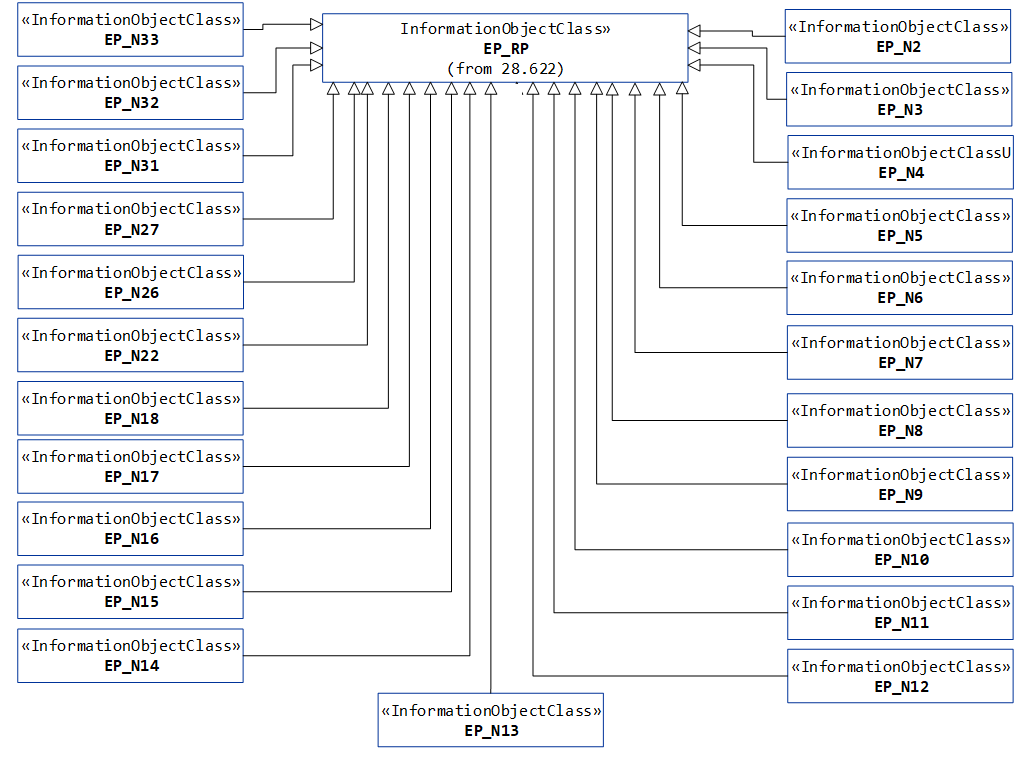


Figure 5.2.1.2-2: Inheritance hierarchy from IOC EP\_RP related to the 5GC NF NRM



Figure 5.2.1.2-x: Inheritance hierarchy for IOC Configurable5QISet

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| **Next Modified Sections** |

### 5.3.14 SMSFFunction

#### 5.3.14.1 Definition

This IOC represents the SMSF function defined in 3GPP TS 23.501 [2].

#### 5.3.14.2 Attributes

The SMSFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in TS 28.622[30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| managedNFProfile | M | T | T | F | T |
| commModelList | M | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| configurable5QISetRef | O | T | T | F | T |

#### 5.3.14.3 Attribute constraints

None.

#### 5.3.14.4 Notifications

The common notifications defined in subclause 5.5 are valid for this IOC, without exceptions or additions.

|  |
| --- |
| **Next Modified Sections** |

### 5.3.x Configurable5QISet

#### 5.3.x.1 Definition

This IOC specifies the non-standardized 5QIs, including their QoS characteristics, that need to be pre-configured (and configurable) to the 5G NFs, see 3GPP TS 23.501 [2].

#### 5.3.x.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| configurable5QIs | M | T | T | F | T |

#### 5.3.x.3 Attribute constraints

None.

#### 5.3.x.4 Notifications

The common notifications defined in subclause 5.5 are valid for this IOC, without exceptions or additions.

|  |
| --- |
| **Next Modified Sections** |

### 5.3.y FiveQICharacteristics <<dataType>>

#### 5.3.y.1 Definition

This data type specifies the 5QI value and the cooresponding QoS characteristics for a configurable 5QI.

#### 5.3.y.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| fiveQIValue | M | T | T | F | T |
| resourceType | M | T | T | F | T |
| priorityLevel | O | T | T | F | T |
| packetDelayBudget | O | T | T | F | T |
| packetErrorRate | O | T | T | F | T |
| averagingWindow | O | T | T | F | T |
| maximumDataBurstVolume | O | T | T | F | T |

#### 5.3.y.3 Attribute constraints

None

#### 5.3.y.4 Notifications

The subclause 4.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

|  |
| --- |
| **Next Modified Sections** |

### 5.3.z PacketErrorRate <<dataType>>

#### 5.3.z.1 Definition

This data type specifies the Packet Error Rate of a configurable 5QI.

#### 5.3.z.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| scalar | M | T | T | F | T |
| exponent | M | T | T | F | T |

#### 5.3.z.3 Attribute constraints

None

#### 5.3.z.4 Notifications

The subclause 4.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

|  |
| --- |
| **Next Modified Sections** |

### 5.4.1 Attribute properties

The following table defines the attributes that are present in several Information Object Classes (IOCs) of the present document.

| Attribute Name | Documentation and Allowed Values | Properties | |
| --- | --- | --- | --- |
| aMFIdentifier | The AMFI is constructed from an AMF Region ID, an AMF Set ID and an AMF Pointer. The AMF Region ID identifies the region, the AMF Set ID uniquely identifies the AMF Set within the AMF Region, and the AMF Pointer uniquely identifies the AMF within the AMF Set. (Ref. 3GPP TS 23.003 [13]) | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| aMFSetId | It represents the AMF Set ID, which is uniquely identifies the AMF Set within the AMF Region.  allowedValues: defined in subclause 2.10.1 of 3GPP TS 23.003 [13]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| aMFSetMemberList | It is the list of DNs of AMFFunction instances of the AMFSet.  allowedValues: N/A | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False | |
| aMFRegionId | It represents the AMF Region ID, which identifies the region.  allowedValues: defined in subclause 2.10.1 of 3GPP TS 23.003 [13]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| localAddress | This parameter specifies the localAddress including IP address and VLAN ID used for initialization of the underlying transport.  First string is IP address, IP address can be an IPv4 address (See RFC 791 [37]) or an IPv6 address (See RFC 2373 [38]).  Second string is VLAN Id (See IEEE 802.1Q [39]). | type: String  multiplicity: 2  isOrdered: True  isUnique: N/A  defaultValue: None  isNullable: False | |
| remoteAddress | Remote address including IP address used for initialization of the underlying transport.  IP address can be an IPv4 address (See RFC 791 [37]) or an IPv6 address (See RFC 2373 [38]). | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | |
| nfProfileList | It is a set of NFProfile(s) to be registered in the NRF instance. NFProfile is defined in 3GPP TS 29.510 [23]. | type: <<dataType>>  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| nSIIdList | It is a set of NSI Id. The NSI ID is defined in subclause 6.1.6.2.8 of 3GPP TS 29.531 [24]. | type: String  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| sNSSAIList | See subclause 4.4.1. |  | |
| sBIFQDN | It is used to indicate the FQDN of the registered NF instance in service-based interface, for example, NF instance FQDN structure is:  nftype<nfnum>.slicetype<sliceid>.mnc<MNC>.mcc<MCC>.3gppnetwork.org | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| sBIServiceList | It is used to indicate the all supported NF services registered on service-based interface. | type: String  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| nRTACList | It is the list of Tracking Area Codes (either legacy TAC or extended TAC).  allowedValues:  Legacy TAC and Extended TAC are defined in clause 9.3.3.10 of TS 38.413 [5]. | type: Integer  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| supportedBMOList | It is used to indicate the list of supported BMOs (Bridge Managed Objects) required for integration with TSN system. | type: String  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| managedNFProfile | This parameter defines profile for managed NF (See TS 23.501 [22]).  allowedValues: N/A | type: ManagedNFProfile  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| nfInstanceID | This parameter defines unique identity of the NF Instance. The format of the NF Instance ID shall be a Universally Unique Identifier (UUID) version 4, as described in IETF RFC 4122 [44]  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False |
| nfType | This parameter defines type of Network Function  allowedValues: See TS 23.501[22] for NF types | type: ENUM  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| fqdn | This parameter defines FQDN of the Network Function (See TS 23.003 [5])  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False |
| ipAddress | This parameter defines IP Address of the Network Function. It can be IPv4 address (See RFC 791 [24]) or IPv6 address (See RFC 2373 [25]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False |
| authzInfo | This parameter defines NF Specific Service authorization information. It shall include the NF type (s) and NF realms/origins allowed to consume NF Service(s) of NF Service Producer (See TS 23.501[22]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: True |
| locality | The parameter defines information about the location of the NF instance (e.g. geographic location, data center) defined by operator (See TS 29.510[23]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: True |
| capacity | This parameter defines static capacity information in the range of 0-65535, expressed as a weight relative to other NF instances of the same type; if capacity is also present in the nfServiceList parameters, those will have precedence over this value (See TS 29.510[23])  allowedValues: 0-65535 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| nFInfo | This parameter includes NF specific data in Managed NF profile  allowedValues: N/A | type: NFInfo  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| hostAddr | This parameter defines host address of a NF  allowedValues: N/A | type: HostAddr  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| priority | This parameter defines Priority (relative to other NFs of the same type) in the range of 0-65535, to be used for NF selection; lower values indicate a higher priority. If priority is also present in the nfServiceList parameters, those will have precedence over this value (See TS 29.510[23]).  allowedValues: 0-65535 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| supportedDataSetIds | This parameter defines list of supported data sets in the UDR instance (See TS 29.510[23]).  allowedValues: "SUBSCRIPTION", "POLICY", EXPOSURE", "APPLICATION" | type: ENUM  multiplicity: 1..\*  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |
| nFSrvGroupId | This parameter defines identity of the group that is served by the NF instance (See TS 29.510[23]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False |
| smfServingAreas | This parameter defines the SMF service area(s) the UPF can serve (See TS 29.510[23]).  allowedValues: N/A | type: String  multiplicity: 1..\*  isOrdered: F  isUnique: True  defaultValue: None  isNullable: False |
| isRemoveAllowed | This indicates if the subject NRCellRelation can be removed (deleted) or not.  If TRUE, the subject NRCellRelation instance can be removed (deleted).  If FALSE, the subject NRCellRelation instance shall not be removed (deleted) by any entity but an MnS consumer.  allowedValues: TRUE,FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| isHOAllowed | This indicates if HO is allowed or prohibited.  If TRUE, handover is allowed from source cell to target cell. The source cell is identified by the name-containing NRCellCU of the NRCellRelation that contains the isHOAllowed. The target cell is referenced by the NRCellRelation that contains this isHOAllowed.  If FALSE, handover shall not be allowed.  allowedValues: TRUE,FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| x2BlackList | This is a list of DNs of NRCellCU and ExternalNRCellCU. If the target node DN is a member of the source node’s NRCellCU.x2BlackList, the source node is:  1) Prohibited from sending X2 connection request to target node;  2) Forced to tear down established X2 connection to target node  3) Not allowed to accept incoming X2 connection request from target node.  The same DN may appear here and in NRCellCU.x2WhiteList. In such case, the DN in x2WhiteList shall be treated as if it is absent. | type: DN  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| xnBlackList | This is a list of DNs of NRCellCU and ExternalNRCellCU. If the target node DN is a member of the source node’s NRCellCU.xnBlackList, the source node is:  1) Prohibited from sending Xn connection request to target node;  2) Forced to tear down established Xn connection to target node  3) Not allowed to accept incoming Xn connection request from target node.  The same DN may appear here and in NRCellCU.xnWhiteList. In such case, the DN in xnWhiteList shall be treated as if it is absent. | type: DN  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| x2WhiteList | This is a list of DNs of NRCellCU and ExternalNRCellCU. If the target node DN is a member of the source node’s NRCellCU.x2WhiteList, the source node:  - is allowed to request the establishment of X2 connection with the target node;  - is not allowed to initiate the tear down of established X2 connection to target node  The same DN may appear here and in NRCellCU.x2BlackList. In such case, the DN here shall be treated as if it is absent. | type: String  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| xnWhiteList | This is a list of DNs of NRCellCU and ExternalNRCellCU. If the target node DN is a member of the source node’s NRCellCU.xnWhiteList, the source node:  - is allowed to request the establishment of Xn connection with the target node;  - is not allowed to initiate the tear down of established Xn connection to target node  The same DN may appear here and in NRCellCU.xnBlackList. In such case, the DN here shall be treated as if it is absent. | type: String  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| x2XnHOBlackList | This is a list of DNs of any number and combination of cells represented by the following IoCs:  NRCellCU  ExternalNRCellCU.  ExternalEUtranCellTDD  ExternalEUtranCellFDD  EUtranCellTDD  EUtranCellFDD  For all the entries in NRCellCU.x2XnHOBlackList, the subject NRCellCU is prohibited to use the X2 or Xn interface for HOs even if an X2 or Xn interface exists to the target cell. | type: DN  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| groupId | This parameter identiies a list of target NF services on which the same communication model is applied to.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |
| commModelType | This parameter defines communication model used by a NF to interact with NF service(s) (See TS 23.501 [2]).  allowedValues:”DIRECT\_COMMUNICATION\_WO\_NRF”, “DIRECT\_COMMUNICATION\_WITH\_NRF”, “INDIRECT\_COMMUNICATION\_WO\_DEDICATED\_DISCOVERY”, “INDIRECT\_COMMUNICATION\_WITH\_DEDICATED\_DISCOVERY” | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| targetNFServiceList | This parameter lists target NF services sharing same communication model and configuration.  allowedValues: N/A | type: DN  multiplicity: 1..\*  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False |
| commModelConfiguration | This parameter defines configuration parameters for specific communication model for a group of NF Services.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| supportedFuncList | This parameter lists functionalities supported by a SCP. Refer to TS 23.501 [2]. | type: SupportedFunction  multiplicity: 1..\*  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |
| address | This parameter defines address of a SCP instance, it can be IP address (either IPv4 address (See RFC 791 [24]) or IPv6 address (See RFC 2373 [25])) or FQDN (See TS 23.003 [5]). | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| function | This parameter defines name of a functionality supported by a SCP. | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False |
| policy | This parameter defines configuration policies of a functionality supported by a SCP. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| capabilityList | This parameter lists capabilities supported by a NEF. Refer to TS 23.501 [2].  allowedValues: N/A | type: String  multiplicity: 1..\*  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |
| isINEF | This parameter defines if the NEF is an Intermediate NEF.  allowedValues: TRUE, FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| isCAPIFSup | This parameter defines if the NEF support Common API Framework.  allowedValues: TRUE, FALSE | type: Boolean  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False |
| sEPPType | This parameter defines the type of a SEPP entity. Refer to TS 33.501 [52].  allowedValues: “CSEPP”, “PSEPP” | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |
| sEPPId | This parameter is identifier of a SEPP, it is unique inside a PLMN.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| remotePlmnId | This parameter defines PLMNId of the remote SEPP.  allowedValues: N/A | Type: PLMNId  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| remoteSeppAddress | This parameter defines address of the remote SEPP. It can be IP address (either IPv4 address (See RFC 791 [24]) or IPv6 address (See RFC 2373 [25])) or FQDN(See TS 23.003 [5]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False |
| remoteSeppId | This parameter defines identifier of the remote SEPP. it is unique inside a PLMN.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| n32cParas | This attribute is used to configure parameters to establish security link between two SEPPs.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False |
| n32fPolicy | This attribute is used to configure policies to protect the messages exchanged between SEPPs.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False |
| withIPX | This attribute defines if there’s an IPX interconnected between two SEPPs.  allowedValues: TRUE, FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| configurable5QISetRef | This is the DN of Configurable5QISet.  allowedValues: DN of the Configurable5QISet MOI. | type: String  multiplicity: 0..1  isOrdered: False  isUnique: True  defaultValue: None  isNullable: True |
| configurable5QIs | It indicates the configurable 5QIs, including their QoS characteristics.  allowedValues: N/A | type: FiveQICharacteristics  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| fiveQIValue | It identifies the 5QI value.  allowedValues: 0 - 255 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: Yes  defaultValue: None  isNullable: False |
| resourceType | It indicates the Resource Type of a 5QI, as specified in TS 23.501 [2].  allowedValues: “GBR”, “Non-GBR” | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |
| priorityLevel | It indicates the Priority Level of a 5QI, as specified in TS 23.501 [2].  allowedValues: 0 - 127 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |
| packetDelayBudget | It indicates the Packet Delay Budget (in unit of 0.5ms) of a 5QI, as specified in TS 23.501 [2].  allowedValues: 0 - 1023 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |
| packetErrorRate | It indicates the Packet Error Rate of a 5QI, as specified in TS 23.501 [2].  allowedValues: N/A | type: PacketErrorRate  multiplicity: 1  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |
| averagingWindow | It indicates the Averaging Window (in unit of ms) of a 5QI, as specified in TS 23.501 [2].  allowedValues: 0 - 4095 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |
| maximumDataBurstVolume | It indicates the Maximum Data Burst Volume (in unit of Byte) of a 5QI, as specified in TS 23.501 [2].  allowedValues: 0 - 4095 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |
| scalar | The Packet Error Rate of a 5QI expressed as *Scalar* x 10-k where k is the *Exponent*.  This attriutes indicates the *Scalar* of this expression.  allowedValues: 0 - 9 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |
| exponent | The Packet Error Rate of a 5QI expressed as *Scalar* x 10-k where k is the *Exponent*.  This attriutes indicates the *Exponent* of this expression.  allowedValues: 0 - 9 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False |

|  |
| --- |
| **Next Modified Sections** |

## C.4.3 XML schema "nRNrm.xsd"

<?xml version="1.0" encoding="UTF-8"?>

<!--

3GPP TS 28.541 NR Network Resource Model

XML schema definition

nrNrm.xsd

-->

<schema xmlns="http://www.w3.org/2001/XMLSchema"

xmlns:xn="http://www.3gpp.org/ftp/specs/archive/28\_series/28.623#genericNrm"

xmlns:nn="http://www.3gpp.org/ftp/specs/archive/28\_series/28.541#nrNrm"

xmlns:en="http://www.3gpp.org/ftp/specs/archive/28\_series/28.659#eutranNrm"

xmlns:epc="http://www.3gpp.org/ftp/specs/archive/28\_series/28.709#epcNrm"

xmlns:sm="http://www.3gpp.org/ftp/specs/archive/28\_series/28.626#stateManagementIRP"

xmlns:ngc="http://www.3gpp.org/ftp/specs/archive/28\_series/28.541#ngcNrm"

xmlns:sp="http://www.3gpp.org/ftp/specs/archive/28\_series/28.629#sonPolicyNrm"

targetNamespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.541#nrNrm" elementFormDefault="qualified">

<import namespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.623#genericNrm"/>

<import namespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.709#epcNrm"/>

<import namespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.626#stateManagementIRP"/>

<import namespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.541#ngcNrm"/>

<import namespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.629#sonPolicyNrm"/>

<simpleType name="GnbId">

<restriction base="unsignedLong">

<maxInclusive value="4294967295"/>

</restriction>

</simpleType>

<simpleType name="GnbIdLength">

<restriction base="integer">

<minLength value="22"/>

<maxLength value="32"/>

</restriction>

</simpleType>

<simpleType name="Nci">

<restriction base="unsignedLong">

<maxInclusive value="68719476735"/>

</restriction>

</simpleType>

<simpleType name="Pci">

<restriction base="unsignedShort">

<maxInclusive value="503"/>

<!-- Minimum value is 0, maximum value is 3x167+2=503 -->

</restriction>

</simpleType>

<simpleType name="NrTac">

<restriction base="unsignedLong">

<maxInclusive value="16777215"/>

<!--5G TAC is 3-octets length -->

</restriction>

</simpleType>

<simpleType name="GnbDuId">

<restriction base="unsignedLong">

<maxInclusive value="68719476735"/>

<!-- Minimum value is 0, maximum value is 2^36-1=68719476735 -->

</restriction>

</simpleType>

<simpleType name="GnbCuupId">

<restriction base="unsignedLong">

<maxInclusive value="68719476735"/>

<!-- Minimum value is 0, maximum value is 2^36-1=68719476735 -->

</restriction>

</simpleType>

<simpleType name="GnbName">

<restriction base="string">

<minLength value="1"/>

<maxLength value="150"/>

</restriction>

</simpleType>

<simpleType name="CyclicPrefix">

<restriction base="integer">

<enumeration value="15"/>

<enumeration value="30"/>

<enumeration value="60"/>

<enumeration value="120"/>

</restriction>

</simpleType>

<simpleType name="QuotaType">

<restriction base="string">

<enumeration value="STRICT"/>

<enumeration value="FLOAT"/>

</restriction>

</simpleType>

<simpleType name="CellState">

<restriction base="string">

<enumeration value="IDLE"/>

<enumeration value="INACTIVE"/>

<enumeration value="ACTIVE"/>

</restriction>

</simpleType>

<simpleType name="BwpContext">

<restriction base="string">

<enumeration value="DL"/>

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<enumeration value="SUL"/>

</restriction>

</simpleType>

<simpleType name="IsInitialBwp">

<restriction base="string">

<enumeration value="INITIAL"/>

<enumeration value="OTHER"/>

</restriction>

</simpleType>

<simpleType name="qOffsetRangeList">

<restriction base="string">

<enumeration value="dB-24"/>

<enumeration value="dB-22"/>

<enumeration value="dB-20"/>

<enumeration value="dB-18"/>

<enumeration value="dB-16"/>

<enumeration value="dB-14"/>

<enumeration value="dB-12"/>

<enumeration value="dB-10"/>

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<enumeration value="dB-6"/>

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</restriction>

</simpleType>

<simpleType name="cellReselectionPriority">

<restriction base="unsignedLong">

<minInclusive value="0"/>

<maxInclusive value="16"/>

<!--Value 0 means lowest priority-->

</restriction>

</simpleType>

<simpleType name="cellReselectionSubPriority">

<restriction base="unsignedLong">

<minInclusive value="0"/>

<maxInclusive value="16"/>

<!--Value 0 means lowest priority-->

</restriction>

</simpleType>

<simpleType name="PMaxRangeType">

<restriction base="short">

<minInclusive value="-30"/>

<maxInclusive value="33"/>

</restriction>

</simpleType>

<simpleType name="qOffsetFreq">

<restriction base="short">

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</simpleType>

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<simpleType name="qRxLevMin">

<restriction base="integer">

<minInclusive value="-140"/>

<maxInclusive value="-44"/>

</restriction>

</simpleType>

<simpleType name="Thresxhighp">

<restriction base="integer">

<minInclusive value="0"/>

<maxInclusive value="62"/>

</restriction>

</simpleType>

<simpleType name="Threshxhighq">

<restriction base="integer">

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<simpleType name="Threshxlowp">

<restriction base="integer">

<minInclusive value="0"/>

<maxInclusive value="62"/>

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</simpleType>

<simpleType name="Threshxlowq">

<restriction base="integer">

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<maxInclusive value="62"/>

</restriction>

</simpleType>

<simpleType name="Treselectionnr">

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</restriction>

</simpleType>

<simpleType name="Treselectionnrsfhigh">

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</restriction>

</simpleType>

<simpleType name="Treselectionnrsfmedium">

<restriction base="string">

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<enumeration value="100"/>

</restriction>

</simpleType>

<simpleType name="Absolutefrequencyssb">

<restriction base="integer">

<minInclusive value="0"/>

<maxInclusive value="3279165"/>

</restriction>

</simpleType>

<simpleType name="Ssbsubcarrierspacing">

<restriction base="string">

<enumeration value="15"/>

<enumeration value="30"/>

<enumeration value="120"/>

<enumeration value="240"/>

</restriction>

</simpleType>

<simpleType name="Multifrequencybandlistnr">

<restriction base="integer">

<minInclusive value="1"/>

<maxInclusive value="256"/>

</restriction>

</simpleType>

<simpleType name="beamType">

<restriction base="string">

<enumeration value="SSB-BEAM"/>

</restriction>

</simpleType>

<simpleType name="beamAzimuth">

<restriction base="integer">

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<maxInclusive value="1800"/>

</restriction>

</simpleType>

<simpleType name="beamTilt">

<restriction base="integer">

<minInclusive value="-900"/>

<maxInclusive value="900"/>

</restriction>

</simpleType>

<simpleType name="beamHorizWidth">

<restriction base="integer">

<minInclusive value="0"/>

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</restriction>

</simpleType>

<simpleType name="beamVertWidth">

<restriction base="integer">

<minInclusive value="0"/>

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</restriction>

</simpleType>

<simpleType name="coverageShapeType">

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</restriction>

</simpleType>

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<enumeration value="PRB"/>

<enumeration value="RRC"/>

<enumeration value="DRB"/>

</restriction>

</simpleType>

<complexType name="LocalEndPoint">

<sequence>

<element name="ipv4Address" type="string"/>

<element name="ipv6Address" type="string"/>

<element name="ipv6Prefix" type="string"/>

<element name="vlanId" type="integer"/>

</sequence>

</complexType>

<complexType name="RemoteEndPoint">

<sequence>

<element name="ipv4Address" type="string"/>

<element name="ipv6Address" type="string"/>

<element name="ipv6Prefix" type="string"/>

</sequence>

</complexType>

<complexType name="blackListEntry">

<sequence minOccurs="0" maxOccurs="1007" >

<element name="pci" type="en:Pci" maxOccurs="504"/>

</sequence>

</complexType>

<complexType name="blackListEntryIdleMode">

<sequence minOccurs="0" maxOccurs="1007" >

<element name="pci" type="en:Pci" maxOccurs="504"/>

</sequence>

</complexType>

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<sequence>

<element name="pLMNId" type="en:PLMNId" maxOccurs="6"/>

<!-- The first pLMNId of the pLMNIdList is primary PLMN id -->

</sequence>

</complexType>

<complexType name="cellIndividualOffset">

<sequence>

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<element name="rsrqOffsetSSB" type="qOffsetRangeList"/>

<element name="sinrOffsetSSB" type="qOffsetRangeList"/>

<element name="rsrpOffsetCSI-RS" type="qOffsetRangeList"/>

<element name="rsrqOffsetCSI-RS" type="qOffsetRangeList"/>

<element name="sinrOffsetCSI-RS" type="qOffsetRangeList"/>

</sequence>

</complexType>

<complexType name="PLMNInfoType">

<sequence>

<element name="pLMNId" type="en:PLMNId"/>

<element name="sNSSAI" type="ngc:SNssai" minOccurs="0"/>

</sequence>

</complexType>

<complexType name="PLMNInfoListType">

<sequence>

<element name="pLMNInfo" type="PLMNInfoType" minOccurs="1"/>

</sequence>

</complexType>

<element name="GNBDUFunction" substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass">

<complexType>

<complexContent>

<extension base="xn:NrmClass">

<sequence>

<element name="attributes">

<complexType>

<all>

<!-- Inherited attributes from ManagedFunction -->

<element name="userLabel" type="string" minOccurs="0"/>

<element name="vnfParametersList" type="xn:vnfParametersListType" minOccurs="0"/>

<element name="peeParametersList" type="xn:peeParametersListType" minOccurs="0"/>

<element name="priority" type="integer" minOccurs="0"/>

<element name="measurements" type="xn:MeasurementTypesAndGPsList" minOccurs="0"/>

<!--End of inherited attributes from ManagedFunction-->

<element name="gnbId" type="nn:GnbId"/>

<element name="gnbIdLength" type="nn:GnbIdLength"/>

<element name="gnbDUId" type="nn:GnbDuId"/>

<element name="gnbDuName" type="nn:GnbName" minOccurs="0"/>

<element name="x2Blacklist" type="xn:dnList" minOccurs="0"/>

<element name="x2Whitelist" type="xn:dnList" minOccurs="0"/>

<element name="xnBlacklist" type="xn:dnList" minOccurs="0"/>

<element name="xnWhitelist" type="xn:dnList" minOccurs="0"/>

<element name="x2XnHOBlackList" type="xn:dnList" minOccurs="0"/>

<element name="aggressorSetID" type="nn:AggressorSetID"/>

<element name="victimSetID" type="nn:VictimSetID"/>

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</complexType>

</element>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref="nn:NRCellDU"/>

<element ref="nn:BWP"/>

<element ref="nn:NRSectorCarrier"/>

<element ref="nn:EP\_F1C"/>

<element ref="nn:EP\_F1U"/>

</choice>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref="xn:MeasurementControl"/>

</choice>

</sequence>

</extension>

</complexContent>

</complexType>

</element>

<element name="GNBCUCPFunction" substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass">

<complexType>

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<extension base="xn:NrmClass">

<sequence>

<element name="attributes">

<complexType>

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<element name="peeParametersList" type="xn:peeParametersListType" minOccurs="0"/>

<element name="priority" type="integer" minOccurs="0"/>

<element name="measurements" type="xn:MeasurementTypesAndGPsList" minOccurs="0"/>

<!--End of inherited attributes from ManagedFunction-->

<element name="gnbId" type="nn:GnbId" />

<element name="gnbIdLength" type="nn:GnbIdLength"/>

<element name="gnbCuName" type=" nn:GnbName" minOccurs="0"/>

<element name="pLMNId" type="en:PLMNId" />

<element name="x2Blacklist" type="xn:dnList" minOccurs="0"/>

<element name="x2Whitelist" type="xn:dnList" minOccurs="0"/>

<element name="xnBlacklist" type="xn:dnList" minOccurs="0"/>

<element name="xnWhitelist" type="xn:dnList" minOccurs="0"/>

<element name="x2XnHOBlackList" type="xn:dnList" minOccurs="0"/>

<element name="mappingSetIDBackhaulAddress" type="MappingSetIDBackhaulAddress" minOccurs="0"/>

<element name="configurable5QISetRef" type="xn:dn"/>

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</complexType>

</element>

<choice minOccurs="0" maxOccurs="unbounded">

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<element ref="nn:EP\_F1C"/>

<element ref="nn:EP\_E1"/>

<element ref="nn:EP\_XnC"/>

<element ref="nn:EP\_X2C"/>

<element ref="nn:EP\_NgC"/>

<element ref="ngc:Configurable5QISet"/>

<element ref="xn:VsDataContainer"/>

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<element ref="xn:MeasurementControl"/>

</choice>

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</extension>

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</complexType>

</element>

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<element name="peeParametersList" type="xn:peeParametersListType" minOccurs="0"/>

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<element name="measurements" type="xn:MeasurementTypesAndGPsList" minOccurs="0"/>

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<element name="gNBCUUPId" type="nn:GnbCuupId "/>

<element name="pLMNInfoList" type="PLMNInfoListType"/> <element name="gNBId" type="nn:GnbId"/>

<element name="gnbIdLength" type="nn:GnbIdLength"/>

<element name="configurable5QISetRef" type="xn:dn"/>

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</complexType>

</element>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref="nn:EP\_E1"/>

<element ref="nn:EP\_F1U"/>

<element ref="nn:EP\_XnU"/>

<element ref="nn:EP\_NgU"/>

<element ref="nn:EP\_X2U"/>

<element ref="nn:EP\_S1U"/>

<element ref="ngc:Configurable5QISet"/>

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<element ref="xn:MeasurementControl"/>

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</extension>

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<extension base="xn:NrmClass">

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<element name="attributes">

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<!-- Inherited attributes from ManagedFunction -->

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<element name="vnfParametersList" type="xn:vnfParametersListType" minOccurs="0"/>

<element name="peeParametersList" type="xn:peeParametersListType" minOccurs="0"/>

<element name="priority" type="integer" minOccurs="0"/>

<element name="measurements" type="xn:MeasurementTypesAndGPsList" minOccurs="0"/>

<!--End of inherited attributes from ManagedFunction-->

<element name="nCGI" type="nn:Ncgi"/>

<element name="pLMNIdList" type="en:PLMNIdList"/>

<element name="sNSSAIList" type="ngc:SnssaiList" minOccurs="0"/>

<element name="nRFrequencyRef" type="xn:dn" minOccurs="0"/>

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<choice minOccurs="0" maxOccurs="unbounded">

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<element ref="nRCellRelation"/>

<element ref="nRFreqRelation"/>

<element ref="eUtranCellRelation"/>

<element ref="eUtranFreqRelation"/>

</choice>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref="xn:MeasurementControl"/>

</choice>

<choice minOccurs="0" maxOccurs="1">

<element ref="sp:EnergySavingProperties"/>

<element ref="sp:ESPolicies"/>

</choice>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref= "RRMPolicyRatio"/>

</choice>

</sequence>

</extension>

</complexContent>

</complexType>

</element>

<element name="NRCellDU">

<complexType>

<complexContent>

<extension base="xn:NrmClass">

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<element name="attributes">

<complexType>

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<!-- Inherited attributes from ManagedFunction -->

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<element name="vnfParametersList" type="xn:vnfParametersListType" minOccurs="0"/>

<element name="peeParametersList" type="xn:peeParametersListType" minOccurs="0"/>

<element name="priority" type="integer" minOccurs="0"/>

<element name="measurements" type="xn:MeasurementTypesAndGPsList" minOccurs="0"/>

<!--End of inherited attributes from ManagedFunction-->

<element name="nCGI" type="nn:Ncgi" minOccurs="0"/>

<element name="operationalState" type="sm:operationalStateType" minOccurs="0"/>

<element name="administrativeState" type="sm:administrativeStateType" minOccurs="0"/>

<element name="cellState" type="nn:CellState"/>

<element name="pLMNIdList" type="en:PLMNIdList"/>

<element name="sNSSAIList" type="ngc:SnssaiList" minOccurs="0"/>

<element name="nRpci" type="nn:Pci" />

<element name="nRTac" type="nn:NrTac" />

<element name="arfcnDL" type="integer"/>

<element name="arfcnUL" type="integer" minOccurs="0"/>

<element name="arfcnSUL" type="integer" minOccurs="0"/>

<element name="bSChannelBwDL" type="integer"/>

<element name="bSChannelBwUL" type="integer" minOccurs="0"/>

<element name="bSChannelBwSUL" type="integer" minOccurs="0"/>

<element name="nRFrequencyRef" type="xn:dn" minOccurs="0"/>

<element name="nRSectorCarrierRef" type="xn:dn" minOccurs="0"/>

<element name="bWPRef" type="xn:dn" minOccurs="0"/>

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</choice>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref="xn:MeasurementControl"/>

</choice>

<choice minOccurs="0" maxOccurs="1">

<element ref="sp:EnergySavingProperties"/>

<element ref="sp:ESPolicies"/>

</choice>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref="RRMPolicyRatio"/>

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</complexType>

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<element name="NRSectorCarrier">

<complexType>

<complexContent>

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<element name="peeParametersList" type="xn:peeParametersListType" minOccurs="0"/>

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<element name="measurements" type="xn:MeasurementTypesAndGPsList" minOccurs="0"/>

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<element name="arfcnUL" type="integer" minOccurs="0"/>

<element name="bSChannelBwDL" type="integer" minOccurs="0"/>

<element name="bSChannelBwUL" type="integer" minOccurs="0"/>

<element name="sectorEquipmentFunctionRef" type="xn:dn" minOccurs="0"/>

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<choice minOccurs="0" maxOccurs="unbounded">

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</choice>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref="xn:VsDataContainer"/>

</choice>

<choice minOccurs="0" maxOccurs="1">

<element ref="sp:EnergySavingProperties"/>

<element ref="sp:ESPolicies"/>

</choice>

</sequence>

</extension>

</complexContent>

</complexType>

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<complexContent>

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<element name="peeParametersList" type="xn:peeParametersListType" minOccurs="0"/>

<element name="priority" type="integer" minOccurs="0"/>

<element name="measurements" type="xn:MeasurementTypesAndGPsList" minOccurs="0"/>

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<element name="bwpContext" type="nn:BwpContext"/>

<element name="isInitialBwp" type="nn:IsInitialBwp"/>

<element name="subCarrierSpacing" type="integer"/>

<element name="cyclicPrefix" type="nn:CyclicPrefix"/>

<element name="startRB" type="integer"/>

<element name="numberOfRBs" type="integer"/>

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</complexType>

</element>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref="xn:MeasurementControl"/>

</choice>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref="xn:VsDataContainer"/>

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</extension>

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<element name="coverageShape" type="coverageShapeType" minOccurs="0"/>

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<element name="digitalAzimuth" type="beamAzimuth" minOccurs="0"/>

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<choice minOccurs="0" maxOccurs="unbounded">

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<element name="beamIndex" type="integer" minOccurs="0"/>

<element name="beamType" type="beamType" minOccurs="0"/>

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<element name="beamHorizWidth" type="beamHorizWidth" minOccurs="0"/>

<element name="beamVertWidth" type="beamVertWidth" minOccurs="0"/>

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</choice>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref="xn:VsDataContainer"/>

</choice>

<choice minOccurs="0" maxOccurs="1">

<element ref="sp:EnergySavingProperties"/>

<element ref="sp:ESPolicies"/>

</choice>

</sequence>

</extension>

</complexContent>

</complexType>

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<complexType>

<complexContent>

<extension base="xn:NrmClass">

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<element name="farEndEntity" type="xn:dn" minOccurs="0"/>

<element name="userLabel" type="string" minOccurs="0"/>

<!-- End of inherited attributes from EP\_RP -->

<element name="localAddress" type="nn:LocalEndPoint" minOccurs="0"/>

<element name="remoteAddress" type="nn:RemoteEndPoint" minOccurs="0"/>

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<!-- Inherited attributes from EP\_RP -->

<element name="farEndEntity" type="xn:dn" minOccurs="0"/>

<element name="userLabel" type="string" minOccurs="0"/>

<!-- End of inherited attributes from EP\_RP -->

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<element name="remoteAddress" type="nn:RemoteEndPoint" minOccurs="0"/>

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</sequence>

</extension>

</complexContent>

</complexType>

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<element name="EP\_XnU">

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<complexContent>

<extension base="xn:NrmClass">

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<!-- Inherited attributes from EP\_RP -->

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<element name="userLabel" type="string" minOccurs="0"/>

<!-- End of inherited attributes from EP\_RP -->

<element name="localAddress" type="nn:LocalEndPoint" minOccurs="0"/>

<element name="remoteAddress" type="nn:RemoteEndPoint" minOccurs="0"/>

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</extension>

</complexContent>

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<!-- End of inherited attributes from EP\_RP -->

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<sequence>

<element name="attributes" minOccurs="0">

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<!-- Inherited attributes from EP\_RP -->

<element name="farEndEntity" type="xn:dn" minOccurs="0"/>

<element name="userLabel" type="string" minOccurs="0"/>

<!-- End of inherited attributes from EP\_RP -->

<element name="localAddress" type="nn:LocalEndPoint" minOccurs="0"/>

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<choice minOccurs="0" maxOccurs="unbounded">

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<element name="measurements" type="xn:MeasurementTypesAndGPsList" minOccurs="0"/>

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<element name="nRTCI" type="nn:Nrtci"/>

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<element name="nRFreqRelationRef" type="xn:dn" minOccurs="0"/>

<element name="adjacentNRCellRef" type="xn:dn" minOccurs="0"/>

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<element name="cellReselectionPriority" type="en:cellReselectionPriority"/>

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<element name="pMax" type="en:PMaxRangeType" minOccurs="0"/>

<element name="qOffserFreq" type="nn:qOffserFreq" minOccurs="0"/>

<element name="qQualMin" type="en:qQualMin" minOccurs="0"/>

<element name="qRxLevMin" type="en:qRxLevMin" minOccurs="0"/>

<element name="threshXHighP" type="en:threshxhighp" minOccurs="0"/>

<element name="threshXHighQ" type="en:threshxhighq" minOccurs="0"/>

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<element name="measurements" type="xn:MeasurementTypesAndGPsList" minOccurs="0"/>

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<element ref="sp:ESPolicies"/>

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<element name="resourceType" type="ResourceType" />

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<element ref="sp:ESPolicies"/>

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<element ref="sp:ESPolicies"/>

</choice>

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<extension base="xn:NrmClass">

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<element name="gNBID" type="nn:GnbId" />

<element name="tAI" type="TAI" minOccurs="0"/>

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| --- |
| **Next Modified Sections** |

## D.4.3 OpenAPI document "nrNrm.yaml"

openapi: 3.0.1

info:

title: NR NRM

version: 16.5.0

description: >-

OAS 3.0.1 specification of the NR NRM

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externalDocs:

description: 3GPP TS 28.541 V16.5.0; 5G NRM, NR NRM

url: http://www.3gpp.org/ftp/Specs/archive/28\_series/28.541/

paths: {}

components:

schemas:

#-------- Definition of types-----------------------------------------------------

GnbId:

type: string

GnbIdLength:

type: integer

minimum: 22

maximum: 32

GnbName:

type: string

maxLength: 150

GnbDuId:

type: number

minimum: 0

maximum: 68719476735

GnbCuUpId:

type: number

minimum: 0

maximum: 68719476735

Sst:

type: integer

maximum: 255

Snssai:

type: object

properties:

sst:

$ref: '#/components/schemas/Sst'

sd:

type: string

SnssaiList:

type: array

items:

$ref: '#/components/schemas/Snssai'

Mnc:

type: string

pattern: '[0-9]{3}|[0-9]{2}'

PlmnId:

type: object

properties:

mcc:

$ref: 'genericNrm.yaml#/components/schemas/Mcc'

mnc:

$ref: '#/components/schemas/Mnc'

PlmnIdList:

type: array

items:

$ref: '#/components/schemas/PlmnId'

PlmnInfo:

type: object

properties:

plmnId":

$ref: '#/components/schemas/PlmnId'

snssai:

$ref: '#/components/schemas/Snssai'

PlmnInfoList:

type: array

items:

$ref: '#/components/schemas/PlmnInfo'

NrPci:

type: integer

maximum: 503

NrTac:

type: integer

maximum: 16777215

Tai:

type: object

properties:

plmnId:

$ref: '#/components/schemas/PlmnId'

nrTac:

$ref: '#/components/schemas/NrTac'

BackhaulAddress:

type: object

properties:

gnbId:

$ref: '#/components/schemas/GnbId'

tai:

$ref: "#/components/schemas/Tai"

MappingSetIDBackhaulAddress:

type: object

properties:

setID:

type: integer

backhaulAddress:

$ref: '#/components/schemas/BackhaulAddress'

CellState:

type: string

enum:

- IDLE

- INACTIVE

- ACTIVE

CyclicPrefix:

type: string

enum:

- '15'

- '30'

- '60'

- '120'

TxDirection:

type: string

enum:

- DL

- UL

- DL and UL

BwpContext:

type: string

enum:

- DL

- UL

- SUL

IsInitialBwp:

type: string

enum:

- INITIAL

- OTHER

- SUL

QuotaType:

type: string

enum:

- STRICT

- FLOAT

RrmPolicyMember:

type: object

properties:

plmnId:

$ref: '#/components/schemas/PlmnId'

snssai:

$ref: '#/components/schemas/Snssai'

RrmPolicyMemberList:

type: array

items:

$ref: '#/components/schemas/RrmPolicyMember'

LocalAddress:

type: object

properties:

ipv4Address:

$ref: 'genericNrm.yaml#/components/schemas/Ipv4Addr'

ipv6Address:

$ref: 'genericNrm.yaml#/components/schemas/Ipv6Addr'

vlanId:

type: integer

minimum: 0

maximum: 4096

port:

type: integer

minimum: 0

maximum: 65535

RemoteAddress:

type: object

properties:

ipv4Address:

$ref: 'genericNrm.yaml#/components/schemas/Ipv4Addr'

ipv6Address:

$ref: 'genericNrm.yaml#/components/schemas/Ipv6Addr'

CellIndividualOffset:

type: object

properties:

rsrpOffsetSSB:

type: integer

rsrqOffsetSSB:

type: integer

sinrOffsetSSB:

type: integer

rsrpOffsetCSI-RS:

type: integer

rsrqOffsetCSI-RS:

type: integer

sinrOffsetCSI-RS:

type: integer

QOffsetRange:

type: integer

enum:

- -24

- -22

- -20

- -18

- -16

- -14

- -12

- -10

- -8

- -6

- -5

- -4

- -3

- -2

- -1

- 0

- 24

- 22

- 20

- 18

- 16

- 14

- 12

- 10

- 8

- 6

- 5

- 4

- 3

- 2

- 1

QOffsetRangeList:

type: object

properties:

rsrpOffsetSSB:

$ref: '#/components/schemas/QOffsetRange'

rsrqOffsetSSB:

$ref: '#/components/schemas/QOffsetRange'

sinrOffsetSSB:

$ref: '#/components/schemas/QOffsetRange'

rsrpOffsetCSI-RS:

$ref: '#/components/schemas/QOffsetRange'

rsrqOffsetCSI-RS:

$ref: '#/components/schemas/QOffsetRange'

sinrOffsetCSI-RS:

$ref: '#/components/schemas/QOffsetRange'

QOffsetFreq:

type: number

TReselectionNRSf:

type: integer

enum:

- 25

- 50

- 75

- 100

SsbPeriodicity:

type: integer

enum:

- 5

- 10

- 20

- 40

- 80

- 160

SsbDuration:

type: integer

enum:

- 1

- 2

- 3

- 4

- 5

SsbSubCarrierSpacing:

type: integer

enum:

- 15

- 30

- 120

- 240

CoverageShape:

type: integer

maximum: 65535

DigitalTilt:

type: integer

minimum: -900

maximum: 900

DigitalAzimuth:

type: integer

minimum: -1800

maximum: 1800

#-------- Definition of abstract IOCs --------------------------------------------

RrmPolicy\_-Attr:

type: object

properties:

resourceType:

type: string

rRMPolicyMemberList:

$ref: '#/components/schemas/RrmPolicyMemberList'

#-------- Definition of concrete IOCs --------------------------------------------

SubNetwork-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

$ref: 'genericNrm.yaml#/components/schemas/SubNetwork-Attr'

- $ref: 'genericNrm.yaml#/components/schemas/SubNetwork-ncO'

- type: object

properties:

SubNetwork:

$ref: '#/components/schemas/SubNetwork-Multiple'

ManagedElement:

$ref: '#/components/schemas/ManagedElement-Multiple'

NRFrequency:

$ref: '#/components/schemas/NRFrequency-Multiple'

ExternalGnbCuCpFunction:

$ref: '#/components/schemas/ExternalGnbCuCpFunction-Multiple'

ExternalENBFunction:

$ref: '#/components/schemas/ExternalENBFunction-Multiple'

EUtranFrequency:

$ref: '#/components/schemas/EUtranFrequency-Multiple'

Configurable5QISet:

$ref: '5gcNrm.yaml#/components/schemas/Configurable5QISet-Single'

ManagedElement-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

$ref: 'genericNRM.yaml#/components/schemas/ManagedElement-Attr'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedElement-ncO'

- type: object

properties:

GnbDuFunction:

$ref: '#/components/schemas/GnbDuFunction-Multiple'

GnbCuUpFunction:

$ref: '#/components/schemas/GnbCuUpFunction-Multiple'

GnbCuCpFunction:

$ref: '#/components/schemas/GnbCuCpFunction-Multiple'

GnbDuFunction-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

gnbDuId:

$ref: '#/components/schemas/GnbDuId'

gnbDuName:

$ref: '#/components/schemas/GnbName'

gnbId:

$ref: '#/components/schemas/GnbId'

gnbIdLength:

$ref: '#/components/schemas/GnbIdLength'

aggressorSetID:

type: integer

victimSetID:

type: integer

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

RRMPolicyRatio:

$ref: '#/components/schemas/RRMPolicyRatio-Multiple'

NrCellDu:

$ref: '#/components/schemas/NrCellDu-Multiple'

Bwp-Multiple:

$ref: '#/components/schemas/Bwp-Multiple'

NrSectorCarrier-Multiple:

$ref: '#/components/schemas/NrSectorCarrier-Multiple'

EP\_F1C:

$ref: '#/components/schemas/EP\_F1C-Single'

EP\_F1U:

$ref: '#/components/schemas/EP\_F1U-Multiple'

GnbCuUpFunction-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

gnbId:

$ref: '#/components/schemas/GnbId'

gnbIdLength:

$ref: '#/components/schemas/GnbIdLength'

gnbCuUpId:

$ref: '#/components/schemas/GnbCuUpId'

plmnInfoList:

$ref: '#/components/schemas/PlmnInfoList'

configurable5QISetRef:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

RRMPolicyRatio:

$ref: '#/components/schemas/RRMPolicyRatio-Multiple'

EP\_E1:

$ref: '#/components/schemas/EP\_E1-Single'

EP\_XnU:

$ref: '#/components/schemas/EP\_XnU-Multiple'

EP\_F1U:

$ref: '#/components/schemas/EP\_F1U-Multiple'

EP\_NgU:

$ref: '#/components/schemas/EP\_NgU-Multiple'

EP\_X2U:

$ref: '#/components/schemas/EP\_X2U-Multiple'

EP\_S1U:

$ref: '#/components/schemas/EP\_S1U-Multiple' Configurable5QISet:

$ref: '5gcNrm.yaml#/components/schemas/Configurable5QISet-Single'

GnbCuCpFunction-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

gnbId:

$ref: '#/components/schemas/GnbId'

gnbIdLength:

$ref: '#/components/schemas/GnbIdLength'

gnbCuName:

$ref: '#/components/schemas/GnbName'

plmnId:

$ref: '#/components/schemas/PlmnId'

x2BlackList:

$ref: 'genericNRM.yaml#/components/schemas/DnList'

xnWhiteList:

$ref: 'genericNRM.yaml#/components/schemas/DnList'

x2XnHOBlackList:

$ref: 'genericNRM.yaml#/components/schemas/DnList'

mappingSetIDBackhaulAddress:

$ref: '#/components/schemas/MappingSetIDBackhaulAddress'

configurable5QISetRef:

$ref: 'genericNRM.yaml#/components/schemas/Dn' - $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

RRMPolicyRatio:

$ref: '#/components/schemas/RRMPolicyRatio-Multiple'

NrCellCu:

$ref: '#/components/schemas/NrCellCu-Multiple'

EP\_XnC:

$ref: '#/components/schemas/EP\_XnC-Multiple'

EP\_E1:

$ref: '#/components/schemas/EP\_E1-Multiple'

EP\_F1C:

$ref: '#/components/schemas/EP\_F1C-Multiple'

EP\_NgC:

$ref: '#/components/schemas/EP\_NgC-Multiple'

EP\_X2C:

$ref: '#/components/schemas/EP\_X2C-Multiple'

Configurable5QISet:

$ref: '5gcNrm.yaml#/components/schemas/Configurable5QISet-Single'

NrCellCu-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

cellLocalId:

type: integer

plmnInfoList:

$ref: '#/components/schemas/PlmnInfoList'

nRFrequencyRef:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

RRMPolicyRatio:

$ref: '#/components/schemas/RRMPolicyRatio-Multiple'

NRCellRelation:

$ref: '#/components/schemas/NRCellRelation-Multiple'

EUtranCellRelation:

$ref: '#/components/schemas/EUtranCellRelation-Multiple'

NRFreqRelation:

$ref: '#/components/schemas/NRFreqRelation-Multiple'

EUtranFreqRelation:

$ref: '#/components/schemas/EUtranFreqRelation-Multiple'

NrCellDu-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

administrativeState:

$ref: 'genericNRM.yaml#/components/schemas/AdministrativeState'

operationalState:

$ref: 'genericNRM.yaml#/components/schemas/OperationalState'

cellLocalId:

type: integer

cellState:

$ref: '#/components/schemas/CellState'

plmnInfoList:

$ref: '#/components/schemas/PlmnInfoList'

nrPci:

$ref: '#/components/schemas/NrPci'

nrTac:

$ref: '#/components/schemas/NrTac'

arfcnDL:

type: integer

arfcnUL:

type: integer

arfcnSUL:

type: integer

bSChannelBwDL:

type: integer

bSChannelBwUL:

type: integer

bSChannelBwSUL:

type: integer

ssbFrequency:

type: integer

minimum: 0

maximum: 3279165

ssbPeriodicity:

$ref: '#/components/schemas/SsbPeriodicity'

ssbSubCarrierSpacing:

$ref: '#/components/schemas/SsbSubCarrierSpacing'

ssbOffset:

type: integer

minimum: 0

maximum: 159

ssbDuration:

$ref: '#/components/schemas/SsbDuration'

nrSectorCarrierRef:

type: array

items:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

bwpRef:

type: array

items:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

nRFrequencyRef:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

RRMPolicyRatio:

$ref: '#/components/schemas/RRMPolicyRatio-Multiple'

NRFrequency-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

absoluteFrequencySSB:

type: integer

minimum: 0

maximum: 3279165

ssbSubCarrierSpacing:

$ref: '#/components/schemas/SsbSubCarrierSpacing'

multiFrequencyBandListNR:

type: integer

minimum: 1

maximum: 256

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

EUtranFrequency-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

$ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

NrSectorCarrier-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

txDirection:

$ref: '#/components/schemas/TxDirection'

configuredMaxTxPower:

type: integer

arfcnDL:

type: integer

arfcnUL:

type: integer

bSChannelBwDL:

type: integer

bSChannelBwUL:

type: integer

sectorEquipmentFunctionRef:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

CommonBeamformingFunction:

$ref: '#/components/schemas/CommonBeamformingFunction-Single'

Bwp-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

bwpContext:

$ref: '#/components/schemas/BwpContext'

isInitialBwp:

$ref: '#/components/schemas/IsInitialBwp'

subCarrierSpacing:

type: integer

cyclicPrefix:

$ref: '#/components/schemas/CyclicPrefix'

startRB:

type: integer

numberOfRBs:

type: integer

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

CommonBeamformingFunction-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- type: object

properties:

coverageShape:

$ref: '#/components/schemas/CoverageShape'

digitalAzimuth:

$ref: '#/components/schemas/DigitalAzimuth'

digitalTilt:

$ref: '#/components/schemas/DigitalTilt'

- type: object

properties:

Beam:

$ref: '#/components/schemas/Beam-Multiple'

Beam-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- type: object

properties:

beamIndex:

type: integer

beamType:

type: string

enum:

- SSB-BEAM

beamAzimuth:

type: integer

minimum: -1800

maximum: 1800

beamTilt:

type: integer

minimum: -900

maximum: 900

beamHorizWidth:

type: integer

minimum: 0

maximum: 3599

beamVertWidth:

type: integer

minimum: 0

maximum: 1800

RRMPolicyRatio-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: '#/components/schemas/RrmPolicy\_-Attr'

- type: object

properties:

quotaType:

$ref: '#/components/schemas/QuotaType'

rRMPolicyMaxRatio:

type: integer

rRMPolicyMarginMaxRatio:

type: integer

rRMPolicyMinRatio:

type: integer

rRMPolicyMarginMinRatio:

type: integer

NRCellRelation-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

nRTCI:

type: integer

cellIndividualOffset:

$ref: '#/components/schemas/CellIndividualOffset'

adjacentNRCellRef:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

nRFrequencyRef:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

isRemoveAllowed:

type: boolean

isHOAllowed:

type: boolean

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

EUtranCellRelation-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

adjacentEUtranCellRef:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

NRFreqRelation-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

offsetMO:

$ref: '#/components/schemas/QOffsetRangeList'

blackListEntry:

type: array

items:

type: integer

minimum: 0

maximum: 1007

blackListEntryIdleMode:

type: integer

cellReselectionPriority:

type: integer

cellReselectionSubPriority:

type: number

minimum: 0.2

maximum: 0.8

multipleOf: 0.2

pMax:

type: integer

minimum: -30

maximum: 33

qOffsetFreq:

$ref: '#/components/schemas/QOffsetFreq'

qQualMin:

type: number

qRxLevMin:

type: integer

minimum: -140

maximum: -44

threshXHighP:

type: integer

minimum: 0

maximum: 62

threshXHighQ:

type: integer

minimum: 0

maximum: 31

threshXLowP:

type: integer

minimum: 0

maximum: 62

threshXLowQ:

type: integer

minimum: 0

maximum: 31

tReselectionNr:

type: integer

minimum: 0

maximum: 7

tReselectionNRSfHigh:

$ref: '#/components/schemas/TReselectionNRSf'

tReselectionNRSfMedium:

$ref: '#/components/schemas/TReselectionNRSf'

nRFrequencyRef:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

EUtranFreqRelation-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

eUTranFrequencyRef:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

ExternalGnbDuFunction-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

gnbId:

$ref: '#/components/schemas/GnbId'

gnbIdLength:

$ref: '#/components/schemas/GnbIdLength'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_F1C:

$ref: '#/components/schemas/EP\_F1C-Multiple'

EP\_F1U:

$ref: '#/components/schemas/EP\_F1U-Multiple'

ExternalGnbCuUpFunction-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

gnbId:

$ref: '#/components/schemas/GnbId'

gnbIdLength:

$ref: '#/components/schemas/GnbIdLength'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_E1:

$ref: '#/components/schemas/EP\_E1-Multiple'

EP\_F1U:

$ref: '#/components/schemas/EP\_F1U-Multiple'

EP\_XnU:

$ref: '#/components/schemas/EP\_XnU-Multiple'

ExternalGnbCuCpFunction-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: >-

genericNRM.yaml#/components/schemas/ManagedFunction-Attr

- type: object

properties:

gnbId:

$ref: '#/components/schemas/GnbId'

gnbIdLength:

$ref: '#/components/schemas/GnbIdLength'

plmnId:

$ref: '#/components/schemas/PlmnId'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

ExternalNrCellCu:

$ref: '#/components/schemas/ExternalNrCellCu-Multiple'

EP\_XnC:

$ref: '#/components/schemas/EP\_XnC-Multiple'

EP\_E1:

$ref: '#/components/schemas/EP\_E1-Multiple'

EP\_F1C:

$ref: '#/components/schemas/EP\_F1C-Multiple'

ExternalNrCellCu-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

cellLocalId:

type: integer

nrPci:

$ref: '#/components/schemas/NrPci'

plmnIdList:

$ref: '#/components/schemas/PlmnIdList'

nRFrequencyRef:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

ExternalENBFunction-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

eNBId:

type: integer

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

ExternalEUTranCell:

$ref: '#/components/schemas/ExternalEUTranCell-Multiple'

ExternalEUTranCell-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

EUtranFrequencyRef:

$ref: 'genericNRM.yaml#/components/schemas/Dn'

- $ref: 'genericNRM.yaml#/components/schemas/ManagedFunction-ncO'

EP\_XnC-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: '#/components/schemas/LocalAddress'

remoteAddress:

$ref: '#/components/schemas/RemoteAddress'

EP\_E1-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: '#/components/schemas/LocalAddress'

remoteAddress:

$ref: '#/components/schemas/RemoteAddress'

EP\_F1C-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: '#/components/schemas/LocalAddress'

remoteAddress:

$ref: '#/components/schemas/RemoteAddress'

EP\_NgC-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: '#/components/schemas/LocalAddress'

remoteAddress:

$ref: '#/components/schemas/RemoteAddress'

EP\_X2C-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: '#/components/schemas/LocalAddress'

remoteAddress:

$ref: '#/components/schemas/RemoteAddress'

EP\_XnU-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: '#/components/schemas/LocalAddress'

remoteAddress:

$ref: '#/components/schemas/RemoteAddress'

EP\_F1U-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: '#/components/schemas/LocalAddress'

remoteAddress:

$ref: '#/components/schemas/RemoteAddress'

EP\_NgU-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: '#/components/schemas/LocalAddress'

remoteAddress:

$ref: '#/components/schemas/RemoteAddress'

EP\_X2U-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: '#/components/schemas/LocalAddress'

remoteAddress:

$ref: '#/components/schemas/RemoteAddress'

EP\_S1U-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: '#/components/schemas/LocalAddress'

remoteAddress:

$ref: '#/components/schemas/RemoteAddress'

#-------- Definition of JSON arrays for name-contained IOCs ----------------------

SubNetwork-Multiple:

type: array

items:

$ref: '#/components/schemas/SubNetwork-Single'

ManagedElement-Multiple:

type: array

items:

$ref: '#/components/schemas/ManagedElement-Single'

GnbDuFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/GnbDuFunction-Single'

GnbCuUpFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/GnbCuUpFunction-Single'

GnbCuCpFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/GnbCuCpFunction-Single'

NrCellDu-Multiple:

type: array

items:

$ref: '#/components/schemas/NrCellDu-Single'

NrCellCu-Multiple:

type: array

items:

$ref: '#/components/schemas/NrCellCu-Single'

NRFrequency-Multiple:

type: array

minItems: 1

items:

$ref: '#/components/schemas/NRFrequency-Single'

EUtranFrequency-Multiple:

type: array

minItems: 1

items:

$ref: '#/components/schemas/EUtranFrequency-Single'

NrSectorCarrier-Multiple:

type: array

items:

$ref: '#/components/schemas/NrSectorCarrier-Single'

Bwp-Multiple:

type: array

items:

$ref: '#/components/schemas/Bwp-Single'

Beam-Multiple:

type: array

items:

$ref: '#/components/schemas/Beam-Single'

RRMPolicyRatio-Multiple:

type: array

items:

$ref: '#/components/schemas/RRMPolicyRatio-Single'

NRCellRelation-Multiple:

type: array

items:

$ref: '#/components/schemas/NRCellRelation-Single'

EUtranCellRelation-Multiple:

type: array

items:

$ref: '#/components/schemas/EUtranCellRelation-Single'

NRFreqRelation-Multiple:

type: array

items:

$ref: '#/components/schemas/NRFreqRelation-Single'

EUtranFreqRelation-Multiple:

type: array

items:

$ref: '#/components/schemas/EUtranFreqRelation-Single'

ExternalGnbDuFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/ExternalGnbDuFunction-Single'

ExternalGnbCuUpFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/ExternalGnbCuUpFunction-Single'

ExternalGnbCuCpFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/ExternalGnbCuCpFunction-Single'

ExternalNrCellCu-Multiple:

type: array

items:

$ref: '#/components/schemas/ExternalNrCellCu-Single'

ExternalENBFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/ExternalENBFunction-Single'

ExternalEUTranCell-Multiple:

type: array

items:

$ref: '#/components/schemas/ExternalEUTranCell-Single'

EP\_E1-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_E1-Single'

EP\_XnC-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_XnC-Single'

EP\_F1C-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_F1C-Single'

EP\_NgC-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_NgC-Single'

EP\_X2C-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_X2C-Single'

EP\_XnU-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_XnU-Single'

EP\_F1U-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_F1U-Single'

EP\_NgU-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_NgU-Single'

EP\_X2U-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_X2U-Single'

EP\_S1U-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_S1U-Single'

#-------- Definitions in TS 28.541 for TS 28.532 ---------------------------------

resources-nrNrm:

oneOf:

- $ref: '#/components/schemas/SubNetwork-Single'

- $ref: '#/components/schemas/ManagedElement-Single'

- $ref: '#/components/schemas/GnbDuFunction-Single'

- $ref: '#/components/schemas/GnbCuUpFunction-Single'

- $ref: '#/components/schemas/GnbCuCpFunction-Single'

- $ref: '#/components/schemas/NrCellCu-Single'

- $ref: '#/components/schemas/NrCellDu-Single'

- $ref: '#/components/schemas/NRFrequency-Single'

- $ref: '#/components/schemas/EUtranFrequency-Single'

- $ref: '#/components/schemas/NrSectorCarrier-Single'

- $ref: '#/components/schemas/Bwp-Single'

- $ref: '#/components/schemas/CommonBeamformingFunction-Single'

- $ref: '#/components/schemas/Beam-Single'

- $ref: '#/components/schemas/RRMPolicyRatio-Single'

- $ref: '#/components/schemas/NRCellRelation-Single'

- $ref: '#/components/schemas/EUtranCellRelation-Single'

- $ref: '#/components/schemas/NRFreqRelation-Single'

- $ref: '#/components/schemas/EUtranFreqRelation-Single'

- $ref: '#/components/schemas/ExternalGnbDuFunction-Single'

- $ref: '#/components/schemas/ExternalGnbCuUpFunction-Single'

- $ref: '#/components/schemas/ExternalGnbCuCpFunction-Single'

- $ref: '#/components/schemas/ExternalNrCellCu-Single'

- $ref: '#/components/schemas/ExternalENBFunction-Single'

- $ref: '#/components/schemas/ExternalEUTranCell-Single'

- $ref: '#/components/schemas/EP\_XnC-Single'

- $ref: '#/components/schemas/EP\_E1-Single'

- $ref: '#/components/schemas/EP\_F1C-Single'

- $ref: '#/components/schemas/EP\_NgC-Single'

- $ref: '#/components/schemas/EP\_X2C-Single'

- $ref: '#/components/schemas/EP\_XnU-Single'

- $ref: '#/components/schemas/EP\_F1U-Single'

- $ref: '#/components/schemas/EP\_NgU-Single'

- $ref: '#/components/schemas/EP\_X2U-Single'

- $ref: '#/components/schemas/EP\_S1U-Single'

|  |
| --- |
| **Next Modified Sections** |

## E.5.16 module \_3gpp-nr-nrm-gnbcucpfunction@2020-06-03.yang

module \_3gpp-nr-nrm-gnbcucpfunction {

yang-version 1.1;

namespace "urn:3gpp:sa5:\_3gpp-nr-nrm-gnbcucpfunction";

prefix "gnbcucp3gpp";

import \_3gpp-common-yang-types { prefix types3gpp; }

import \_3gpp-common-managed-function { prefix mf3gpp; }

import \_3gpp-common-managed-element { prefix me3gpp; }

import \_3gpp-common-top { prefix top3gpp; }

import \_3gpp-nr-nrm-rrmpolicy { prefix nrrrmpolicy3gpp; }

organization "3GPP SA5";

description "Defines the YANG mapping of the GNBCUCPFunction Information

Object Class (IOC) that is part of the NR Network Resource Model (NRM).";

reference "3GPP TS 28.541 5G Network Resource Model (NRM)";

revision 2020-06-03 { reference "CR-0286"; }

revision 2020-02-14 { reference S5-20XXXX ; }

revision 2019-10-28 { reference S5-193518 ; }

revision 2019-06-17 {

description "Initial revision";

}

grouping GNBCUCPFunctionGrp {

description "Represents the GNBCUCPFunction IOC.";

reference "3GPP TS 28.541";

uses mf3gpp:ManagedFunctionGrp;

uses nrrrmpolicy3gpp:RRMPolicy\_Grp;

leaf gNBId {

description "Identifies a gNB within a PLMN. The gNB Identifier (gNB ID)

is part of the NR Cell Identifier (NCI) of the gNB cells.";

reference "gNB ID in 3GPP TS 38.300, Global gNB ID in 3GPP TS 38.413";

mandatory true;

type int64 { range "0..4294967295"; }

}

leaf gNBIdLength {

description "Indicates the number of bits for encoding the gNB ID.";

reference "gNB ID in 3GPP TS 38.300, Global gNB ID in 3GPP TS 38.413";

mandatory true;

type int32 { range "22..32"; }

}

leaf gNBCUName {

description "Identifies the Central Unit of an gNB.";

reference "3GPP TS 38.473";

mandatory true;

type string { length "1..150"; }

}

list pLMNId {

description "The PLMN identifier to be used as part of the global RAN

node identity.";

key "mcc mnc";

min-elements 1;

max-elements 1;

uses types3gpp:PLMNId;

}

leaf-list x2BlackList {

type types3gpp:DistinguishedName;

description "List of nodes to which X2 connections are prohibited.";

}

leaf-list x2WhiteList {

type types3gpp:DistinguishedName;

description "List of nodes to which X2 connections are enforced.";

}

leaf-list xnBlackList {

type types3gpp:DistinguishedName;

description "List of nodes to which Xn connections are prohibited.";

}

leaf-list xnWhiteList {

type types3gpp:DistinguishedName;

description "List of nodes to which X2 connections are enforced.";

}

leaf-list x2XnHOBlackList {

type types3gpp:DistinguishedName;

description "List of nodes to which handovers over X2 or Xn are prohibited.";

}

leaf configurable5QISetRef {

type types3gpp:DistinguishedName;

description "DN of the Configurable5QISet that the GNBCUCPFunction supports (is associated to).";

}

}

augment "/me3gpp:ManagedElement" {

list GNBCUCPFunction {

description "Represents the logical function CU-CP of gNB and en-gNB.";

reference "3GPP TS 28.541";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses GNBCUCPFunctionGrp;

}

uses mf3gpp:ManagedFunctionContainedClasses;

}

}

}

|  |
| --- |
| **Next Modified Sections** |

## E.5.17 module \_3gpp-nr-nrm-gnbcuupfunction@2020-06-03.yang

module \_3gpp-nr-nrm-gnbcuupfunction {

yang-version 1.1;

namespace "urn:3gpp:sa5:\_3gpp-nr-nrm-gnbcuupfunction";

prefix "gnbcuup3gpp";

import \_3gpp-common-yang-types { prefix types3gpp; }

import \_3gpp-common-managed-function { prefix mf3gpp; }

import \_3gpp-common-managed-element { prefix me3gpp; }

import \_3gpp-common-top { prefix top3gpp; }

import \_3gpp-nr-nrm-rrmpolicy { prefix nrrrmpolicy3gpp; }

import \_3gpp-nr-nrm-common { prefix nrcommon3gpp; }

organization "3GPP SA5";

description "Defines the YANG mapping of the GNBCUUPFunction Information

Object Class (IOC) that is part of the NR Network Resource Model (NRM).";

reference "3GPP TS 28.541 5G Network Resource Model (NRM)";

revision 2020-06-03 { reference "CR-0286"; }

revision 2020-03-12 { reference "SP-200233 S5-201547"; }

revision 2020-02-14 { reference S5-20XXXX ; }

revision 2019-10-28 { reference S5-193518 ; }

revision 2019-08-21 {

description "Initial revision";

}

grouping TAIGrp {

description "Tracking Area Identity";

list pLMNId {

key "mcc mnc";

uses types3gpp:PLMNId;

}

leaf nRTAC {

type int64;

description "Identity of the common Tracking Area Code for the PLMNs

allowedValues:

a) It is the TAC or Extended-TAC.

b) A cell can only broadcast one TAC or Extended-TAC.

See TS 36.300, subclause 10.1.7 (PLMNID and TAC relation).

c) TAC is defined in subclause 19.4.2.3 of 3GPP TS 23.003 and

Extended-TAC is defined in subclause 9.3.1.29 of 3GPP TS 38.473.

d) For a 5G SA (Stand Alone), it has a non-null value.";

}

}

grouping BackhaulAddressGrp {

description "Indicates the backhauladdress of gNB.";

leaf gNBId {

type uint32 {

range "0..4294967295";

}

description "It identifies a gNB within a PLMN. The gNB ID is part of

the NR Cell Identifier (NCI) of the gNB cells.";

reference "gNB Identifier (gNB ID) of subclause 8.2 of TS 38.300.

Global gNB ID in subclause 9.3.1.6 of TS 38.413";

}

list tAI {

key nRTAC;

min-elements 1;

max-elements 1;

description "Tracking Area Identity";

reference "subclause 9.3.3.11 in TS 38.413";

uses TAIGrp;

}

}

grouping MappingSetIDBackhaulAddressGrp {

description "Mapping relationship between setID and backhaulAddress of gNB";

leaf idx {

type uint32 ;

description "ID value";

}

leaf setID {

type uint32;

mandatory true;

description "Indicates the setID of gNB.";

reference "Subclause 7.4.1.6 in TS 38.211";

}

list backhaulAddress {

key gNBId;

min-elements 1;

max-elements 1;

description "Indicates the backhauladdress of gNB.";

uses BackhaulAddressGrp;

}

}

grouping GNBCUUPFunctionGrp {

description "Represents the GNBCUUPFunction IOC.";

reference "3GPP TS 28.541";

uses mf3gpp:ManagedFunctionGrp;

uses nrrrmpolicy3gpp:RRMPolicy\_Grp;

leaf gNBCUUPId {

type uint64 {

range "0..68719476735" ;

}

config false;

mandatory true;

description "Identifies the gNB-CU-UP at least within a gNB-CU-CP";

reference "'gNB-CU-UP ID' in subclause 9.3.1.15 of 3GPP TS 38.463";

}

leaf gNBId {

mandatory true;

type int32 { range "22..32"; }

description "Indicates the number of bits for encoding the gNB Id.";

reference "gNB Id in 3GPP TS 38.300, Global gNB ID in 3GPP TS 38.413";

}

list pLMNInfoList {

description "The PLMNInfoList is a list of PLMNInfo data type. It defines which PLMNs that

can be served by the GNBCUUPFunction and which S-NSSAIs can be supported by the

GNBCUUPFunction for corresponding PLMN in case of network slicing feature is supported";

key "mcc mnc";

uses nrcommon3gpp:PLMNInfo;

}

list mappingSetIDBackhaulAddressList {

key idx;

description "Specifies a list of mappingSetIDBackhaulAddress used to

retrieve the backhaul address of the victim set.

Must be present if Remote Interference Management function is supported.";

uses MappingSetIDBackhaulAddressGrp;

}

leaf configurable5QISetRef {

type types3gpp:DistinguishedName;

description "DN of the Configurable5QISet that the GNBCUUPFunction supports (is associated to).";

}

}

augment "/me3gpp:ManagedElement" {

list GNBCUUPFunction {

key id;

description "Represents the logical function CU-UP of gNB or en-gNB.";

reference "3GPP TS 28.541";

uses top3gpp:Top\_Grp;

container attributes {

uses GNBCUUPFunctionGrp;

}

uses mf3gpp:ManagedFunctionContainedClasses;

}

}

}

|  |
| --- |
| **Next Modified Sections** |

## F.4.3 XML schema "ngcNrm.xsd"

<?xml version="1.0" encoding="UTF-8"?>

<!--

3GPP TS 28.541 5GC Network Resource Model

XML schema definition

ngcNrm.xsd

-->

<schema

targetNamespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.541#ngcNrm"

elementFormDefault="qualified"

attributeFormDefault="unqualified"

xmlns="http://www.w3.org/2001/XMLSchema"

xmlns:xn="http://www.3gpp.org/ftp/specs/archive/28\_series/28.623#genericNrm" xmlns:nn="http://www.3gpp.org/ftp/specs/archive/28\_series/28.541#nrNrm" xmlns:en="http://www.3gpp.org/ftp/specs/archive/28\_series/28.659#eutranNrm"

xmlns:ngc="http://www.3gpp.org/ftp/specs/archive/28\_series/28.541#ngcNrm"

>

<import namespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.623#genericNrm"/>

<import namespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.659#eutranNrm"/>

<import namespace="http://www.3gpp.org/ftp/specs/archive/28\_series/28.541#nrNrm"/>

<!--NGC NRM IM class associated XML elements -->

<complexType name="aMFIdentifier">

<sequence>

<element name="amfRegionId" type="ngc:AmfRegionId"/>

<element name="amfSetId" type="ngc:AmfSetId"/>

<element name="amfPointer" type="ngc:AmfPointer"/>

</sequence>

</complexType>

<simpleType name="AmfRegionId">

<restriction base="integer">

<maxInclusive value="255"/>

<!-- The AMF Region ID is 8-bitslength, defined in 23.003 -->

</restriction>

</simpleType>

<simpleType name="AmfSetId">

<restriction base="integer">

<maxInclusive value="1023"/>

<!-- The AMF Region ID is 10-bits length, defined in 23.003 -->

</restriction>

</simpleType>

<simpleType name="AmfPointer">

<restriction base="integer">

<maxInclusive value="63"/>

<!-- The AMF Pointer is 6-bits length, defined in 23.003 -->

</restriction>

</simpleType> <complexType name="NrTACList">

<sequence>

<element name="tac" type="nn:NrTac" minOccurs="0" maxOccurs="unbounded"/>

</sequence>

</complexType>

<complexType name="managedNFProfile">

<sequence>

<element name="nfInstanceID" type="string"/>

<element name="nfType" type="ngc:NfType"/>

<element name="hostAddr" type="ngc:hostAddr"/>

<element name="authzInfo" type="string" minOccurs="0"/>

<element name="location" type="string" minOccurs="0"/>

<element name="capacity" type="ngc:capacity" minOccurs="0"/>

<element name="nfInfo" type="ngc:Nfinfo"/>

</sequence>

</complexType>

<complexType name="hostAddr">

<!-- Refer to definitions in TS 28.541-->

<sequence>

<choice minOccurs="0" maxOccurs="1">

<element name="ipAddress" type="string"/>

<element name="fqdn" type="string"/>

</choice>

</sequence>

</complexType>

<simpleType name="capacity">

<!-- Refer to definitions in TS 28.541-->

<restriction base="integer">

<minInclusive value="0"/>

<maxInclusive value="65535"/>

</restriction>

</simpleType>

<complexType name="Nfinfo">

<!-- Refer to definitions in TS 28.541-->

<sequence>

<choice minOccurs="0" maxOccurs="1">

<element name="amfInfo" type="ngc:AmfInfo"/>

<element name="udrInfo" type="ngc:UdrInfo"/>

<element name="udmInfo" type="ngc:UdmInfo"/>

<element name="ausfInfo" type="ngc:AusfInfo"/>

<element name="upfInfo" type="ngc:UpfInfo"/>

</choice>

</sequence>

</complexType>

<complexType name="NFProfileList">

<sequence>

<element name="nfProfile" type="ngc:NfProfile"/>

</sequence>

</complexType>

<complexType name="NfProfile">

<sequence>

<element name="nfInstanceID" type="string"/>

<!-- nfInstanceID is uuid of NF instance -->

<element name="nfType" type="ngc:NfType"/>

<element name="nfType" type="ngc:NfType"/>

<element name="sNssais" type="ngc: SnssaiList"/>

<element name="fqdn" type="string"/>

<element name="interPlmnFqdn" type="string"/>

<element name="ipv4Addresses" type="string"/>

<element name="ipv6Addresses" type="string"/>

<element name="ipv6Prefixes" type="string"/>

<element name="capacity" type="string"/>

<element name="udrInfo" type="ngc:UdrInfo"/>

<element name="amfInfo" type="ngc:AmfInfo"/>

<element name="smfInfo" type="ngc:SmfInfo"/>

<element name="upfInfo" type="ngc:UpfInfo"/>

<element name="nfServices" type="ngc:NfServices"/>

<element name="priority" type="integer" minOccurs="0"/>

<element name="nFSrvGroupId" type=" string"/>

<element name="smfServingAreas" type="string"/>

<element name="locality" type="string"/>

<element name="authzInfo" type="string"/>

</sequence>

</complexType>

<complexType name="NfServices">

<sequence>

<element name="serviceInstanceId" type="string"/>

<element name="serviceName" type="string"/>

<element name="version" type="string"/>

<element name="schema" type="string"/>

<element name="fqdn" type="string"/>

<element name="interPlmnFqdn" type="string"/>

<element name="ipEndPoints" type="ngc:IpEndpoints"/>

<element name="apiPrefix" type="string"/>

<element name="defaultNotificationSubscriptions" type="ngc:DefaultNotificationSubscriptions"/>

<element name="allowedPlmns" type="en:PLMNIdList"/>

<element name="allowedNfTypes" type="ngc:NFTypeList"/>

<element name="allowedNssais" type="ngc:Nssai"/>

<element name="capacity" type="string"/>

<element name="supportedFeatures" type="string"/>

</sequence>

</complexType>

<simpleType name="NfType">

<restriction base="string">

<!-- NF name is defined in TS 23.501 -->

<enumeration value="NRF"/>

<enumeration value="UDM"/>

<enumeration value="AMF"/>

<enumeration value="SMF"/>

<enumeration value="AUSF"/>

<enumeration value="NEF"/>

<enumeration value="PCF"/>

<enumeration value="SMSF"/>

<enumeration value="NSSF"/>

<enumeration value="UDR"/>

<enumeration value="LMF"/>

<enumeration value="GMLC"/>

<enumeration value="5GEIR"/>

<enumeration value="SEPP"/>

<enumeration value="UPF"/>

<enumeration value="N3IWF"/>

<enumeration value="AF"/>

<enumeration value="UDSF"/>

<enumeration value="DN"/>

</restriction>

</simpleType>

<complexType name="NFTypeList">

<sequence>

<element name="NFType" type="ngc:NfType"/>

</sequence>

</complexType>

<complexType name="LocalEndPoint">

<sequence>

<element name="ipv4Address" type="string"/>

<element name="ipv6Address" type="string"/>

<element name="ipv6Prefix" type="string"/>

<element name="vlanId" type="integer"/>

</sequence>

</complexType>

<complexType name="RemoteEndPoint">

<sequence>

<element name="ipv4Address" type="string"/>

<element name="ipv6Address" type="string"/>

<element name="ipv6Prefix" type="string"/>

</sequence>

</complexType>

<complexType name="UdrInfo">

<sequence>

<element name="supiRange" type="ngc:SupiRange"/>

</sequence>

</complexType>

<complexType name="SupiRange">

<sequence>

<element name="start" type="string"/>

<element name="end" type="string"/>

<element name="pattern" type="string"/>

</sequence>

</complexType>

<complexType name="AmfInfo">

<sequence>

<element name="amfSetId" type="ngc:AmfSetId"/>

</sequence>

</complexType>

<complexType name="SmfInfo">

<sequence>

<element name="dnn" type="string"/>

</sequence>

</complexType>

<complexType name="UpfInfo">

<sequence>

<element name="snssaiUpfInfo" type="ngc:SnssaiUpfInfo"/>

</sequence>

</complexType>

<complexType name="SnssaiUpfInfo">

<sequence>

<element name="sNssai" type="ngc:SNssai"/>

<element name="dnnUpfInfoList" type="ngc:DnnUpfInfoList"/>

</sequence>

</complexType>

<complexType name="DnnUpfInfoList">

<sequence>

<element name="dnn" type="string"/>

</sequence>

</complexType>

<complexType name="DefaultNotificationSubscription">

<sequence>

<element name="notificationType" type="ngc:NotificationType"/>

<element name="callbackUri" type="string"/>

<element name="n1MessageClass" type="string"/>

<element name="n2InformationClass" type="string"/>

</sequence>

</complexType>

<simpleType name="NotificationType">

<restriction base="string">

<enumeration value="N1\_MESSAGES"/>

<enumeration value="N2\_INFORMATION"/>

<enumeration value="LOCATION\_NOTIFICATION"/>

</restriction>

</simpleType>

<simpleType name="TransportProtocol">

<restriction base="string">

<enumeration value="TCP"/>

</restriction>

</simpleType>

<simpleType name="NfStatus">

<restriction base="string">

<enumeration value="REGISTERED"/>

<enumeration value="SUSPENDED"/>

</restriction>

</simpleType>

<complexType name="NfRegistrationData">

<sequence>

<element name="heartBeatTimer" type="integer"/>

<element name="nfProfile" type="ngc:NfProfile"/>

</sequence>

</complexType>

<complexType name="NSILdList">

<sequence>

<element name="nSIId" type="string"/>

<!-- NSI Id is defined in TS 29.531 -->

</sequence>

</complexType>

<complexType name="SnssaiList">

<sequence>

<element name="sNssai" type="ngc:SNssai"/>

</sequence>

</complexType>

<complexType name="SNssai">

<sequence>

<element name="sst" type="ngc:Sst" minOccurs="0"/>

<element name="sd" type="ngc:Sd"/>

</sequence>

</complexType>

<simpleType name="Sst">

<restriction base="integer">

<maxInclusive value="255"/>

<!-- SST is 1-octets length and defined in TS 23.003 -->

</restriction>

</simpleType>

<simpleType name="Sd">

<restriction base="integer">

<maxInclusive value="65535"/>

<!-- SST is 2-octets length and defined in TS 23.003 -->

</restriction>

</complexType>

<simpleType name="WeightFactor">

<restriction base="integer">

</restriction>

</simpleType>

<simpleType name="SEPPType">

<restriction base="string">

<enumeration value="CSEPP"/>

<enumeration value="PSEPP"/>

</restriction>

</simpleType>

<complexType name="SupportedFunc">

<sequence>

<element name="function" type="string"/>

<element name="policy" type="string" minOccurs="0"/>

</sequence>

</complexType>

<complexType name="SupportedFuncList">

<sequence>

<element name="supportedFunc" type="ngc:SupportedFunc"/>

</sequence>

</complexType>

<simpleType name="CommModelType">

<restriction base="string">

<enumeration value="DIRECT\_COMMUNICATION\_WO\_NRF"/>

<enumeration value="DIRECT\_COMMUNICATION\_WITH\_NRF"/>

<enumeration value="INDIRECT\_COMMUNICATION\_WO\_DEDICATED\_DISCOVERY"/>

<enumeration value="INDIRECT\_COMMUNICATION\_WITH\_DEDICATED\_DISCOVERY"/>

</restriction>

</simpleType>

<complexType name="CommModel">

<sequence>

<element name="groupId" type="integer"/>

<element name="commModelType" type="ngc:CommModelType"/>

<element name="targetNFServiceList" type="xn:dnlist"/>

<element name="commModelConfiguration" type="string"/>

</sequence>

</complexType>

<complexType name="CommModelList">

<sequence>

<element name="commModel" type="ngc:CommModel"/>

</sequence>

</complexType>

<complexType name="CapabilityList">

<sequence>

<element name="capability" type="string"/>

</sequence>

</complexType>

<simpleType name="FiveQIResourceType">

<restriction base="string">

<enumeration value="GBR"/>

<enumeration value="NonGBR"/>

</restriction>

</simpleType>

<complexType name="PacketErrorRate">

<sequence>

<element name="scalar" type="integer"/>

<element name="exponent" type="integer"/>

</sequence>

</complexType>

<complexType name="FiveQICharacteristics">

<sequence>

<element name="fiveQIValue" type="integer"/>

<element name="resourceType" type="ngc:5QIResourceType"/>

<element name="priorityLevel" type="integer"/>

<element name="packetDelayBudget" type="integer"/>

<element name="packetErrorRate" type="ngc:PacketErrorRate "/>

<element name="averagingWindow" type="integer"/>

<element name="maximumDataBurstVolume" type="integer"/>

</sequence>

</complexType>

<complexType name="FiveQIList">

<sequence>

<element name="FiveQI" type="ngc:FiveQICharacteristics"/>

</sequence>

</complexType>

<element name="AMFFunction" substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass">

<complexType>

<complexContent>

<extension base="xn:NrmClass">

<sequence>

<element name="attributes">

<complexType>

<all>

<element name="userLabel" type="string"/>

<element name="vnfParametersList" type="xn:vnfParametersListType" minOccurs="0"/>

<element name="pLMNIdList" type="en:PLMNIdList"/>

<element name="aMFIdentifier" type="ngc:aMFIdentifier"/>

<element name="sBIFqdn" type="string"/>

<element name="snssaiList" type="ngc:SnssaiList" minOccurs="0"/>

<element name="aMFSet" type="xn:dn" minOccurs="0"/>

<element name="priority" type="integer" minOccurs="0"/>

<element name="measurements" type="xn:MeasurementTypesAndGPsList" minOccurs="0"/>

<element name="managedNFProfile" type="ngc:managedNFProfile" minOccurs="0"/>

<element name="commModelList" type="ngc:CommModelList" minOccurs="1"/>

</all>

</complexType>

</element>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref="ngc:EP\_N2"/>

<element ref="ngc:EP\_N8"/>

<element ref="ngc:EP\_N11"/>

<element ref="ngc:EP\_N12"/>

<element ref="ngc:EP\_N14"/>

<element ref="ngc:EP\_N15"/>

<element ref="ngc:EP\_N17"/>

<element ref="ngc:EP\_N22"/>

<element ref="ngc:EP\_N26"/>

<element ref="ngc:EP\_N20"/>

<element ref="ngc:EP\_NLS"/>

<element ref="ngc:EP\_NLG"/>

<element ref="xn:VsDataContainer"/>

<element ref="xn:MeasurementControl"/>

</choice>

</sequence>

</extension>

</complexContent>

</complexType>

</element>

<element name="SMFFunction" substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass">

<complexType>

<complexContent>

<extension base="xn:NrmClass">

<sequence>

<element name="attributes">

<complexType>

<all>

<element name="userLabel" type="string"/>

<element name="vnfParametersList" type="xn:vnfParametersListType" minOccurs="0"/>

<element name="pLMNIdList" type="en:PLMNIdList"/>

<element name="nRTACList" type="ngc:NrTACList"/>

<element name="sBIFqdn" type="string"/>

<element name="snssaiList" type="ngc:SnssaiList" minOccurs="0"/>

<element name="priority" type="integer" minOccurs="0"/>

<element name="measurements" type="xn:MeasurementTypesAndGPsList" minOccurs="0"/>

<element name="managedNFProfile" type="ngc:managedNFProfile" minOccurs="0"/>

<element name="commModelList" type="ngc:CommModelList" minOccurs="1"/>

<element name="configurable5QISetRef" type="xn:dn"/>

</all>

</complexType>

</element>

<choice minOccurs="0" maxOccurs="unbounded">

<element ref="ngc:EP\_N4"/>

<element ref="ngc:EP\_N10"/>

<element ref="ngc:EP\_N11"/>

<element ref="ngc:EP\_N7"/>

<element ref="ngc:EP\_N16"/>

<element ref="ngc:EP\_S5C"/>

<element ref="ngc:Configurable5QISet"/>

<element ref="xn:VsDataContainer"/>

<element ref="xn:MeasurementControl"/>

</choice>

</sequence>

</extension>

</complexContent>

</complexType>

</element>

<element name="UPFFunction" substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass">

<complexType>

<complexContent>

<extension base="xn:NrmClass">

<sequence>

<element name="attributes">

<complexType>

<all>

<element name="userLabel" type="string"/>

<element name="vnfParametersList" type="xn:vnfParametersListType" minOccurs="0"/>

<element name="pLMNIdList" type="en:PLMNIdList"/>

<element name="nRTACList" type="ngc:NrTACList"/>

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| --- |
| **Next Modified Sections** |

## G.4.3 OpenAPI document "5gcNrm.yaml"

openapi: 3.0.1

info:

title: 3GPP 5GC NRM

version: 16.5.0

description: >-

OAS 3.0.1 specification of the 5GC NRM

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externalDocs:

description: 3GPP TS 28.541 V16.4.0; 5G NRM, 5GC NRM

url: http://www.3gpp.org/ftp/Specs/archive/28\_series/28.541/

paths: {}

components:

schemas:

#-------- Definition of types-----------------------------------------------------

AmfIdentifier:

type: object

description: 'AmfIdentifier comprise of amfRegionId, amfSetId and amfPointer'

properties:

amfRegionId:

$ref: '#/components/schemas/AmfRegionId'

amfSetId:

$ref: '#/components/schemas/AmfSetId'

amfPointer:

$ref: '#/components/schemas/AmfPointer'

AmfRegionId:

type: integer

description: AmfRegionId is defined in TS 23.003

maximum: 255

AmfSetId:

type: string

description: AmfSetId is defined in TS 23.003

maximum: 1023

AmfPointer:

type: integer

description: AmfPointer is defined in TS 23.003

maximum: 63

IpEndPoint:

type: object

properties:

ipv4Address:

$ref: 'genericNrm.yaml#/components/schemas/Ipv4Addr'

ipv6Address:

$ref: 'genericNrm.yaml#/components/schemas/Ipv6Addr'

ipv6Prefix:

$ref: 'genericNrm.yaml#/components/schemas/Ipv6Prefix'

transport:

$ref: 'genericNrm.yaml#/components/schemas/TransportProtocol'

port:

type: integer

NFProfileList:

type: array

description: List of NF profile

items:

$ref: '#/components/schemas/NFProfile'

NFProfile:

type: object

description: 'NF profile stored in NRF, defined in TS 29.510'

properties:

nFInstanceId:

type: string

description: uuid of NF instance

nFType:

$ref: 'genericNrm.yaml#/components/schemas/NFType'

nFStatus:

$ref: '#/components/schemas/NFStatus'

plmn:

$ref: 'nrNrm.yaml#/components/schemas/PlmnId'

sNssais:

$ref: 'nrNrm.yaml#/components/schemas/Snssai'

fqdn:

$ref: 'genericNrm.yaml#/components/schemas/Fqdn'

interPlmnFqdn:

$ref: 'genericNrm.yaml#/components/schemas/Fqdn'

nfServices:

type: array

items:

$ref: '#/components/schemas/NFService'

NFService:

type: object

description: NF Service is defined in TS 29.510

properties:

serviceInstanceId:

type: string

serviceName:

type: string

version:

type: string

schema:

type: string

fqdn:

$ref: 'genericNrm.yaml#/components/schemas/Fqdn'

interPlmnFqdn:

$ref: 'genericNrm.yaml#/components/schemas/Fqdn'

ipEndPoints:

type: array

items:

$ref: '#/components/schemas/IpEndPoint'

apiPrfix:

type: string

allowedPlmns:

$ref: 'nrNrm.yaml#/components/schemas/PlmnId'

allowedNfTypes:

type: array

items:

$ref: 'genericNrm.yaml#/components/schemas/NFType'

allowedNssais:

type: array

items:

$ref: 'nrNrm.yaml#/components/schemas/Snssai'

NFStatus:

type: string

description: any of enumrated value

enum:

- REGISTERED

- SUSPENDED

NSIIdList:

type: array

items:

$ref: '#/components/schemas/NSIId'

NSIId:

type: string

description: NSI Id is defined in TS 29.531

TACList:

type: array

items:

$ref: 'nrNrm.yaml#/components/schemas/NrTac'

WeightFactor:

type: integer

UdmInfo:

type: object

properties:

nFSrvGroupId:

type: string

AusfInfo:

type: object

properties:

nFSrvGroupId:

type: string

UpfInfo:

type: object

properties:

smfServingAreas:

type: string

AmfInfo:

type: object

properties:

priority:

type: integer

SupportedDataSetId:

type: string

description: any of enumrated value

enum:

- SUBSCRIPTION

- POLICY

- EXPOSURE

- APPLICATION

Udrinfo:

type: object

properties:

supportedDataSetIds:

type: array

items:

$ref: '#/components/schemas/SupportedDataSetId'

nFSrvGroupId:

type: string

NFInfo:

oneOf:

- $ref: '#/components/schemas/UdmInfo'

- $ref: '#/components/schemas/AusfInfo'

- $ref: '#/components/schemas/UpfInfo'

- $ref: '#/components/schemas/AmfInfo'

- $ref: '#/components/schemas/Udrinfo'

ManagedNFProfile:

type: object

properties:

nfInstanceID:

type: string

nfType:

$ref: 'genericNrm.yaml#/components/schemas/NFType'

authzInfo:

type: string

hostAddr:

$ref: 'genericNrm.yaml#/components/schemas/HostAddr'

locality:

type: string

nFInfo:

$ref: '#/components/schemas/NFInfo'

capacity:

type: integer

SEPPType:

type: string

description: any of enumrated value

enum:

- CSEPP

- PSEPP

SupportedFunc:

type: object

properties:

function:

type: string

policy:

type: string

SupportedFuncList:

type: array

items:

$ref: '#/components/schemas/SupportedFunc'

CommModelType:

type: string

description: any of enumrated value

enum:

- DIRECT\_COMMUNICATION\_WO\_NRF

- DIRECT\_COMMUNICATION\_WITH\_NRF

- INDIRECT\_COMMUNICATION\_WO\_DEDICATED\_DISCOVERY

- INDIRECT\_COMMUNICATION\_WITH\_DEDICATED\_DISCOVERY

CommModel:

type: object

properties:

groupId:

type: integer

commModelType:

$ref: '#/components/schemas/CommModelType'

targetNFServiceList:

$ref: 'genericNrm.yaml#/components/schemas/DnList'

commModelConfiguration:

type: string

CommModelList:

type: array

items:

$ref: '#/components/schemas/CommModel'

CapabilityList:

type: array

items:

type: string

PacketErrorRate:

type: object

properties:

scalar:

type: integer

exponent:

type: integer

FiveQICharacteristics:

type: object

properties:

fiveQIValue:

type: integer

resourceType:

type: string

enum:

- GBR

- NonGBR

priorityLevel:

type: integer

packetDelayBudget:

type: integer

packetErrorRate:

$ref: '#/components/schemas/PacketErrorRate'

averagingWindow:

type: integer

maximumDataBurstVolume:

type: integer

#-------- Definition of concrete IOCs --------------------------------------------

SubNetwork-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/SubNetwork-Attr'

- $ref: 'genericNrm.yaml#/components/schemas/SubNetwork-ncO'

- type: object

properties:

SubNetwork:

$ref: '#/components/schemas/SubNetwork-Multiple'

ManagedElement:

$ref: '#/components/schemas/ManagedElement-Multiple'

ExternalAmfFunction:

$ref: '#/components/schemas/ExternalAmfFunction-Multiple'

ExternalNrfFunction:

$ref: '#/components/schemas/ExternalNrfFunction-Multiple'

ExternalNssfFunction:

$ref: '#/components/schemas/ExternalNssfFunction-Multiple'

AmfSet:

$ref: '#/components/schemas/AmfSet-Multiple'

AmfRegion:

$ref: '#/components/schemas/AmfRegion-Multiple'

Configurable5QISetRef:

$ref: '#/components/schemas/Configurable5QISet-Single'

ManagedElement-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedElement-Attr'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedElement-ncO'

- type: object

properties:

AmfFunction:

$ref: '#/components/schemas/AmfFunction-Multiple'

SmfFunction:

$ref: '#/components/schemas/SmfFunction-Multiple'

UpfFunction:

$ref: '#/components/schemas/UpfFunction-Multiple'

N3iwfFunction:

$ref: '#/components/schemas/N3iwfFunction-Multiple'

PcfFunction:

$ref: '#/components/schemas/PcfFunction-Multiple'

AusfFunction:

$ref: '#/components/schemas/AusfFunction-Multiple'

UdmFunction:

$ref: '#/components/schemas/UdmFunction-Multiple'

UdrFunction:

$ref: '#/components/schemas/UdrFunction-Multiple'

UdsfFunction:

$ref: '#/components/schemas/UdsfFunction-Multiple'

NrfFunction:

$ref: '#/components/schemas/NrfFunction-Multiple'

NssfFunction:

$ref: '#/components/schemas/NssfFunction-Multiple'

SmsfFunction:

$ref: '#/components/schemas/SmsfFunction-Multiple'

LmfFunction:

$ref: '#/components/schemas/LmfFunction-Multiple'

NgeirFunction:

$ref: '#/components/schemas/NgeirFunction-Multiple'

SeppFunction:

$ref: '#/components/schemas/SeppFunction-Multiple'

NwdafFunction:

$ref: '#/components/schemas/NwdafFunction-Multiple'

ScpFunction:

$ref: '#/components/schemas/ScpFunction-Multiple'

NefFunction:

$ref: '#/components/schemas/NefFunction-Multiple'

AmfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

amfIdentifier:

$ref: '#/components/schemas/AmfIdentifier'

sBIFqdn:

type: string

weightFactor:

$ref: '#/components/schemas/WeightFactor'

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

amfSet:

$ref: 'genericNrm.yaml#/components/schemas/Dn'

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

commModelList:

$ref: '#/components/schemas/CommModelList'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_N2:

$ref: '#/components/schemas/EP\_N2-Multiple'

EP\_N8:

$ref: '#/components/schemas/EP\_N8-Multiple'

EP\_N11:

$ref: '#/components/schemas/EP\_N11-Multiple'

EP\_N12:

$ref: '#/components/schemas/EP\_N12-Multiple'

EP\_N14:

$ref: '#/components/schemas/EP\_N14-Multiple'

EP\_N15:

$ref: '#/components/schemas/EP\_N15-Multiple'

EP\_N17:

$ref: '#/components/schemas/EP\_N17-Multiple'

EP\_N20:

$ref: '#/components/schemas/EP\_N20-Multiple'

EP\_N22:

$ref: '#/components/schemas/EP\_N22-Multiple'

EP\_N26:

$ref: '#/components/schemas/EP\_N26-Multiple'

EP\_NLS:

$ref: '#/components/schemas/EP\_NLS-Multiple'

EP\_NLG:

$ref: '#/components/schemas/EP\_NLG-Multiple'

AmfSet-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

nRTACList:

$ref: '#/components/schemas/TACList'

amfSetId:

$ref: '#/components/schemas/AmfSetId'

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

AmfRegion-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

nRTACList:

$ref: '#/components/schemas/TACList'

amfRegionId:

$ref: '#/components/schemas/AmfRegionId'

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

SmfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

nRTACList:

$ref: '#/components/schemas/TACList'

sBIFqdn:

type: string

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

commModelList:

$ref: '#/components/schemas/CommModelList'

Configurable5QISetRef:

$ref: '#/components/schemas/Configurable5QISet-Single'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_N4:

$ref: '#/components/schemas/EP\_N4-Multiple'

EP\_N7:

$ref: '#/components/schemas/EP\_N7-Multiple'

EP\_N10:

$ref: '#/components/schemas/EP\_N10-Multiple'

EP\_N11:

$ref: '#/components/schemas/EP\_N11-Multiple'

EP\_N16:

$ref: '#/components/schemas/EP\_N16-Multiple'

EP\_S5C:

$ref: '#/components/schemas/EP\_S5C-Multiple'

Configurable5QISetRef:

$ref: '#/components/schemas/Configurable5QISet-Single'

UpfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

nRTACList:

$ref: '#/components/schemas/TACList'

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

commModelList:

$ref: '#/components/schemas/CommModelList'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_N3:

$ref: '#/components/schemas/EP\_N3-Multiple'

EP\_N4:

$ref: '#/components/schemas/EP\_N4-Multiple'

EP\_N6:

$ref: '#/components/schemas/EP\_N6-Multiple'

EP\_N9:

$ref: '#/components/schemas/EP\_N9-Multiple'

EP\_S5U:

$ref: '#/components/schemas/EP\_S5U-Multiple'

N3iwfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

commModelList:

$ref: '#/components/schemas/CommModelList'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_N3:

$ref: '#/components/schemas/EP\_N3-Multiple'

EP\_N4:

$ref: '#/components/schemas/EP\_N4-Multiple'

PcfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

sBIFqdn:

type: string

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

commModelList:

$ref: '#/components/schemas/CommModelList'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_N5:

$ref: '#/components/schemas/EP\_N5-Multiple'

EP\_N7:

$ref: '#/components/schemas/EP\_N7-Multiple'

EP\_N15:

$ref: '#/components/schemas/EP\_N15-Multiple'

EP\_N16:

$ref: '#/components/schemas/EP\_N16-Multiple'

EP\_Rx:

$ref: '#/components/schemas/EP\_Rx-Multiple'

AusfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

sBIFqdn:

type: string

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

commModelList:

$ref: '#/components/schemas/CommModelList'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_N12:

$ref: '#/components/schemas/EP\_N12-Multiple'

EP\_N13:

$ref: '#/components/schemas/EP\_N13-Multiple'

UdmFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

sBIFqdn:

type: string

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

commModelList:

$ref: '#/components/schemas/CommModelList'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_N8:

$ref: '#/components/schemas/EP\_N8-Multiple'

EP\_N10:

$ref: '#/components/schemas/EP\_N10-Multiple'

EP\_N13:

$ref: '#/components/schemas/EP\_N13-Multiple'

UdrFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

sBIFqdn:

type: string

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

UdsfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

sBIFqdn:

type: string

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

NrfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

sBIFqdn:

type: string

nSIIdList:

$ref: '#/components/schemas/NSIIdList'

nFProfileList:

$ref: '#/components/schemas/NFProfileList'

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_N27:

$ref: '#/components/schemas/EP\_N27-Multiple'

NssfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

sBIFqdn:

type: string

nSIIdList:

$ref: '#/components/schemas/NSIIdList'

nFProfileList:

$ref: '#/components/schemas/NFProfileList'

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

commModelList:

$ref: '#/components/schemas/CommModelList'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_N22:

$ref: '#/components/schemas/EP\_N22-Multiple'

EP\_N31:

$ref: '#/components/schemas/EP\_N31-Multiple'

SmsfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

sBIFqdn:

type: string

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

commModelList:

$ref: '#/components/schemas/CommModelList'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_N20:

$ref: '#/components/schemas/EP\_N20-Multiple'

EP\_N21:

$ref: '#/components/schemas/EP\_N21-Multiple'

EP\_MAP\_SMSC:

$ref: '#/components/schemas/EP\_MAP\_SMSC-Multiple'

LmfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

commModelList:

$ref: '#/components/schemas/CommModelList'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_NLS:

$ref: '#/components/schemas/EP\_NLS-Multiple'

NgeirFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

sBIFqdn:

type: string

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

commModelList:

$ref: '#/components/schemas/CommModelList'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_N17:

$ref: '#/components/schemas/EP\_N17-Multiple'

SeppFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnId:

$ref: 'nrNrm.yaml#/components/schemas/PlmnId'

sEPPType:

$ref: '#/components/schemas/SEPPType'

sEPPId:

type: integer

fqdn:

$ref: 'genericNrm.yaml#/components/schemas/Fqdn'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

- type: object

properties:

EP\_N32:

$ref: '#/components/schemas/EP\_N32-Multiple'

NwdafFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

sBIFqdn:

type: string

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

commModelList:

$ref: '#/components/schemas/CommModelList'

ScpFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

supportedFuncList:

$ref: '#/components/schemas/SupportedFuncList'

address:

$ref: 'genericNrm.yaml#/components/schemas/HostAddr'

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

NefFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

sBIFqdn:

type: string

snssaiList:

$ref: 'nrNrm.yaml#/components/schemas/SnssaiList'

managedNFProfile:

$ref: '#/components/schemas/ManagedNFProfile'

capabilityList:

$ref: '#/components/schemas/CapabilityList'

isINEF:

type: boolean

isCAPIFSup:

type: boolean

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-ncO'

ExternalAmfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

amfIdentifier:

$ref: '#/components/schemas/AmfIdentifier'

ExternalNrfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

ExternalNssfFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnIdList:

$ref: 'nrNrm.yaml#/components/schemas/PlmnIdList'

ExternalSeppFunction-Single:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNrm.yaml#/components/schemas/ManagedFunction-Attr'

- type: object

properties:

plmnId:

$ref: 'nrNrm.yaml#/components/schemas/PlmnId'

sEPPId:

type: integer

fqdn:

$ref: 'genericNrm.yaml#/components/schemas/Fqdn'

EP\_N2-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N3-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N4-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N5-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N6-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N7-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N8-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N9-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N10-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N11-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N12-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N13-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N14-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N15-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N16-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N17-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N20-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N21-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N22-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N26-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N27-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N31-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_N32-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

remotePlmnId:

$ref: 'nrNrm.yaml#/components/schemas/PlmnId'

remoteSeppAddress:

$ref: 'genericNrm.yaml#/components/schemas/HostAddr'

remoteSeppId:

type: integer

n32cParas:

type: string

n32fPolicy:

type: string

withIPX:

type: boolean

EP\_S5C-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_S5U-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_Rx-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_MAP\_SMSC-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_NLS-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

EP\_NLG-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/EP\_RP-Attr'

- type: object

properties:

localAddress:

$ref: 'nrNrm.yaml#/components/schemas/LocalAddress'

remoteAddress:

$ref: 'nrNrm.yaml#/components/schemas/RemoteAddress'

Configurable5QISet-Single:

allOf:

- $ref: 'genericNRM.yaml#/components/schemas/Top-Attr'

- type: object

properties:

attributes:

allOf:

- type: object

properties:

configurable5QIs:

type: array

items:

$ref: '#/components/schemas/FiveQICharacteristics'

#-------- Definition of JSON arrays for name-contained IOCs ----------------------

SubNetwork-Multiple:

type: array

items:

$ref: '#/components/schemas/SubNetwork-Single'

ManagedElement-Multiple:

type: array

items:

$ref: '#/components/schemas/ManagedElement-Single'

AmfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/AmfFunction-Single'

SmfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/SmfFunction-Single'

UpfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/UpfFunction-Single'

N3iwfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/N3iwfFunction-Single'

PcfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/PcfFunction-Single'

AusfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/AusfFunction-Single'

UdmFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/UdmFunction-Single'

UdrFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/UdrFunction-Single'

UdsfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/UdsfFunction-Single'

NrfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/NrfFunction-Single'

NssfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/NssfFunction-Single'

SmsfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/SmsfFunction-Single'

LmfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/LmfFunction-Single'

NgeirFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/NgeirFunction-Single'

SeppFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/SeppFunction-Single'

NwdafFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/NwdafFunction-Single'

ScpFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/ScpFunction-Single'

NefFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/NefFunction-Single'

ExternalAmfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/ExternalAmfFunction-Single'

ExternalNrfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/ExternalNrfFunction-Single'

ExternalNssfFunction-Multiple:

type: array

items:

$ref: '#/components/schemas/ExternalNssfFunction-Single'

ExternalSeppFunction-Nultiple:

type: array

items:

$ref: '#/components/schemas/ExternalSeppFunction-Single'

AmfSet-Multiple:

type: array

items:

$ref: '#/components/schemas/AmfSet-Single'

AmfRegion-Multiple:

type: array

items:

$ref: '#/components/schemas/AmfRegion-Single'

EP\_N2-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N2-Single'

EP\_N3-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N3-Single'

EP\_N4-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N4-Single'

EP\_N5-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N5-Single'

EP\_N6-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N6-Single'

EP\_N7-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N7-Single'

EP\_N8-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N8-Single'

EP\_N9-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N9-Single'

EP\_N10-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N10-Single'

EP\_N11-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N11-Single'

EP\_N12-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N12-Single'

EP\_N13-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N13-Single'

EP\_N14-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N14-Single'

EP\_N15-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N15-Single'

EP\_N16-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N16-Single'

EP\_N17-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N17-Single'

EP\_N20-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N20-Single'

EP\_N21-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N21-Single'

EP\_N22-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N22-Single'

EP\_N26-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N26-Single'

EP\_N27-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N27-Single'

EP\_N31-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N31-Single'

EP\_N32-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_N32-Single'

EP\_S5C-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_S5C-Single'

EP\_S5U-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_S5U-Single'

EP\_Rx-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_Rx-Single'

EP\_MAP\_SMSC-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_MAP\_SMSC-Single'

EP\_NLS-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_NLS-Single'

EP\_NLG-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_NLG-Single'

#------------ Definitions in TS 28.541 for TS 28.532 -----------------------------

resources-5gcNrm:

oneOf:

- $ref: '#/components/schemas/SubNetwork-Single'

- $ref: '#/components/schemas/ManagedElement-Single'

- $ref: '#/components/schemas/AmfFunction-Single'

- $ref: '#/components/schemas/SmfFunction-Single'

- $ref: '#/components/schemas/UpfFunction-Single'

- $ref: '#/components/schemas/N3iwfFunction-Single'

- $ref: '#/components/schemas/PcfFunction-Single'

- $ref: '#/components/schemas/AusfFunction-Single'

- $ref: '#/components/schemas/UdmFunction-Single'

- $ref: '#/components/schemas/UdrFunction-Single'

- $ref: '#/components/schemas/UdsfFunction-Single'

- $ref: '#/components/schemas/NrfFunction-Single'

- $ref: '#/components/schemas/NssfFunction-Single'

- $ref: '#/components/schemas/SmsfFunction-Single'

- $ref: '#/components/schemas/LmfFunction-Single'

- $ref: '#/components/schemas/NgeirFunction-Single'

- $ref: '#/components/schemas/SeppFunction-Single'

- $ref: '#/components/schemas/NwdafFunction-Single'

- $ref: '#/components/schemas/ScpFunction-Single'

- $ref: '#/components/schemas/NefFunction-Single'

- $ref: '#/components/schemas/ExternalAmfFunction-Single'

- $ref: '#/components/schemas/ExternalNrfFunction-Single'

- $ref: '#/components/schemas/ExternalNssfFunction-Single'

- $ref: '#/components/schemas/ExternalSeppFunction-Single'

- $ref: '#/components/schemas/AmfSet-Single'

- $ref: '#/components/schemas/AmfRegion-Single'

- $ref: '#/components/schemas/EP\_N2-Single'

- $ref: '#/components/schemas/EP\_N3-Single'

- $ref: '#/components/schemas/EP\_N4-Single'

- $ref: '#/components/schemas/EP\_N5-Single'

- $ref: '#/components/schemas/EP\_N6-Single'

- $ref: '#/components/schemas/EP\_N7-Single'

- $ref: '#/components/schemas/EP\_N8-Single'

- $ref: '#/components/schemas/EP\_N9-Single'

- $ref: '#/components/schemas/EP\_N10-Single'

- $ref: '#/components/schemas/EP\_N11-Single'

- $ref: '#/components/schemas/EP\_N12-Single'

- $ref: '#/components/schemas/EP\_N13-Single'

- $ref: '#/components/schemas/EP\_N14-Single'

- $ref: '#/components/schemas/EP\_N15-Single'

- $ref: '#/components/schemas/EP\_N16-Single'

- $ref: '#/components/schemas/EP\_N17-Single'

- $ref: '#/components/schemas/EP\_N20-Single'

- $ref: '#/components/schemas/EP\_N21-Single'

- $ref: '#/components/schemas/EP\_N22-Single'

- $ref: '#/components/schemas/EP\_N26-Single'

- $ref: '#/components/schemas/EP\_N27-Single'

- $ref: '#/components/schemas/EP\_N31-Single'

- $ref: '#/components/schemas/EP\_N31-Single'

- $ref: '#/components/schemas/EP\_S5C-Single'

- $ref: '#/components/schemas/EP\_S5U-Single'

- $ref: '#/components/schemas/EP\_Rx-Single'

- $ref: '#/components/schemas/EP\_MAP\_SMSC-Single'

- $ref: '#/components/schemas/EP\_NLS-Single'

- $ref: '#/components/schemas/EP\_NLG-Single'

- $ref: '#/components/schemas/Configurable5QISet-Single'

|  |
| --- |
| **Next Modified Sections** |

## H.5.20 module \_3gpp-5gc-nrm-smffunction@2030-06-03.yang

module \_3gpp-5gc-nrm-smffunction {

yang-version 1.1;

namespace urn:3gpp:sa5:\_3gpp-5gc-nrm-smffunction;

prefix smf3gpp;

import \_3gpp-common-managed-function { prefix mf3gpp; }

import \_3gpp-common-managed-element { prefix me3gpp; }

import \_3gpp-common-yang-types { prefix types3gpp; }

import \_3gpp-5g-common-yang-types { prefix types5g3gpp; }

import ietf-inet-types { prefix inet; }

import \_3gpp-common-top { prefix top3gpp; }

description "SMFFunction derived from basic ManagedFunction.";

revision 2020-06-03 { reference "CR-0286"; }

revision 2019-10-25 { reference "S5-194457 S5-193518"; }

revision 2019-05-31 {

description "Ericsson refactoring.";

}

revision 2018-08-07 {

description "Initial revision";

}

grouping SMFFunctionGrp {

uses mf3gpp:ManagedFunctionGrp;

list pLMNIdList {

min-elements 1;

description "A list of PLMN identifiers (Mobile Country Code and Mobile Network Code).";

key "mcc mnc";

uses types3gpp:PLMNId;

}

leaf-list nRTACList {

description "List of Tracking Area Codes (legacy TAC or extended TAC)

where the represented management function is serving.";

reference "TS 38.413 clause 9.3.3.10";

min-elements 1;

config false;

type types3gpp:Tac;

}

leaf sBIFQDN {

description "The FQDN of the registered NF instance in the service-based interface.";

type inet:domain-name;

}

leaf-list sNSSAIList {

min-elements 0;

description "List of S-NSSAIs the managed object is capable of supporting.

(Single Network Slice Selection Assistance Information)

An S-NSSAI has an SST (Slice/Service type) and an optional SD

(Slice Differentiator) field.";

reference "3GPP TS 23.003";

type types3gpp:SNssai;

}

list managedNFProfile {

key idx;

min-elements 1;

uses types3gpp:ManagedNFProfile;

}

list commModelList {

min-elements 1;

key "groupId";

uses types5g3gpp:CommModel;

}

leaf configurable5QISetRef {

type types3gpp:DistinguishedName;

description "DN of the Configurable5QISet that the SMFFunction supports (is associated to).";

}

}

augment "/me3gpp:ManagedElement" {

list SMFFunction {

description "5G Core SMF Function";

reference "3GPP TS 28.541";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses SMFFunctionGrp;

}

uses mf3gpp:ManagedFunctionContainedClasses;

}

}

}

|  |
| --- |
| **Next Modified Sections** |

## H.5.x module \_3gpp-5gc-nrm-Configurable5QISet@2020-06-03.yang

module \_3gpp-5gc-nrm-configurable5qiset {

yang-version 1.1;

namespace urn:3gpp:sa5:\_3gpp-5gc-nrm-configurable5qiset;

prefix Conf5QIs3gpp;

import \_3gpp-common-top { prefix top3gpp; }

import \_3gpp-common-managed-element { prefix me3gpp; }

import \_3gpp-5gc-nrm-smffunction { prefix smf3gpp; }

import \_3gpp-nr-nrm-gnbcucpfunction { prefix gnbcucp3gpp; }

import \_3gpp-nr-nrm-gnbcuupfunction { prefix gnbcuup3gpp; }

organization "3gpp SA5";

contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

description "This IOC represents the non-standardized 5QIs, including

their QoS characteristics, that need to be pre-configured

(and configurable) to the 5G NFs.";

reference "3GPP TS 28.541";

revision 2020-06-03 { reference "CR-0286"; }

grouping PacketErrorRate {

leaf scalar {

type uint32 {

range 0..9 ;

}

mandatory true;

description "The Packet Error Rate of a 5QI expressed as Scalar x 10-k where k is the Exponent.";

}

leaf exponent {

type uint32 {

range 0..9 ;

}

mandatory true;

description "The Packet Error Rate of a 5QI expressed as Scalar x 10-k, where k is the Exponent.";

}

}

grouping FiveQICharacteristics {

leaf fiveQIValue {

type uint32 {

range 0..255 ;

}

mandatory true;

description "Identifies the 5QI value.";

}

leaf resourceType {

type enumeration {

enum GBR;

enum NON\_GBR;

}

mandatory true;

description "It indicates the Resource Type of a 5QI, as specified in TS 23.501 ";

}

leaf priorityLevel {

type uint32 {

range 0..127 ;

}

}

leaf packetDelayBudget {

type uint32 {

range 0..1023 ;

}

description "Indicates the Packet Delay Budget (in unit of 0.5ms)of a 5QI, as specified in TS 23.501 ";

}

list packetErrorRate {

key "scalar exponent";

min-elements 0;

max-elements 1;

uses PacketErrorRate;

reference "TS 23.501";

}

leaf averagingWindow {

type uint32 {

range 0..4095 ;

}

units ms;

reference "TS 23.501";

}

leaf maximumDataBurstVolume {

type uint32{

range 0..4095 ;

}

units byte;

}

}

grouping Configurable5QISetGrp {

description "Represents the Configurable5QISet IOC.";

list configurable5QIs {

key "fiveQIValue";

uses FiveQICharacteristics;

}

}

grouping Configurable5QISetSubtree {

list Configurable5QISet {

description "Specifies the non-standardized 5QIs, including their QoS

characteristics, that need to be pre-configured (and configurable) to

the 5G NFs, see 3GPP TS 23.501.";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses Configurable5QISetGrp;

}

}

}

augment "/subnet3gpp:SubNetwork" {

uses Configurable5QISetSubtree;

}

augment "/me3gpp:ManagedElement/smf3gpp:SMFFunction" {

uses Configurable5QISetSubtree;

}

augment "/me3gpp:ManagedElement/gnbcucp3gpp:GNBCUCPFunction" {

uses Configurable5QISetSubtree;

}

augment "/me3gpp:ManagedElement/gnbcuup3gpp:GNBCUUPFunction" {

uses Configurable5QISetSubtree;

}

}

|  |
| --- |
| **End of Modified Sections** |