# 4 Information model definitions for NR NRM

## 4.1 Imported and associated information

### 4.1.1 Imported information entities and local labels

|  |  |
| --- | --- |
| Label reference | Local label |
| 3GPP TS 28.622 [30], IOC, ManagedFunction | ManagedFunction |
| 3GPP TS 28.622 [30], IOC, EP\_RP | EP\_RP |
| 3GPP TS 28.662 [11], IOC, SectorEquipmentFunction | SectorEquipmentFunction |
| 3GPP TS 28.658 [19], IOC, ExternalENBFunction | ExternalENBFunction |
| 3GPP TS 28.708 [21], IOC, ServingGWFunction | ServingGWFunction |
| 3GPP TS 28.658 [19], IOC, EUtranCellFDD | EUtranCellFDD |
| 3GPP TS 28.658 [19], IOC, EUtranCellTDD | EUtranCellTDD |
| 3GPP TS 28.658 [19], dataType, PLMNId | PLMNId |
| 3GPP TS 28.658 [19], IOC, ENBFunction | ENBFunction |
| 3GPP TS 28.708 [21], IOC, ExternalServingGWFunction | ExternalServingGWFunction |
| 3GPP TS 28.658 [19], IOC, ExternalEUtranCellFDD | ExternalEUtranCellFDD |
| 3GPP TS 28.658 [19], IOC, ExternalEUtranCellTDD | ExternalEUtranCellTDD |
| 3GPP TS 28.658 [19], IOC, AdjacentCell | AdjacentEUtranCell |
| 3GPP TS 28.658 [19], IOC, EUtranFrequency | EUtranFrequency |
| 3GPP TS 28.658 [19], IOC, EUtranFreqRelation | EUtranFreqRelation |
| 3GPP TS 28.658 [19], IOC, EUtranRelation | EUtranCellRelation |
| 3GPP TS 28.622 [30], dataType, Tai | Tai |

### 4.1.2 Associated information entities and local labels

|  |  |
| --- | --- |
| Label reference | Local label |
| 3GPP TS 28.622 [30], IOC, ManagedElement | ManagedElement |
| 3GPP TS 28.622 [30], IOC, SubNetwork | SubNetwork |

## 4.2 Class diagram

### 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 3GPP TS 38.401[4]. In this scenario, a gNB is represented by a combination of a GNBCUCPFunction, one or more GNBCUUPFunctions and one or more GNBDUFunctions.

- 2-split NG-RAN deployment scenario, represents the gNB consist of gNB-CU and gNB-DU defined in 3GPP TS 38.401[4] clause 6.1.1. In this scenario, a gNB-CU is represented by a combination of a GNBCUCPFunction and one or more GNBCUUPFunctions, whereas a gNB-DU is represented by a GNBDUFunction.

- 3-split NG-RAN deployment scenario, represents the gNB consist of gNB-CU-CP, gNB-CU-UP and gNB-DU defined in 3GPP TS 38.401[4] clause 6.1.2. In this scenario, a gNB-CU-CP is represented by a GNBCUCPFunction, a gNB-CU-UP is represented by a GNBCUUPFunction, and a gNB-DU is represented by a GNBDUFunction.

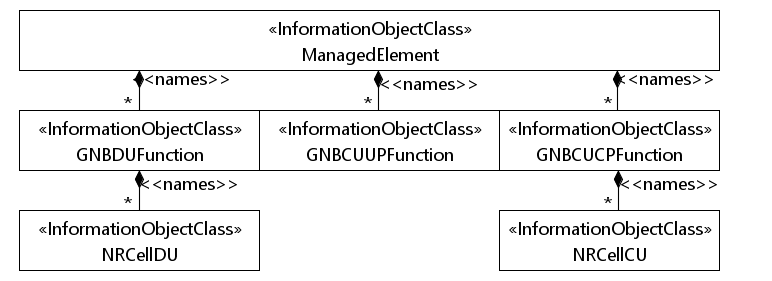


Figure 4.2.1.1-1: NRM for all deployment scenarios

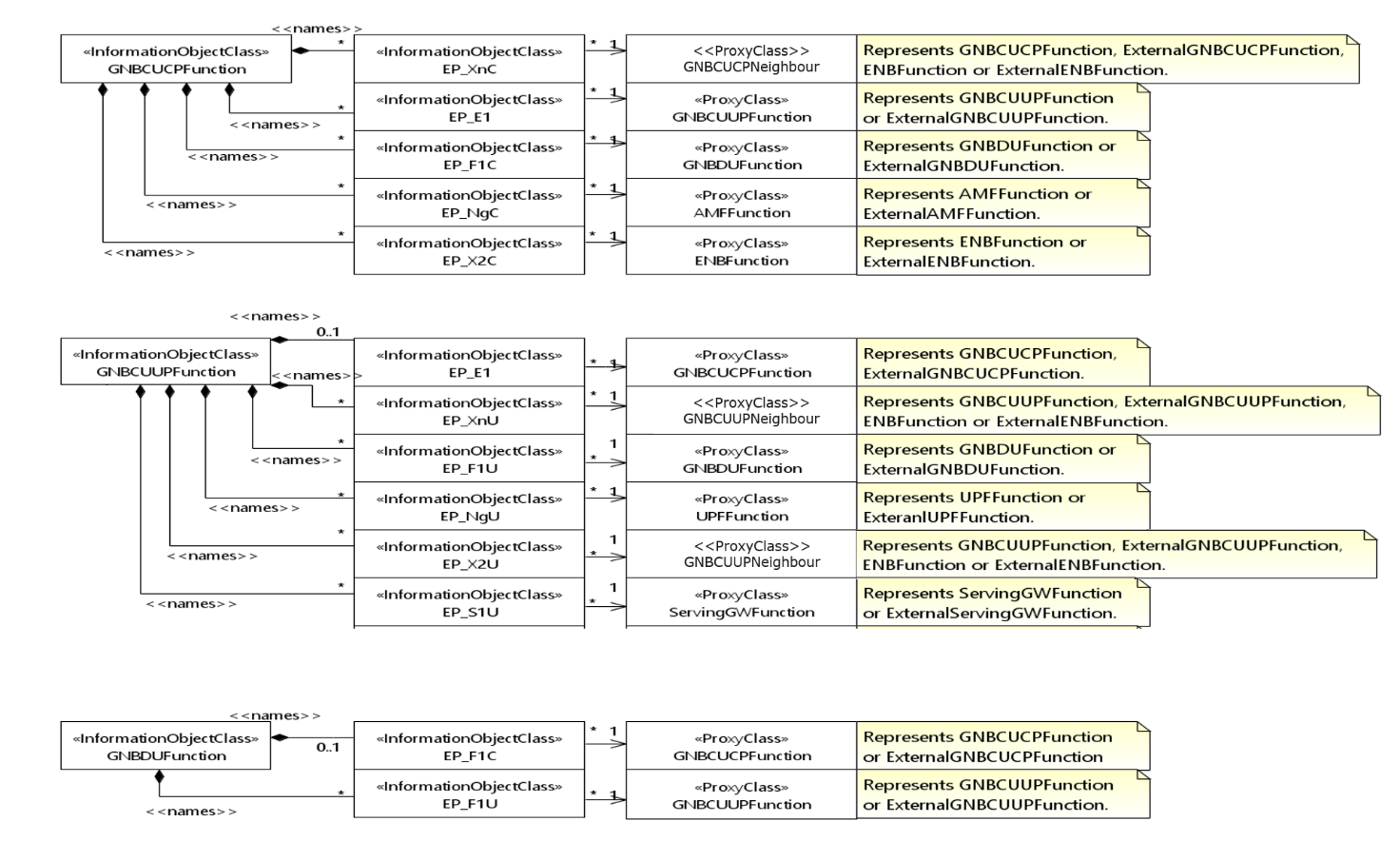


Figure 4.2.1.1-2: NRM for EPs for all deployment scenarios

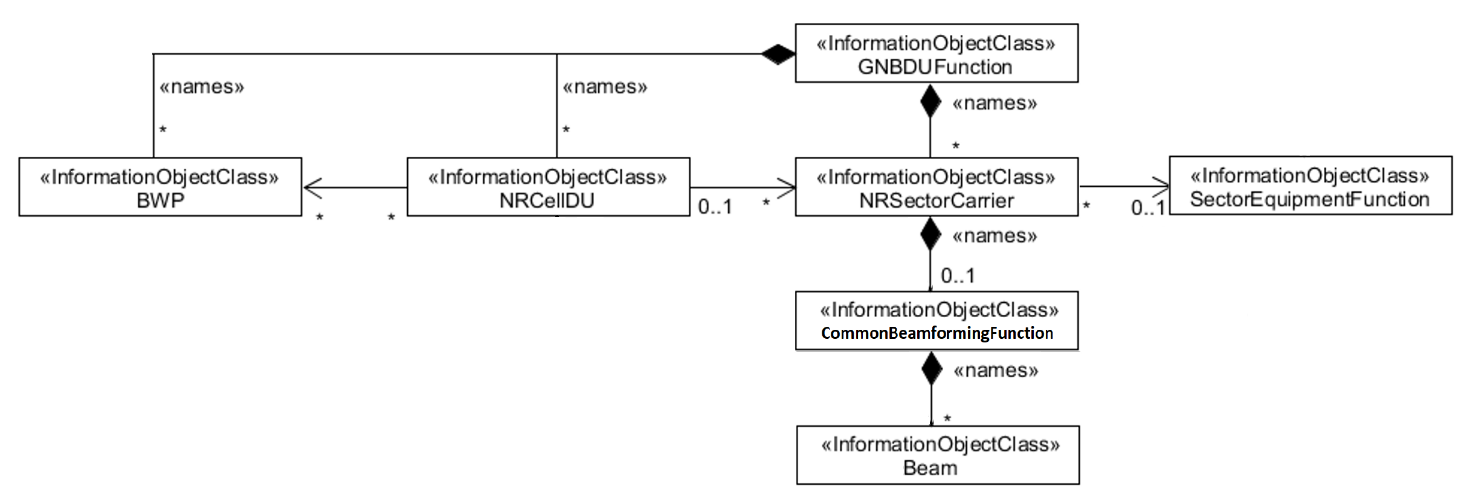


Figure 4.2.1.1-3: NRM for <<IOC>>NRSectorCarrier and <<IOC>>BWP for all deployment scenarios

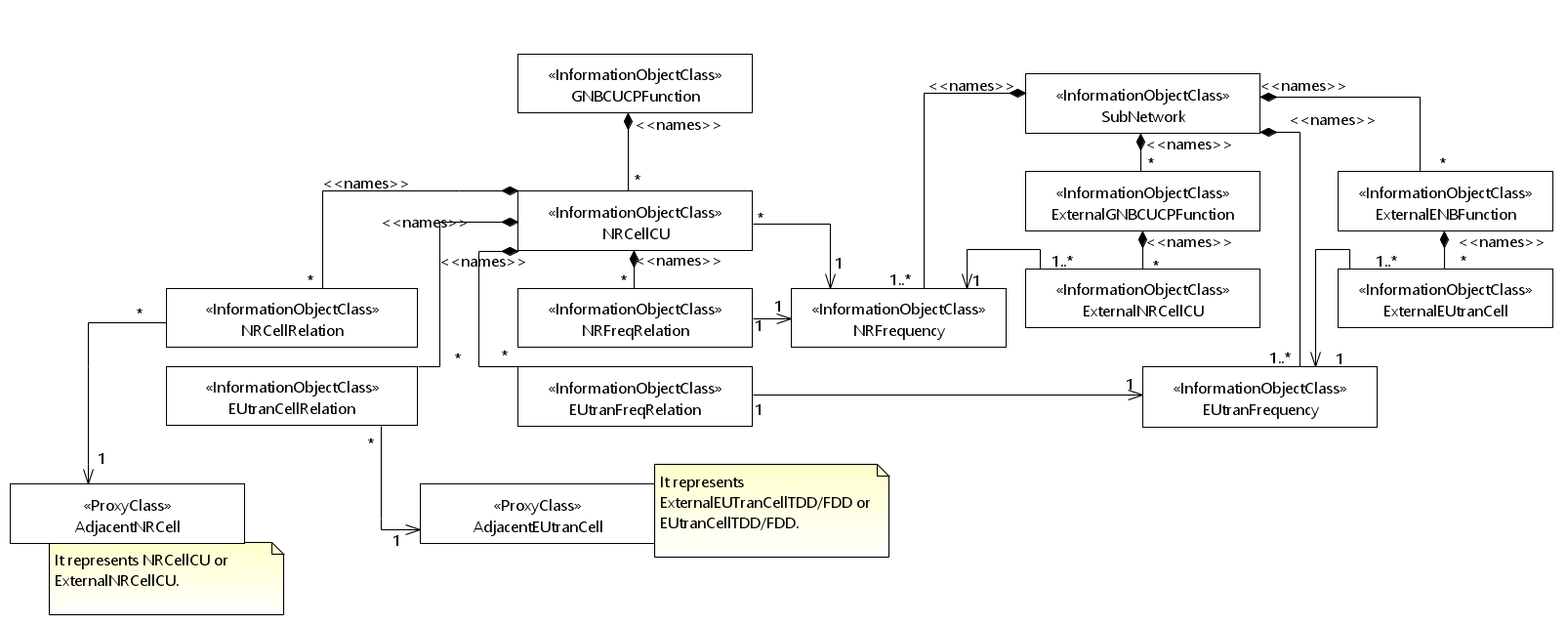


Figure 4.2.1.1-4: Cell Relation view for all deployment scenarios

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

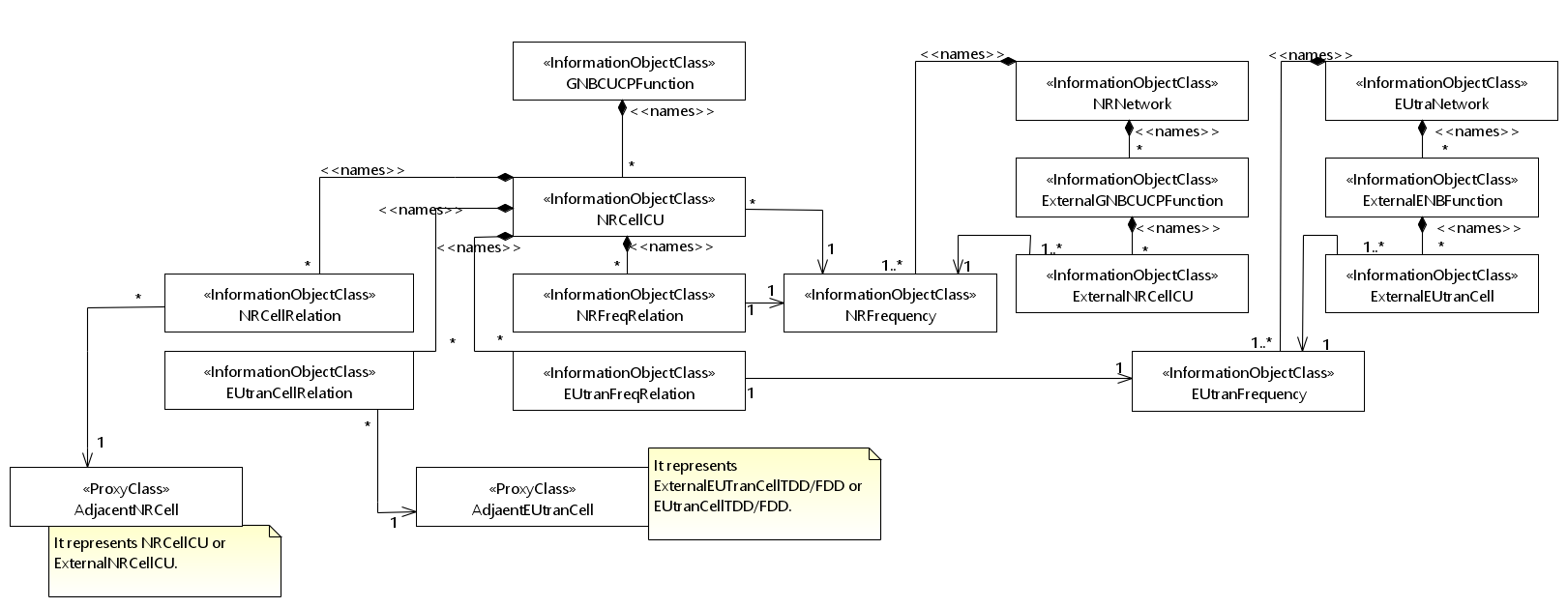


Figure 4.2.1.1-5: Cell Relation view for all deployment scenarios

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 3GPP 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 fragment for abstract RRM Policies



**Figure 4.2.1.1-7a: NRM fragment for RRMPolicyRatio**

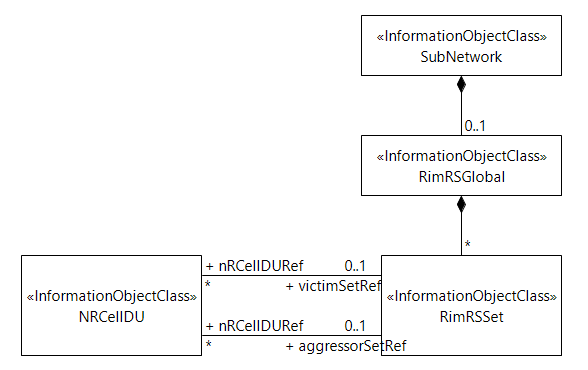


Figure 4.2.1.1-7: NRM fragment to support RIM

Figure 4.2.1.1-8 shows the NRM fragment for pre-configured 5QIs in NG-RAN.



Figure 4.2.1.1-8: NRM fragment for pre-configured 5QIs in NG-RAN

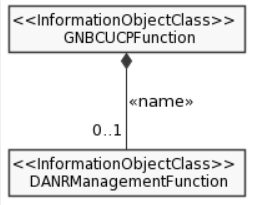


Figure 4.2.1.1-9: NRM fragment for DANR Management

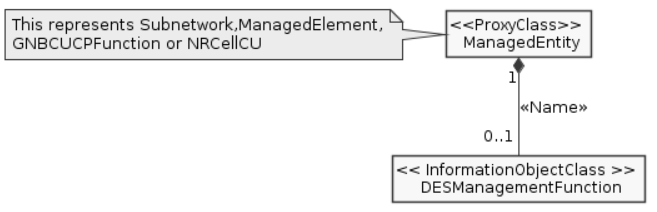


Figure 4.2.1.1-10: NRM fragment for DES Management



Figure 4.2.1.1-11: NRM fragment for DRACH Management



Figure 4.2.1.1-12: NRM fragment for DMRO Management



Figure 4.2.1.1-13: NRM fragment for DPCI Management

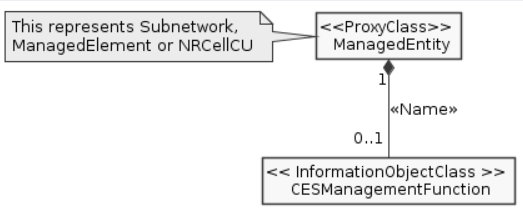


Figure 4.2.1.1-14: NRM fragment for CES Management

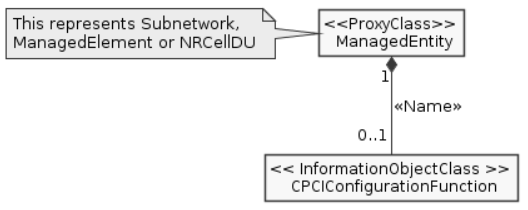


Figure 4.2.1.1-15: NRM fragment for CPCI Management

Figure 4.2.1.1-16 shows the NRM fragment for dynamically assigned 5QIs in NG-RAN.



Figure 4.2.1.1-16: NRM fragment for dynamically assigned 5QIs in NG-RAN

#### 4.2.1.2 Inheritance

This clause depicts the inheritance relationships.



Figure 4.2.1.2-a: NR NRM fragment in all deployment scenarios

Figure 4.2.1.2-b: NRM fragment for EPs in all deployment scenarios



Figure 4.2.1.2-c: NRM fragment for NRNetwork, EUtraNetwork



Figure 4.2.1.2-d: NRM fragment for Beam, CommonBeamformingFunction



Figure 4.2.1.2-e: NRM fragment for RRM Policies



Figure 4.2.1.2-f: NRM fragment for NRFreqRelation, NRFrequency and NRCellRelation



Figure 4.2.1.2-1: NRM fragment for C-SON, D-SON

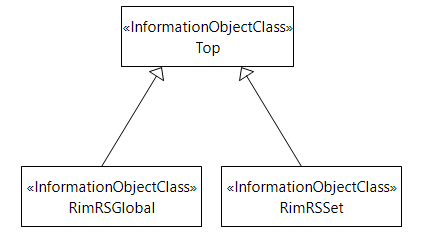


Figure 4.2.1.2-2: NRM fragment for RIM

## 4.3 Class definitions

### 4.3.1 GNBDUFunction

#### 4.3.1.1 Definition

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

For 2-split and 3-split NG-RAN architecture, this IOC provides the management representation of gNB-DU defined in clause 6.1.1 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\_F1C, <<IOC>>EP\_F1U | <<IOC>>EP\_F1C, <<IOC>>EP\_F1U | None. |
| en-gNB | <<IOC>>EP\_F1C, <<IOC>>EP\_F1U | <<IOC>>EP\_F1C, <<IOC>>EP\_F1U | None. |

#### 4.3.1.2 Attributes

The GNBDUFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| gNB­DUId | M | T | T | F | T |
| gNBDUName | O | T | T | F | T |
| gNBId | M | T | T | F | T |
| gNBIdLength | M | T | T | F | T |
| rimRSReportConf | O | T | F | T | T |

#### 4.3.1.3 Attribute constraints

None.

#### 4.3.1.4 Notifications

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

### 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\_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 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | 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 | M | T | T | F | T |
| xnWhiteList | M | T | T | F | T |
| x2XnHOBlackList | CM | T | T | F | T |
| mappingSetIDBackhaulAddressList | CM | T | T | F | T |
| tceIDMappingInfoList | CM | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| configurable5QISetRef | O | T | T | F | T |
| dynamic5QISetRef | O | T | F | F | T |

#### 4.3.2.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| x2BlackList | Condition: Multi-Radio Dual Connectivity with the EPC (see 3GPP TS 37.340 [9] clause 4.1.2) is supported. |
| x2WhiteList | Condition: Multi-Radio Dual Connectivity with the EPC (see 3GPP TS 37.340 [9] clause 4.1.2) is supported. |
| mappingSetIDBackhaulAddressList | Condition: Remote Interference Management function is supported. |
| tceIDMappingInfolist | Condition: MDT 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.

### 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 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | 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 |
| dynamic5QISetRef | O | T | F | 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.

### 4.3.4 NRCellCU

#### 4.3.4.1 Definition

This IOC represents the part of NR cell information that is responsible for the management of inter-cell mobility and neighbour relations via ANR.

#### 4.3.4.2 Attributes

The NRCellCU IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| cellLocalId | M | T | T | F | T |
| pLMNInfoList | M | T | T (Note) | F | T |
| **Attribute related to role** |  |  |  |  |  |
| nRFrequencyRef | M | T | F | F | T |
| NOTE: Whether the attribute "pLMNId" in the PLMNInfo can be writable depends on the implementation. | | | | | |

Note 1: Void.

Note 2: Void.

#### 4.3.4.3 Void

#### 4.3.4.4 Notifications

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

### 4.3.5 NRCellDU

#### 4.3.5.1 Definition

This IOC represents the part of NR cell information that describes s the specific resources instances.

An NR cell transmits SS/PBCH block and always requires downlink transmission at a certain carrier frequency with a certain channel bandwidth. Transmission may be performed from multiple sector-carriers using different transmission points, and these may be configured with different carrier frequencies and channel bandwidths, as long as they are aligned to the cell's downlink resource grids as defined in subclause 4.4 in 3GPP TS 38.211 [32]. The values of arfcnDL and bSChannelBwDL attributes define the resource grids which each sector-carrier needs to be aligned to. See subclauses 5.3 and 5.4.2 of 3GPP TS 38.104 for definitions of BS channel bandwidth and NR-ARFCN, respectively.

An NR cell requires an uplink in order to provide initial access. In case of TDD, the values of arfcnUL and bSChannelBwUL have to always be set to the same values as for the corresponding DL attributes. For both FDD and TDD, the arfcnUL and bSChannelBwUL define uplink resource grids to which each sector-carrier needs to align to.

An NR cell can in addition be configured with a supplementary uplink, which has its own arfcnSUL and bSChannelBwSUL, which define resource grids for supplementary uplink sector-carriers.

Each of downlink, uplink and supplementary uplink (if configured) need an initial bandwidth part (BWP), which defines resources to be used by UEs during and immediately after initial access. Additional BWPs can be either configured or calculated by gNB internally and be applied to UEs dynamically by gNB based on e.g. UE capability and bandwidth need of each UE.

NOTE: Void

#### 4.3.5.2 Attributes

The NRCellDU IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| cellLocalId | M | T | T | F | T |
| operationalState | M | T | F | F | T |
| administrativeState | M | T | T | F | T |
| cellState | M | T | F | F | T |
| pLMNInfoList | M | T | T | F | T |
| nRPCI | M | T | T | F | T |
| nRTAC | CM | T | T | F | T |
| arfcnDL | M | T | T | F | T |
| arfcnUL | CM | T | T | F | T |
| arfcnSUL | CM | T | T | F | T |
| bSChannelBwDL | M | T | T | F | T |
| ssbFrequency | CM | T | T | F | T |
| ssbPeriodicity | M | T | T | F | T |
| ssbSubCarrierSpacing | CM | T | T | F | T |
| ssbOffset | M | T | T | F | T |
| ssbDuration | M | T | T | F | T |
| bSChannelBwUL | CM | T | T | F | T |
| bSChannelBwSUL | CM | T | T | F | T |
| rimRSMonitoringStartTime | O | T | T | F | T |
| rimRSMonitoringStopTime | O | T | T | F | T |
| rimRSMonitoringWindowDuration | O | T | T | F | T |
| rimRSMonitoringWindowStartingOffset | O | T | T | F | T |
| rimRSMonitoringWindowPeriodicity | O | T | T | F | T |
| rimRSMonitoringOccasionInterval | O | T | T | F | T |
| rimRSMonitoringOccasionStartingOffset | O | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| nRSectorCarrierRef | M | T | T | F | T |
| bWPRef | M | T | T | F | T |
| nRFrequencyRef | CO | T | T | F | T |
| victimSetRef | CM | T | T | F | T |
| aggressorSetRef | O | T | T | F | T |
| Note 1: No state propagation is implied.  Note 2: Void | | | | | |

#### 4.3.5.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| arfcnUL S | Condition: The cell has an uplink (FDD or TDD) |
| arfcnSUL S | Condition: The cell has a supplementary uplink |
| bSChannelBwUL S | Condition: The cell has an uplink (FDD or TDD) |
| bSChannelBwSUL S | Condition: The cell has a supplementary uplink |
| nRFrequencyRef S | Condition: Non-split deployment scenario is supported |
| ssbFrequency S | Condition: nRFrequencyRef is not used |
| ssbSubCarrierSpacing S | Condition: nRFrequencyRef is not used |
| victimSetRef S | Condition: RIM feature is supported |

#### 4.3.5.4 Notifications

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

### 4.3.6 NRSectorCarrier

#### 4.3.6.1 Definition

This <<IOC>>NRSectorCarrier represents the resources of each transmission point associated to corresponding cell(s). These in general have different physical locations (of the antennae), and possibly different frequencies or bandwidths. The UE is not directly aware of which NRSectorCarrier resources the network uses for its connection.

An NR sector-carrier can have downlink, uplink or both as specified by txDirection. Attributes related to unavailable direction (DL or UL) shall not be set.

Additional NRSectorCarriers not directly associated to one cell only can also be configured.

If a value of arfcnDL, arfcnUL, bSChannelBwDL or bSChannelBwUL can be derived unambiguously from the referring cell, then that attribute needs not be present. That will not be possible if the NRSectorCarrier is used for supplementary uplink, if it is not directly associated to a cell, or if the sector-carrier uses only a part of the cell's channel bandwidth. Thus, at least in those cases the applicable attributes have to be present and their values need to be set.

#### 4.3.6.2 Attributes

The NRSectorCarrier IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| txDirection | M | T | T | F | T |
| configuredMaxTxPower | CM | T | T | F | T |
| configuredMaxTxEIRP | CM | T | T | F | T |
| arfcnDL | CM | T | T | F | T |
| arfcnUL | CM | T | T | F | T |
| bSChannelBwDL | CM | T | T | F | T |
| bSChannelBwUL | CM | T | T | F | T |
| **attribute related to role** |  |  |  |  |  |
| sectorEquipmentFunctionRef | M | T | T | F | T |

#### 4.3.6.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| configuredMaxTxPower | Condition: The sector-carrier has a downlink. Configuration of Tx power at antenna port reference point is supported. |
| configuredMaxTxEIRP | Condition: The sector-carrier has a downlink. Configuration of emitted isotropic radiated power is supported. |
| arfcnDL | Condition: The sector-carrier has a downlink AND the value differs from the referring cell's value of arfcnDL. |
| arfcnUL | Condition: The sector-carrier has an uplink AND the value differs from the referring cell's value of arfcnUL. |
| bSChannelBwDL | Condition: The sector-carrier has a downlink AND the value differs from the referring cell's value of bSChannelBwDL. |
| bSChannelBwUL | Condition: The sector-carrier has an uplink AND the value differs from the referring cell's value of bSChannelBwUL. |

#### 4.3.6.4 Notifications

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

### 4.3.7 BWP

#### 4.3.7.1 Definition

This IOC represents a Bandwidth Part (BWP) defined in 3GPP TS 38.211 [32], subclause 4.4.5. A bandwidth part is related to downlink, uplink or supplementary uplink resource grids, and is defined by its Subcarrier Spacing (SCS), cyclic prefix and location and size related to the common resource grid for the applicable SCS.

A BWP can be either an initial BWP used for initial access, or other ("regular") BWP configured for relevant UEs that support the BWP's characteristics.

#### 4.3.7.2 Attributes

The BWP IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| bwpContext | M | T | T | F | T |
| isInitialBwp | M | T | T | F | T |
| subCarrierSpacing | M | T | T | F | T |
| cyclicPrefix | M | T | T | F | T |
| startRB | M | T | T | F | T |
| numberOfRBs | M | T | T | F | T |

#### 4.3.7.3 Attribute constraints

None.

#### 4.3.7.4 Notifications

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

### 4.3.8 EP\_E1

#### 4.3.8.1 Definition

This IOC represents the local end point of the logical link, supporting E1 interface between gNB-CU-CP and gNB-CU-UP. The E1 interface is defined in 3GPP TS 38.401 [4].

#### 4.3.8.2 Attributes

The EP\_E1 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 4.3.8.3 Attribute constraints

None.

#### 4.3.8.4 Notifications

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

### 4.3.9 EP\_XnU

#### 4.3.9.1 Definition

This IOC represents the one end-point of a logical link supporting the Xn user plane (Xn-U) interface. The Xn-U interface provides non-guaranteed delivery of user plane PDUs between two NG-RAN nodes. The user plane PDUs are carried on GTP-U/UDP/IP/Data link layer/Physical layer stack. See subclause 7.2 of 3GPP TS 38.420 [6].

#### 4.3.9.2 Attributes

The EP\_XnU IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 4.3.9.3 Attribute constraints

None.

#### 4.3.9.4 Notifications

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

### 4.3.10 EP\_NgC

#### 4.3.10.1 Definition

This IOC represents the local end point of the control plane interface (NG-C) between the gNB and AMF. The transport network layer is built on IP transport. For the reliable transport of signalling messages, SCTP is added on top of IP. The application layer signalling protocol is referred to as NG-AP (NG Application Protocol).

3GPP TS 38.470 [7] noted that "one gNB-CU and a set of gNB-DUs are visible to other logical nodes as a gNB or an en-gNB where the gNB terminates the Xn and the NG interfaces, and the en-gNB terminates the X2 and the S1-U interfaces".

#### 4.3.10.2 Attributes

The EP\_NgC IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 4.3.10.3 Attribute constraints

None.

#### 4.3.10.4 Notifications

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

### 4.3.11 EP\_NgU

#### 4.3.11.1 Definition

This IOC represents the local end point of the NG user plane (NG-U) interface between the gNB and UPF. The interface provides non‑guaranteed delivery of user plane PDUs between the gNB and UPF. GTP-U is baseline for this interface.

3GPP TS 38.470 [7] noted that "one gNB-CU and a set of gNB-DUs are visible to other logical nodes as a gNB or an en-gNB where the gNB terminates the Xn and the NG interfaces, and the en-gNB terminates the X2 and the S1-U interfaces".

#### 4.3.11.2 Attributes

The EP\_NgU IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| epTransportRef | O | T | F | F | T |

#### 4.3.11.3 Attribute constraints

None.

#### 4.3.11.4 Notifications

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

### 4.3.12 EP\_F1C

#### 4.3.12.1 Definition

This IOC represents the local end point of the control plane interface (F1-C) between the gNB-DU and gNB-CU or gNB-CU-CP. The transport network layer is based on IP transport with the SCTP on top of IP. The application layer signalling protocol is referred to as NG-AP (NG Application Protocol). See subclause 7.1 of 3GPP TS 38.470 [7].

3GPP TS 38.470 [7] noted that "one gNB-CU and a set of gNB-DUs are visible to other logical nodes as a gNB or an en-gNB where the gNB terminates the Xn and the NG interfaces, and the en-gNB terminates the X2 and the S1-U interfaces".

#### 4.3.12.2 Attributes

The EP\_F1C IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 4.3.12.3 Attribute constraints

None.

#### 4.3.12.4 Notifications

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

### 4.3.13 EP\_F1U

#### 4.3.13.1 Definition

This IOC represents the local end point of the user plane interface (F1-U) between the gNB-DU and gNB-CU or gNB-CU-UP. The transport network layer is based on IP transport, with the UDP and GTP-U on top of IP.

3GPP TS 38.470 [7] noted that "one gNB-CU and a set of gNB-DUs are visible to other logical nodes as a gNB or an en-gNB where the gNB terminates the Xn and the NG interfaces, and the en-gNB terminates the X2 and the S1-U interfaces".

#### 4.3.13.2 Attributes

The EP\_F1U IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 4.3.13.3 Attribute constraints

None.

#### 4.3.13.4 Notifications

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

### 4.3.14 EP\_S1U

#### 4.3.14.1 Definition

This IOC represents the local end point of the logical link, supporting S1-U interface towards a S-GW node. The S1-U interface is defined in 3GPP TS 36.410 [14].

#### 4.3.14.2 Attributes

The EP\_S1U IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 4.3.14.3 Attribute constraints

None.

#### 4.3.14.4 Notifications

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

### 4.3.15 EP\_X2C

#### 4.3.15.1 Definition

This IOC represents the local end point of the logical link, supporting X2-C application protocols used in EN-DC, to a neighbour eNB or en-gNB node, which is defined in 3GPP TS 36.423 [15]. EN-DC is defined in 3GPP TS 37.340 [9].

#### 4.3.15.2 Attributes

The EP\_X2C IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 4.3.15.3 Attribute constraints

None.

#### 4.3.15.4 Notifications

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

### 4.3.16 EP\_X2U

#### 4.3.16.1 Definition

This IOC represents the local end-point of a logical link supporting the X2 user plane (X2-U) interface used in EN-DC, which is defined in 3GPP TS 36.425 [16].

#### 4.3.16.2 Attributes

The EP\_X2U IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 4.3.16.3 Attribute constraints

None.

#### 4.3.16.4 Notifications

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

### 4.3.17 EP\_XnC

#### 4.3.17.1 Definition

This IOC represents the local gNB node end point of the logical link, supporting Xn Application protocols, to a neighbour NG-RAN node (including gNB and ng-eNB). The Xn Application PDUs are carried over SCTP/IP/Data link layer/Physical layer stack. See subclause 7 of 3GPP TS 38.420 [6].

#### 4.3.17.2 Attributes

The EP\_XnC IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 4.3.17.3 Attribute constraints

None

#### 4.3.17.4 Notifications

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

### 4.3.18 ExternalGNBCUCPFunction

#### 4.3.18.1 Definition

This IOC represents the properties, known by the management function, of a GNBCUCPFunction managed by another management function. For more information about GNBCUCPFunction, see subclause 4.3.2.

#### 4.3.18.2 Attributes

The ExternalGNBCUCPFunction includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| gNBId | M | T | T | F | T |
| gNBIdLength | M | T | T | F | T |
| pLMNId | M | T | T | F | T |

#### 4.3.18.3 Attribute constraints

None.

#### 4.3.18.4 Notifications

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

### 4.3.19 ExternalGNBCUUPFunction

#### 4.3.19.1 Definition

This IOC represents the properties, known by the management function, of a GNBCUUPFunction managed by another management function. For more information about GNBCUUPFunction, see subclause 4.3.3.

#### 4.3.19.2 Attributes

The ExternalGNBCUUPFunction includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| gNBId | M | T | T | F | T |
| gNBIdLength | M | T | T | F | T |

#### 4.3.19.3 Attribute constraints

None.

#### 4.3.19.4 Notifications

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

### 4.3.20 ExternalGNBDUFunction

#### 4.3.20.1 Definition

This IOC represents the properties, known by the management function, of a GNBDUFunction managed by another management function. For more information about GNBDUFunction, see subclause 4.3.1.

#### 4.3.20.2 Attributes

The ExternalGNBDUFunction includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| gNBId | M | T | T | T | T |
| gNBIdLength | M | T | T | F | T |

#### 4.3.20.3 Attribute constraints

None.

#### 4.3.20.4 Notifications

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

### 4.3.21 ExternalUPFFunction

#### 4.3.21.1 Definition

This IOC represents the properties, known by the management function, of a UPFFunction managed by another management function. For more information about UPFFunction, see subclause 5.3.3.

#### 4.3.21.2 Attributes

The ExternalUPFFunction includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
|  |  |  |  |  |  |

#### 4.3.21.3 Attribute constraints

None.

#### 4.3.21.4 Notifications

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

### 4.3.22 ExternalAMFFunction

#### 4.3.22.1 Definition

This IOC represents the properties, known by the management function, of an AMFFunction managed by another management function. For more information about AMFFunction, see subclause 5.3.

#### 4.3.22.2 Attributes

The ExternalAMFFunction includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
|  |  |  |  |  |  |

#### 4.3.22.3 Attribute constraints

None

#### 4.3.22.4 Notifications

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

### 4.3.23 Void

### 4.3.24 ENBFunction <<ProxyClass>>

#### 4.3.24.1 Definition

This IOC represents an <<IOC>>ENBFunction and <<IOC>>ExternalENBFunction.

#### 4.3.24.2 Attributes

See that defined in <<IOC>>ENBFunction and <<IOC>>ExternalENBFunction.

#### 4.3.24.3 Attribute constraints

See that defined in <<IOC>>ENBFunction and <<IOC>>ExternalENBFunction.

#### 4.3.24.4 Notifications

See respective IOCs.

### 4.3.25 GNBCUCPFunction <<ProxyClass>>

#### 4.3.25.1 Definition

This IOC represents an <<IOC>>GNBCUCPFunction and <<IOC>>ExternalGNBCUCPFunction.

#### 4.3.25.2 Attributes

See that defined in <<IOC>>GNBCUCPFunction and <<IOC>>ExternalGNBCUCPFunction.

#### 4.3.25.3 Attribute constraints

See respective IOCs.

#### 4.3.25.4 Notifications

See respective IOCs.

### 4.3.26 GNBCUUPFunction <<ProxyClass>>

#### 4.3.26.1 Definition

This IOC represents an <<IOC>>GNBCUUPFunction and <<IOC>>ExternalGNBCUUPFunction.

#### 4.3.26.2 Attributes

See that defined in <<IOC>>GNBCUUPFunction and <<IOC>>ExternalGNBCUUPFunction.

#### 4.3.26.3 Attribute constraints

See that defined in <<IOC>>GNBCUUPFunction and <<IOC>>ExternalGNBCUUPFunction.

#### 4.3.26.4 Notifications

See respective IOCs.

### 4.3.27 GNBDUFunction <<ProxyClass>>

#### 4.3.27.1 Definition

This IOC represents an <<IOC>>GNBDUFunction and <<IOC>>ExternalGNBDUFunction.

#### 4.3.27.2 Attributes

See that defined in <<IOC>>GNBDUFunction and <<IOC>>ExternalGNBDUFunction.

#### 4.3.27.3 Attribute constraints

See that defined in <<IOC>>GNBDUFunction and <<IOC>>ExternalGNBDUFunction.

#### 4.3.27.4 Notifications

See respective IOCs.

### 4.3.28 ServingGWFFunction <<ProxyClass>>

#### 4.3.28.1 Definition

This IOC represents an <<IOC>>ServingGWFFunction and <<IOC>>ExternalServingGWFunction.

#### 4.3.28.2 Attributes

See that defined in <<IOC>>ServingGWFunction and <<IOC>>ExternalServingGWFunction.

#### 4.3.28.3 Attribute constraints

See that defined in <<IOC>>ServingGWFunction and <<IOC>>ExternalServingGWFunction.

#### 4.3.28.4 Notifications

See respective IOCs.

### 4.3.29 UPFFunction <<ProxyClass>>

#### 4.3.29.1 Definition

This IOC represents an <<IOC>>UPFFunction and <<IOC>>ExternalUPFFunction.

#### 4.3.29.2 Attributes

See that defined in <<IOC>>UPFFunction and <<IOC>>ExternalUPFFunction.

#### 4.3.29.3 Attribute constraints

See that defined in <<IOC>>UPFFunction and <<IOC>>ExternalUPFFunction.

#### 4.3.29.4 Notifications

See respective IOCs.

### 4.3.30 AMFFunction <<ProxyClass>>

#### 4.3.30.1 Definition

This IOC represents an <<IOC>>AMFFunction and <<IOC>>ExternalAMFFunction.

#### 4.3.30.2 Attributes

See that defined in <<IOC>>AMFFunction and <<IOC>>ExternalAMFFunction.

#### 4.3.30.3 Attribute constraints

See that defined in <<IOC>>AMFFunction and <<IOC>>ExternalAMFFunction.

#### 4.3.30.4 Notifications

See respective IOCs.

### 4.3.31 Void

### 4.3.32 NRCellRelation

#### 4.3.32.1 Definition

This IOC represents a neighbour cell relation from a source cell to a target cell, where the target cell is an NRCellCU or ExternalNRCellCU instance.

The source cell can be a NRCellCU instance. This is the case for an Intra-NR neighbour cell relation.

The source cell can be a EUtranGenericCell instance. This is the case for Inter-LTE-NR neighbour cell relation, from E-UTRAN to NR. See 3GPP TS 28.658 [19].

Neighbour cell relations are unidirectional.

#### 4.3.32.2 Attributes

The NRCellRelation IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| nRTCI | O | T | T | F | T |
| cellIndividualOffset | M | T | T | F | T |
| isRemoveAllowed | CM | T | T | F | T |
| isHOAllowed | CM | T | T | F | T |
| isESCoveredBy | CM | T | T | F | T |
| isENDCAllowed | CM | T | T | F | T |
| **attribute related to role** |  |  |  |  |  |
| nRFreqRelationRef | M | T | T | F | T |
| adjacentNRCellRef | M | T | T | F | T |

#### 4.3.32.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| isRemoveAllowed | Condition: ANR function is supported in the source cell. |
| isHOAllowed | Condition: ANR function is supported in the source cell. |
| isESCoveredBy | Condition: Energy Saving function is supported. |
| isENDCAllowed | Condition: Multi-Radio Dual Connectivity with the EPC (see 3GPP TS 37.340 [9] clause 4.1.2) is supported. |

#### 4.3.32.4 Notifications

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

### 4.3.33 NRFreqRelation

#### 4.3.33.1 Definition

This IOC, together with the target NRFrequency, represents the frequency properties applicable to the referencing NRCellRelation.

#### 4.3.33.2 Attributes

The NRFreqRelation IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| offsetMO | O | T | T | F | F |
| blackListEntry | O | T | T | F | F |
| blackListEntryIdleMode | O | T | T | F | F |
| cellReselectionPriority | O | T | T | F | F |
| cellReselectionSubPriority | O | T | T | F | F |
| pMax | O | T | T | F | F |
| qOffsetFreq | O | T | T | F | F |
| qQualMin | O | T | T | F | F |
| qRxLevMin | M | T | T | F | F |
| threshXHighP | M | T | T | F | F |
| threshXHighQ | CM | T | T | F | F |
| threshXLowP | M | T | T | F | F |
| threshXLowQ | CM | T | T | F | F |
| tReselectionNr | M | T | T | F | F |
| tReselectionNRSfHigh | O | T | T | F | F |
| tReselectionNRSfMedium | O | T | T | F | F |
| **attribute related to role** |  |  |  |  |  |
| nRFrequencyRef | M | T | T | F | F |

#### 4.3.33.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| threshXHighQ | Condition: RSRQ used in SIB4. |
| threshXLowQ | Condition: RSRQ used in SIB4. |

#### 4.3.33.4 Notifications

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

### 4.3.34 Void

### 4.3.35 ExternalNRCellCU

#### 4.3.35.1 Definition

This abstract IOC represents the properties of an NRCellCU controlled by another Management Service Provider. This IOC contains necessary attributes for inter-system and intra-system handover. It also contains a subset of the attributes of related IOCs controlled by Management Service Provider. The way to maintain consistency between the attribute values of these IOCs is outside the scope of the present document.

#### 4.3.35.2 Attributes

The ExternalNRCellCU IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| cellLocalId | M | T | T | F | T |
| nRPCI | M | T | T | F | T |
| plmnIdList | M | T | T | F | T |
| **attribute related to role** |  |  |  |  |  |
| nRFrequencyRef | M | T | T | F | T |

#### 4.3.35.3 Attribute constraints

None.

#### 4.3.35.4 Notifications

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

### 4.3.36 RRMPolicyRatio

#### 4.3.36.1 Definition

This IOC represents the properties of RRMPolicyRatio. RRMPolicyRatio is one realization of abstract *RRMPolicy\_ IOC.* RRMPolicyRatio has three attributes, apart from those inherited (DN, resourceType, rRMPolicyMemberList).

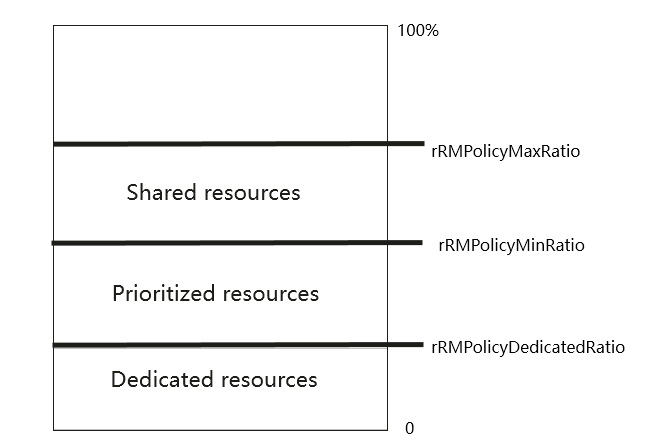


Figure 4.3.36-1 Structure of RRMPolicyRatio

- The attribute rRMPolicyMaxRatio defines the maximum resource usage quota for the associated rRMPolicyMemberList, including at least one of shared resources, prioritized resources and dedicated resources. The sum of the ‘rRMPolicyMaxRatio' values assigned to all RRMPolicyRatio(s) name-contained by same ManagedEntity can be greater than 100.

- The attribute rRMPolicyMinRatio defines the minimum resource usage quota for the associated RRMPolicyMemberList, including at least one of prioritized resources and dedicated resources, which means the resources quota that need to be guaranteed for use by the associated rRMPolicyMemberList. The sum of the ‘rRMPolicyMinRatio' values assigned to all RRMPolicyRatio(s) name-contained by same ManagedEntity shall be less than or equal to 100.

- The attribute rRMPolicyDedicatedRatio defines the dedicated resource usage quota for the RRMPolicyMemberList, including dedicated resources. The sum of the ‘rRMPolicyDedicatedRatio' values assigned to all RRMPolicyRatio(s) name-contained by same ManagedEntity shall be less than or equal to 100.

The following are the definition for above mentioned three resource categories:

**- Shared resources:** means the resources that are shared with other rRMPolicyMemberList(s) (i.e. the rRMPolicyMemberList(s) defined in RRMPolicyRatio(s) name-contained by the same ManagedEntity). The shared resources are not guaranteed for use by the associated rRMPolicyMemberList. The shared resources quota is represented by [rRMPolicyMaxRatio-rRMPolicyMinRatio].

**- Priortized resources:** means the resources are preferentially used by the associated RRMPolicyMemberList. These resources are guaranteed for use by the associated RRMPolicyMemberList when it needs to use them. When not used, these resources may be used by other rRMPolicyMemberList(s) (i.e. the rRMPolicyMemberList(s) defined in RRMPolicyRatio(s) name-contained by the same ManagedEntity). The prioritized resources quota is represented by [rRMPolicyMinRatio-rRMPolicyDedicatedRatio].

**- Dedicated resources:** means the resources are dedicated for use by the associated RRMPolicyMemberList. These resources can not be shared even if the associated RRMPolicyMember does not use them. The Dedicated resources quota is represented by [rRMPolicyDedicatedRatio].

#### 4.3.36.2 Attributes

The RRMPolicyRatio IOC includes attributes inherited from *RRMPolicy\_* IOC (defined in clause 4.3.43) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| rRMPolicyMaxRatio | M | T | T | F | T |
| rRMPolicyMinRatio | M | T | T | F | T |
| rRMPolicyDedicatedRatio | O | T | T | F | T |

#### 4.3.36.3 Attribute constraints

None

#### 4.3.36.4 Notifications

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

### 4.3.37 S-NSSAI <<dataType>>

#### 4.3.37.1 Definition

This data type represents an S-NSSAI. An NSSAI is a set of supported S-NSSAI(s), an S-NSSAI is comprised of an SST (Slice/Service type) and an optional SD (Slice Differentiator) field, (See 3GPP TS 23.003 [13]).

#### 4.3.37.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| sST | M | T | T | F | T |
| sD | O | T | T | F | T |

#### 4.3.37.3 Attribute constraints

None

#### 4.3.37.4 Notifications

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

### 4.3.38 NRFrequency

#### 4.3.38.1 Definition

This IOC represents certain NR frequency properties.

#### 4.3.38.2 Attributes

The NRFrequency IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| absoluteFrequencySSB | M | T | T | F | T |
| sSBSubCarrierSpacing | M | T | T | F | T |
| multiFrequencyBandListNR | O | T | F | F | T |

#### 4.3.38.3 Attribute constraints

None.

#### 4.3.38.4 Notifications

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

### 4.3.39 CommonBeamformingFunction

#### 4.3.39.1 Definition

This <<IOC>>CommonBeamformingFunction represents common beamforming functionality (eg: SSB beams) for the NRSectorCarrier.

The CommonBeamformingFunction provides capability to configure the advanced antenna for a sector carrier. The configuration capability is provided by selection of coverageShape, digitalTilt and digitalAzimuth. These attributes represent the wanted coverage area and radiation pattern on a sector carrier related to an antenna transmission point.

This configuration capability assumes the system shall handle configuration of SSB beams within the sector carrier. Individual SSB beams within a sector carrier cannot be independently configured as this depends on many conditions and constraints, for instance TDD patterns, allocations of PRACH occasions, SIB1 and mobility considerations.

The associated <<IOC>> Beam provides information beam direction and beam width for the associated SSB beams as a result of the configuration. The beams addressed in this definition are the common beams. There may be more than one beam per CommonBeamformingFunction for the NRSectorCarrier.

#### 4.3.39.2 Attributes

The CommonBeamformingFunction IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| coverageShape | M | T | T | F | T |
| digitalTilt | M | T | T | F | T |
| digitalAzimuth | M | T | T | F | T |

#### 4.3.39.3 Attribute constraints

None.

#### 4.3.39.4 Notifications

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

### 4.3.40 Beam

#### 4.3.40.1 Definition

This <<IOC>>Beam represents the per-Beam information required for, e.g. beam performance management utilizing measurements generated in the RAN. TS 38.104 [12] relates to beam transmission, 3GPP TS TS 38.215 [55] to beam measurements, and TS 38.331 [54] to reporting of those measurements and associated beam failure Information Elements, subclauses 5.5.3, 5.5.5.2, 6.3.2. 6.2.2.

Measurements on common beams may be correlated with associated spatial beam information to assist use cases like troubleshooting performance problems, or SON functions like Coverage & Capacity Optimization.

<<IOC>>Beam can have spatial attributes of horizontal/azimuth (i.e. Phi φ-axis) and vertical/tilt (i.e. Theta θ-axis) beam pointing direction and beam width attributes. There may be more than one beam per CommonBeamformingFunction for an NRSectorCarrier. Informational note, beam direction and width are characteristics - a representation - of directional energy vectors.

#### 4.3.40.2 Attributes

The Beam IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| beamIndex | M | T | F | F | T |
| beamType | O | T | F | F | T |
| beamAzimuth | CM | T | F | F | T |
| beamTilt | CM | T | F | F | T |
| beamHorizWidth | CM | T | F | F | T |
| beamVertWidth | CM | T | F | F | T |

#### 4.3.40.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| beamAzimuth S | Condition: The beamType is "SSB-BEAM" and Supported by Equipment |
| beamTilt S | Condition: The beamType is "SSB-BEAM" and Supported by Equipment |
| beamHorizWidth S | Condition: The beamType is "SSB-BEAM" and Supported by Equipment |
| beamVertWidth S | Condition: The beamType is "SSB-BEAM" and Supported by Equipment |

### 4.3.41 PLMNInfo <<dataType>>

#### 4.3.41.1 Definition

This <<dataType>> represents the PLMN supported by the <<IOC>> using this <<dataType>> as one of its attributes. In case of network slicing feature is supported, this <<dateType>> also represents the S-NSSAI in the PLMN supported by the <<IOC>> using this <<dataType>> as one of its attributes.

#### 4.3.41.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNId | M | T | T | F | T |
| sNSSAI | CM | T | T | F | T |

#### 4.3.41.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAI S | Condition: Network slicing feature is supported. |

#### 4.3.41.4 Notifications

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

### 4.3.42 RRMPolicyMember <<dataType>>

#### 4.3.42.1 Definition

This <<dataType>> represents an RRM Policy member that will be part of a rRMPolicyMemberList. A RRMPolicyMember is defined by its pLMNId and sNSSAI (S-NSSAI). The members in a rRMPolicyMemberList is assigned a specific amount of RRM resources based on settings in *RRMPolicy\_.*

#### 4.3.42.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| pLMNId | M | T | T | F | T |
| sNSSAI | CM | T | T | F | T |

#### 4.3.42.3 Attribute constraints

|  |  |
| --- | --- |
| **Name** | **Definition** |
| sNSSAI S | Condition: Network slicing is supported |

#### 4.3.42.4 Notifications

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

### 4.3.43 *RRMPolicy\_*

#### 4.3.43.1 Definition

This IOC represents the properties of an abstract RRMPolicy. The *RRMPolicy\_* IOC needs to be subclassed to be instantiated. It defines two attributes apart from those inherited from TOP IOC, the resourceType attribute defines type of resource (PRB, RRC connected users, DRB usage etc.) and the rRMPolicyMemberList attribute defines the RRMPolicyMember(s)that is subject to this policy. An RRM resource (defined in resourceType attribute) is located in NRCellDU, NRCellCU, GNBDUFunction, GNBCUCPFunction or in GNBCUUPFunction. The RRMPolicyRatio IOC is one realization of a *RRMPolicy\_* IOC, see the inheritance in Figure 4.2.1.2-1. This RRM framework allows adding new policies, both standardized or as vendor specific, by inheriting from the abstract *RRMPolicy\_ IOC.*

#### 4.3.43.2 Attributes

The *RRMPolicy\_* IOC have the following attributes, apart from those inherited from TOP IOC (defined in 3GPP TS 28.622 [30]):

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| resourceType | M | T | T | F | T |
| rRMPolicyMemberList | M | T | T | F | T |

#### 4.3.43.3 Attribute constraints

None.

#### 4.3.43.4 Notifications

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

### 4.3.44 RRMPolicyManagedEntity <<ProxyClass>>

#### 4.3.44.1 Definition

This represents an <<IOC>>NRCellCU, or an <<IOC>>NRCellDU or an <<IOC>>GNBCUUPFunction, or an <<IOC>>GNBCUCPFunction, or an <<IOC>>GNBDUFunction.

If <<IOC>>NRCellCU is used, which means that a RRMPolicy shall be applied to an RRM resource in the NRCellCU. The possible RRM resource(s) owned by NRCellCU is defined in the resourceType attribute.

If <<IOC>>NRCellDU is used, which means that a RRMPolicy shall be applied to an RRM resource in the NRCellDU. The possible RRM resource(s) owned by NRCellDU is defined in the resourceType attribute.

If <<IOC>>GNBCUUPFunction is used, which means that a RRMPolicy shall be applied to an RRM resource in the GNBCUUPFunction. The possible RRM resource(s) owned by GNBCUUPFunction is defined in the resourceType attribute.

If <<IOC>>GNBCUCPFunction is used, which means that a RRMPolicy shall be applied to an RRM resource in the GNBCUCPFunction. The possible RRM resource(s) owned by GNBCUCPFunction is defined in the resourceType attribute.

If <<IOC>>GNBDUFunction is used, which means that a RRMPolicy shall be applied to an RRM resource in the GNBDUFunction. The possible RRM resource(s) owned by GNBDUFunction is defined in the resourceType attribute.

#### 4.3.44.2 Attributes

See that defined in <<IOC>>NRCellCU, <<IOC>>NRCellDU, <<IOC>>GNBCUUPFunction, <<IOC>>GNBCUCPFunction or <<IOC>>GNBDUFunction.

#### 4.3.44.3 Attribute constraints

See that defined in <<IOC>>NRCellCU, <<IOC>>NRCellDU, <<IOC>>GNBCUUPFunction, <<IOC>>GNBCUCPFunction, or <<IOC>>GNBDUFunction.

#### 4.3.44.4 Notifications

See respective IOCs.

### 4.3.45 GNBCUCPNeighbour <<ProxyClass>>

#### 4.3.45.1 Definition

This IOC represents an <<IOC>>GNBCUCPFunction, <<IOC>>ExternalGNBCUCPFunction, <<IOC>>ENBFunction and <<IOC>>ExternalENBFunction.

#### 4.3.45.2 Attributes

See that defined in <<IOC>>GNBCUCPFunction, <<IOC>>ExternalGNBCUCPFunction, <<IOC>>ENBFunction and <<IOC>>ExternalENBFunction.

#### 4.3.45.3 Attribute constraints

See that defined in <<IOC>>GNBCUCPFunction, <<IOC>>ExternalGNBCUCPFunction, <<IOC>>ENBFunction and <<IOC>>ExternalENBFunction.

#### 4.3.45.4 Notifications

See respective IOCs.

### 4.3.46 GNBCUUPNeighbour <<ProxyClass>>

#### 4.3.46.1 Definition

This IOC represents an <<IOC>>GNBCUUPFunction, <<IOC>>ExternalGNBCUUPFunction, <<IOC>>ENBFunction and <<IOC>>ExternalENBFunction.

#### 4.3.46.2 Attributes

See that defined in <<IOC>>GNBCUUPFunction, <<IOC>>ExternalGNBCUUPFunction, <<IOC>>ENBFunction and <<IOC>>ExternalENBFunction.

#### 4.3.46.3 Attribute constraints

See that defined in <<IOC>>GNBCUUPFunction, <<IOC>>ExternalGNBCUUPFunction, <<IOC>>ENBFunction and <<IOC>>ExternalENBFunction.

#### 4.3.46.4 Notifications

See respective IOCs.

### 4.3.47 MappingSetIDBackhaulAddress <<dataType>>

#### 4.3.47.1 Definition

This data type represents the properties describing the mapping relationship between set ID and backhaul address of gNB.

#### 4.3.47.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| setID | M | T | T | F | T |
| backhaulAddress | M | T | T | F | T |

#### 4.3.47.3 Attribute constraints

None.

#### 4.3.47.4 Notifications

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

### 4.3.48 BackhaulAddress <<dataType>>

#### 4.3.48.1 Definition

This data type represents the properties describing the backhaul address of gNB.

#### 4.3.48.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| gNBId | M | T | T | F | T |
| tAI | M | T | T | F | T |

#### 4.3.48.3 Attribute constraints

None.

#### 4.3.48.4 Notifications

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

### 4.3.49 Void

### 4.3.50 RimRSGlobal

#### 4.3.50.1 Definition

This IOC is used to represent global/common Remote Interference Management (RIM) Reference Signal (RS) resource allocated for the whole network. Resource for RIM-RS transmission is defined by Sequence domain resource, Time domain resource and Frequency resource. The configure parameters of the RIM RS resource are applied to all Sets of RIM RS Resource across gNBs/cells in the network.

#### 4.3.50.2 Attributes

The RimRSGlobal IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| frequencyDomainPara | M | T | T | F | T |
| sequenceDomainPara | M | T | T | F | T |
| timeDomainPara | M | T | T | F | T |

#### 4.3.50.3 Attribute constraints

None.

#### 4.3.50.4 Notifications

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

### 4.3.51 FrequencyDomainPara <<dataType>>

#### 4.3.51.1 Definition

This data type defines configuration parameters of frequency domain resource to support RIM RS.

#### 4.3.51.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| rimRSSubcarrierSpacing | M | T | T | F | T |
| rIMRSBandwidth | M | T | T | F | T |
| nrofGlobalRIMRSFrequencyCandidates | M | T | T | F | T |
| rimRSCommonCarrierReferencePoint | M | T | T | F | T |
| rimRSStartingFrequencyOffsetIdList | M | T | T | F | T |

#### 4.3.51.3 Attribute constraints

None.

#### 4.3.51.4 Notifications

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

### 4.3.52 SequenceDomainPara <<dataType>>

#### 4.3.52.1 Definition

This data type defines configuration parameters of sequence domain resource to support RIM RS.

#### 4.3.52.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| nrofRIMRSSequenceCandidatesofRS1 | M | T | T | F | T |
| rimRSScrambleIdListofRS1 | M | T | T | F | T |
| nrofRIMRSSequenceCandidatesofRS2 | O | T | T | F | T |
| rimRSScrambleIdListofRS2 | O | T | T | F | T |
| enableEnoughNotEnoughIndication | M | T | T | F | T |
| RIMRSScrambleTimerMultiplier | M | T | T | F | T |
| RIMRSScrambleTimerOffset | M | T | T | F | T |

#### 4.3.52.3 Attribute constraints

None.

#### 4.3.52.4 Notifications

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

### 4.3.53 TimeDomainPara <<dataType>>

#### 4.3.53.1 Definition

This data type defines configuration parameters of time domain resource to support RIM RS.

#### 4.3.53.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| dlULSwitchingPeriod1 | M | T | T | F | T |
| symbolOffsetOfReferencePoint1 | M | T | T | F | T |
| dlULSwitchingPeriod2 | O | T | T | F | T |
| symbolOffsetOfReferencePoint2 | O | T | T | F | T |
| totalnrofSetIdofRS1 | M | T | T | F | T |
| totalnrofSetIdofRS2 | O | T | T | F | T |
| nrofConsecutiveRIMRS1 | M | T | T | F | T |
| nrofConsecutiveRIMRS2 | O | T | T | F | T |
| consecutiveRIMRS1List | M | T | T | F | T |
| consecutiveRIMRS2List | M | T | T | F | T |
| enablenearfarIndicationRS1 | O | T | T | F | T |
| enablenearfarIndicationRS2 | O | T | T | F | T |

#### 4.3.53.3 Attribute constraints

None.

#### 4.3.53.4 Notifications

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

### 4.3.54 RimRSReportConf <<dataType>>

#### 4.3.54.1 Definition

This data type defines RIM-RS reporting configuration.

#### 4.3.54.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| reportIndicator | M | T | T | F | T |
| reportInterval | M | T | T | F | T |
| nrofRIMRSReportInfo | M | T | T | F | T |
| maxPropagationDelay | O | T | T | F | T |
| RimRSReportInfoList | M | T | T | F | T |

#### 4.3.54.3 Attribute constraints

None.

#### 4.3.54.4 Notifications

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

### 4.3.55 RimRSReportInfo <<dataType>>

#### 4.3.55.1 Definition

This data type defines necessary reporting information derived from the detected RIM-RS, including

1) The detected set ID;

2) Propagation delay in number of OFDM symbols

3) Functionality of the RS (RS-1 or RS-2, Enough or Not enough mitigation for RS-1).

NOTES:

RS-1 is equivalent to RIM-RS type 1 (see 3GPP TS 38.211 [32], subclause 7.4.1.6).

RS-2 is equivalent to RIM-RS type 2 (see 3GPP TS 38.211 [32], subclause 7.4.1.6).

Enough mitigation for RS-1 means "Enough" / "Not enough" indication functionality is enabled for RIM RS-1 and RIM-RS type 1 is used to indicate 'enough mitigation' functionality.

Not enough mitigation for RS-1 means "Enough" / "Not enough" indication functionality is enabled for RIM RS-1 and RIM-RS type 1 is used to indicate 'Not enough mitigation' functionality.

#### 4.3.55.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| detectedSetID | M | T | T | F | T |
| propagationDelay | O | T | T | F | T |
| functionalityOfRIMRS | M | T | T | F | T |

#### 4.3.55.3 Attribute constraints

None.

#### 4.3.55.4 Notifications

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

4.3.56 RimRSSet

4.3.56.1 Definition

This IOC is used to represent aggressor or victim Set organized by OAM. The RIM RS Resource is assigned to each Set, which is identified by triple indices set of <Time domain index, Frequency domain index, and Sequence index >. The triple indices set can be derived by setId attribute (See subclause 7.4.1.6 in 3GPP TS 38.211 [32]).

4.3.56.2 Attributes

The RimRSSet IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| setId | M | T | T | F | T |
| setType | M | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| nRCellDURef | M | T | F | F | T |

4.3.56.3 Attribute constraints

None.

4.3.56.4 Notifications

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

### 4.3.57 DANRManagementFunction

#### 4.3.57.1 Definition

This IOC contains attributes to support the D-SON function of ANR Management (See clause 6.4.1.3 in 3GPP TS 28.313 [57]).

#### 4.3.57.2 Attributes

The DANRManagementFunction IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| intrasystemANRManagementSwitch | M | T | T | F | T |
| intersystemANRManagementSwitch | M | T | T | F | T |

#### 4.3.57.3 Attribute constraints

None.

#### 4.3.57.4 Notifications

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

### 4.3.58 DESManagementFunction

#### 4.3.58.1 Definition

This IOC represents the management capabilities of Distributed SON Energy Saving (ES) functions (See clause 6.2.3.0 in 3GPP TS 28.310 [71]). This is provided for Energy Saving purposes.

NOTE: In the case where multiple DESManagement MOIs exist at different levels of the containment tree, the DESManagement MOI at the lower level overrides the DESManagement MOIs at higher level(s) of the same containment tree.

#### 4.3.58.2 Attributes

The DESManagementFunction IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| desSwitch | M | T | T | F | T |
| intraRatEsActivationOriginalCellLoadParameters | CM | T | T | F | T |
| intraRatEsActivationCandidateCellsLoadParameters | CM | T | T | F | T |
| intraRatEsDeactivationCandidateCellsLoadParameters | CM | T | T | F | T |
| esNotAllowedTimePeriod | O | T | T | F | T |
| interRatEsActivationOriginalCellParameters | CM | T | T | F | T |
| interRatEsActivationCandidateCellParameters | CM | T | T | F | T |
| interRatEsDeactivationCandidateCellParameters | CM | T | T | F | T |
| energySavingState | M | T | F | F | T |
| isProbingCapable | O | T | F | F | T |

#### 4.3.58.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| intraRatEsActivationOriginalCellLoadParameters S | The condition is "the cell acts as an original cell". |
| intraRatEsActivationCandidateCellsLoadParameters S | The condition is " the cell acts as a candidate cell". |
| intraRatEsDeactivationCandidateCellsLoadParameters S | The condition is " the cell acts as a candidate cell". |
| interRatEsActivationOriginalCellParameters CM S | The condition is "The cell acts as an original cell". |
| interRatEsActivationCandidateCellParameters CM S | The condition is "The cell acts as a candidate cell". |
| interRatEsDeactivationCandidateCellParameters CM S | The condition is "The cell acts as a candidate cell". |

#### 4.3.58.4 Notification

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

### 4.3.59 DRACHOptimizationFunction

#### 4.3.59.1 Definition

This IOC contains attributes to support the D-SON function of RACH optimization (See clause 7.1.1 in 3GPP TS 28.313 [57]).

NOTE: In the case where multiple DRACHOptimization MOIs exist at different levels of the containment tree, the DRACHOptimization MOI at the lower level overrides the DRACHOptimization MOIs at higher level(s) of the same containment tree.

#### 4.3.59.2 Attributes

The DRACHOptimizationFunction IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| ueAccProbabilityDist | M | T | T | F | T |
| ueAccDelayProbabilityDist | M | T | T | F | T |
| drachOptimizationControl | M | T | T | F | T |

#### 4.3.59.3 Attribute constraints

None.

#### 4.3.59.4 Notifications

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

### 4.3.60 DMROFunction

#### 4.3.60.1 Definition

This IOC contains attributes to support the D-SON function of MRO (See clause 7.1.2 in 3GPP TS 28.313 [57]).

NOTE: In the case where multiple DMROFunction MOIs exist at different levels of the containment tree, the DMROFunction MOI at the lower level overrides the DMROFunction MOIs at higher level(s) of the same containment tree.

#### 4.3.60.2 Attributes

The DMROFunction IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| dmroControl | M | T | T | F | T |
| maximumDeviationHoTrigger | M | T | T | F | T |
| minimumTimeBetweenHoTriggerChange | M | T | T | F | T |
| tstoreUEcntxt | M | T | T | F | T |

#### 4.3.60.3 Attribute constraints

None.

#### 4.3.60.4 Notifications

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

### 4.3.61 DPCIConfigurationFunction

#### 4.3.61.1 Definition

This IOC contains attributes to support the Distributed SON function of PCI configuration (See clause 7.1.3 in 3GPP TS 28.313 [57]).

NOTE: In the case where multiple DPCIConfiguration MOIs exist at different levels of the containment tree, the DPCIConfiguration MOI at the lower level overrides the DPCIConfiguration MOIs at higher level(s) of the same containment tree.

#### 4.3.61.2 Attributes

The DPCIConfigControlFunction IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| dPciConfigurationControl | M | T | T | F | T |
| nRPciList | M | T | T | F | T |

#### 4.3.61.3 Attribute constraints

None.

#### 4.3.61.4 Notifications

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

### 4.3.62 CPCIConfigurationFunction

#### 4.3.62.1 Definition

This IOC contains attributes to support the Centralized SON function of PCI configuration (See clause 7.2.1 in 3GPP TS 28.313 [57]).

NOTE: In the case where multiple CPCIConfiguration MOIs exist at different levels of the containment tree, the CPCIConfiguration MOI at the lower level overrides the CPCIConfiguration MOIs at higher level(s) of the same containment tree.

#### 4.3.62.2 Attributes

The CPCIConfigurationFunction IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| cPciConfigurationControl | M | T | T | F | T |
| cSonPciList | M | T | T | F | T |

#### 4.3.62.3 Attribute constraints

None.

#### 4.3.62.4 Notifications

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

### 4.3.63 CESManagementFunction

#### 4.3.63.1 Definition

This IOC represents the management capabilities of Centralized SON Energy Saving (ES) functions. (See clause 6.2.2 of 3GPP TS 28.310 [70]) This is provided for Energy Saving purposes.

NOTE: In the case where multiple CESManagement MOIs exist at different levels of the containment tree, the CESManagement MOI at the lower level overrides the ESManagement MOIs at higher level(s) of the same containment tree.

#### 4.3.63.2 Attributes

The CESManagementFunction IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| cesSwitch | M | T | T | F | T |
| energySavingControl | M | T | T | F | T |
| energySavingState | M | T | T | F | T |
| intraRatEsActivationOriginalCellLoadParameters | CM | T | T | F | T |
| intraRatEsActivationCandidateCellsLoadParameters | CM | T | T | F | T |
| intraRatEsDeactivationCandidateCellsLoadParameters | CM | T | T | F | T |
| esNotAllowedTimePeriod | O | T | T | F | T |
| interRatEsActivationOriginalCellParameters | CM | T | T | F | T |
| interRatEsActivationCandidateCellParameters | CM | T | T | F | T |
| interRatEsDeactivationCandidateCellParameters | CM | T | T | F | T |

#### 4.3.63.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| intraRatEsActivationOriginalCellLoadParameters S | The condition is "Intra-RAT domain centralized SON energy saving is supported AND the cell acts as an original cell". |
| intraRatEsActivationCandidateCellsLoadParameters S | The condition is "Intra-RAT domain centralized SON energy saving is supported AND the cell acts as a candidate cell". |
| intraRatEsDeactivationCandidateCellsLoadParameters S | The condition is "Intra-RAT domain centralized SON energy saving is supported AND the cell acts as a candidate cell". |
| interRatEsActivationOriginalCellParameters CM S | The condition is "The cell acts as an original cell" AND inter-RAT domain centralized SON energy saving is supported. |
| interRatEsActivationCandidateCellParameters CM S | The condition is "The cell acts as a candidate cell" AND inter-RAT domain centralized SON energy saving is supported. |
| interRatEsDeactivationCandidateCellParameters CM S | The condition is "The cell acts as a candidate cell" AND inter-RAT domain centralized SON energy saving is supported. |

#### 4.3.63.4 Notification

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

### 4.3.64 AddressWithVlan <<dataType>>

#### 4.3.64.1 Definition

This data type represents the address including IP address and VLAN Id (e.g. localAddress of EP\_NgC) used for initialization of the underlying transport.

#### 4.3.64.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| iPAddress | O | T | T | F | T |
| vLANId | O | T | T | F | T |

#### 4.3.64.3 Attribute constraints

None

#### 4.3.64.4 Notifications

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

### 4.3.65 TceIDMappingInfo <<dataType>>

#### 4.3.65.1 Definition

This data type represents the properties describing the mapping relationship between TCE ID, PLMN where TCE resides and IP address of TCE.

#### 4.3.65.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| tceIPAddress | M | T | T | F | T |
| tceID | M | T | T | F | T |
| pLMNTarget | M | T | T | F | T |

#### 4.3.65.3 Attribute constraints

None.

#### 4.3.65.4 Notifications

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

## 4.4 Attribute definitions

### 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 3GPP 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 3GPP 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 3GPP 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 3GPP TS 38.104 [12] and 7.3 in 3GPP TS 38.901 [53] as well as 3GPP 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 3GPP TS 38.104 [12] and 7.3 in 3GPP 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 3GPP 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 3GPP TS 38.104 [12] and 7.3 in 3GPP TS 38.901 [53] as well as 3GPP 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 3GPP TS 38.104 [12] and 7.3 in 3GPP 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 3GPP 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 3GPP 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 3GPP 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 transmission power in milliwatts (mW) at the antenna port for all downlink channels, used simultaneously in a cell, added together.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| configuredMaxTxEIRP | This is the maximum emitted isotroptic radiated power (EIRP) in dBm for all downlink channels, used simultaneously in a cell, added together [12].  allowedValues: N/A | 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 3GPP 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 used for initialization of the underlying transport.  The AddressWithVlan <dataType> is defined in clause 4.3.64. | type: AddressWithVlan  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| AddressWithVlan.iPaddress | This parameter specifies the 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 |
| AddressWithVlan. vlanId | This parameter specifies the local VLAN Id (See IEEE 802.1Q [39]) used for initialization of the underlying transport. | type: String  multiplicity: 1  isOrdered: N/A  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 3GPP TS 38.300 [3]. See "Global gNB ID" in subclause 9.3.1.6 of 3GPP 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 3GPP 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 3GPP 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 3GPP 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 3GPP TS 38.300 [3].  allowedValues: Not applicable | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  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 3GPP 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: String  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 needs to have as its serving PLMN to be allowed to use the GNB-CU-UP.  allowedValues: Not applicable. | type: PLMNId  multiplicity: 1..12  isOrdered: False  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. 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: True  isUnique: True  defaultValue: None  isNullable: False |
| NRCellDU.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. 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: True  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: False  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: False  isUnique: True  defaultValue: None  isNullable: False |
| resourceType | The resource type of interest for an RRM Policy.  allowedValues:  PRB (for NRCellDU, GNBDUFunction)  RRC connected users (for NRCellCU, GNBCUCPFunction)  DRB (for GNBCUUPFunction)  See NOTE 2and 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: False  isUnique: True  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: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| rRMPolicyMaxRatio | This attribute specifies the maximum percentage of radio resources that can be used by the associated rRMPolicyMemberList. The maximum percentage of radio resources include at least one of the shared resources, prioritized resources and dedicated resources.  The sum of the ‘rRMPolicyMaxRatio' values assigned to all RRMPolicyRatio(s) name-contained by same ManagedEntity can be greater than 100.  allowedValues:  0 : 100 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: 100  isNullable: False |
| rRMPolicyMinRatio | This attribute specifies the minimum percentage of radio resources that can be used by the associated rRMPolicyMemberList. The minimum percentage of radio resources including at least one of prioritized resources and dedicated resources.    The sum of the ‘rRMPolicyMinRatio' values assigned to all RRMPolicyRatio(s) name-contained by same ManagedEntity shall be less than or equal to 100.  allowedValues:  0 : 100  NOTE: Void. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: 0  isNullable: False |
| rRMPolicyDedicatedRatio | This attribute specifies the percentage of radio resource that dedicatedly used by the associated rRMPolicyMemberList.  The sum of the ‘rRMPolicyDedicatedRatio' values assigned to all RRMPolicyRatio(s) name-contained by same MangedEntity shall be less than or equal to 100.  allowedValues:0 : 100 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: 0  isNullable: False |
| subCarrierSpacing | Subcarrier spacing configuration for a BWP. See subclause 5 in 3GPP 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 3GPP 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 3GPP 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: N/A  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 is positioned on the NR global frequency raster, as defined in 3GPP TS 38.101-1 [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: N/A  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: N/A  defaultValue: None  isNullable: False |
| bWPRef | This attribute contains a list of referenced BWPs.  allowedValues: DN of a BWP.. | type: DN  multiplicity: \*  isOrdered: False  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: N/A  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 3GPP TS 38.331 [54].  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 3GPP TS 38.331 [54].  allowedValues: Not applicable. | type: Integer  multiplicity: 6  isOrdered: True  isUnique: False  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 [54].  allowedValues: { 0…1007 } | type: Integer  multiplicity: \*  isOrdered: False  isUnique: True  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 3GPP TS 38.331 [54].  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 shall 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 3GPP TS 38.331 [54].  allowedValues: { 0.2, 0.4, 0.6, 0.8 }. | type: Real  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 38.101-1 [42].  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 3GPP 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: Integer  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, rsrqOffsetCSI-RS, sinrOffsetCSI-RS.  See Q-OffsetRangeList in subclause of subclause 6.3.1 of 3GPP TS 38.331 [54].  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: False  defaultValue: 0  isNullable: False |
| qQualMin | It indicates the minimum required quality level in the cell (dB). See qQualMin in 3GPP 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: Integer  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 3GPP 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 3GPP 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 [54]. 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 3GPP 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 3GPP 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 3GPP 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 |
| 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: False  isUnique: True  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 of a victim Set (RIM-RS1 Set) or aggressor Set (RIM-RS2 set). (See subclause 7.4.1.6 in 3GPP TS 38.211 [32]).  allowedValues:  The bit length of the set ID is maximum 22bit.  see NOTE 10 | 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 3GPP TS 38.413[5]), including pLMNId ID and nRTAC.  allowedValues: Not applicable | type: Tai  multiplicity: 1  isOrdered: N/A  isUnique: N/A  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 |
| intrasystemANRManagementSwitch | This attribute determines whether the intra-system ANR function is activated or deactivated.  If "TRUE", the intra-system ANR function may add or remove intra NG-RAN Neighbour Relations, i.e. add or remove NRCellRelation instances from NRCellCU of this GNBCUCPFunction. If "FALSE", the intra-system ANR Function shall not add or remove Neighbour Relations, i.e. add or remove NRCellRelation instances from NRCellCU of this GNBCUCPFunction.  allowedValues: TRUE,FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| intersystemANRManagementSwitch | This attribute determines whether the inter-system ANR function is activated or deactivated.  If "TRUE", the inter-system ANR function may add or remove inter-system Neighbour Relations, i.e. add or remove EUtranRelation instances from NRCellCU of this GNBCUCPFunction. If "FALSE", the inter-system ANR Function shall not add or remove inter-system Neighbour Relations, i.e. add or remove EUtranRelation instances from NRCellCU of this GNBCUCPFunction.  allowedValues: TRUE, FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| desSwitch | This attribute determines whether the Distributed SON energy saving function is enabled or disabled.  allowedValues: TRUE, FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| cesSwitch | This attribute determines whether the Centralized SON energy saving function is enabled or disabled.  allowedValues: TRUE, FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| energySavingControl | This attribute allows the Centralized SON energy saving function to initiate energy saving activation or deactivation.  allowedValues: toBeEnergySaving, toBeNotEnergySaving | type: enumeration  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| energySavingState | Specifies the status regarding the energy saving in the cell.  If the value of energySavingControl is toBeEnergySaving, then it shall be tried to achieve the value isEnergySaving for the energySavingState.  If the value of energySavingControl is toBeNotEnergySaving, then it shall be tried to achieve the value isNotEnergySaving for the energySavingState.  allowedValues: isNotEnergySaving, isEnergySaving. | type: enumeration  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| intraRatEsActivationOriginalCellLoadParameters | This attributes is relevant, if the cell acts as an original cell.  This attribute indicates the traffic load threshold and the time duration, which are used by distributed ES algorithms to allow a cell to enter the energySaving state. The time duration indicates how long the load needs to have been below the threshold.  allowedValues:  Threshold: Integer 0..100 (Percentage of PRB usage, see 3GPP TS 36.314 [13])  TimeDuration: Integer (in unit of seconds) | type: data type  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| intraRatEsActivationCandidateCellsLoadParameters | This attributes is relevant, if the cell acts as a candidate cell.  This attribute indicates the traffic load threshold and the time duration, which are used by distributed ES algorithms level to allow a n ‘original' cell to enter the energySaving state. Threshold and duration are applied to the candidate cell(s) which will provides coverage backup of an original cell when it is in the energySaving state. The threshold applies in the same way for a candidate cell, no matter for which original cell it will provide backup coverage.  The time duration indicates how long the traffic in the candidate cell needs to have been below the threshold before any original cells which will be provided backup coverage by the candidate cell enters energy saving state.  allowedValues: Threshold: Integer 0..100 (Percentage of PRB usage (see 3GPP TS 36.314 [13]) )  TimeDuration: Integer (in unit of seconds) | type: data type  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| intraRatEsDeactivationCandidateCellsLoadParameters | This attributes is relevant, if the cell acts as a candidate cell.  This attribute indicates the traffic load threshold and the time duration which is used by distributed ES algorithms to allow a cell to leave the energySaving state. Threshold and time duration are applied to the candidate cell when it which provides coverage backup for the cell in energySaving state. The threshold applies in the same way for a candidate cell, no matter for which original cell it provides backup coverage.  The time duration indicates how long the traffic in the candidate cell needs to have been above the threshold to wake up one or more original cells which have been provided backup coverage by the candidate cell.  allowedValues: Threshold: Integer 0..100 (Percentage of PRB usage (see 3GPP TS 36.314 [13]) )  TimeDuration: Integer (in unit of seconds) | type: data type  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| esNotAllowedTimePeriod | This attribute can be used to prevent a cell entering energySaving state.  This attribute indicates a list of time periods during which inter-RAT energy saving is not allowed.  Time period is valid on the specified day and time of every week.  allowedValues: The legal values are as follows:  startTime and endTime:  All values that indicate valid UTC time. endTime should be later than startTime.  periodOfDay: structure of startTime and endTime.  daysOfWeekList: list of weekday.  weekday: Monday, Tuesday, … Sunday.  List of time periods:  {{ daysOfWeek daysOfWeekList,  periodOfDay dailyPeriod}} | type: data type  multiplicity: 0..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| interRatEsActivationOriginalCellParameters | This attribute is relevant, if the cell acts as an original cell.  This attribute indicates the traffic load threshold and the time duration, which are used by distributed inter-RAT ES algorithms to allow an original cell to enter the energySaving state. The time duration indicates how long the traffic load (both for UL and DL) needs to have been below the threshold.  In case the original cell is an EUTRAN cell, the load information refers to Composite Available Capacity Group IE (see 3GPP TS 36.413 [12] Annex B.1.5) and the following applies:  Load = (100 - ‘Capacity Value' ) \* ‘Cell Capacity Class Value', where ‘Capacity Value' and ‘Cell Capacity Class Value' are defined in 3GPP TS 36.423 [7].  In case the original cell is a UTRAN cell, the load information refers to Cell Load Information Group IE (see 3GPP TS 36.413 [12] Annex B.1.5) and the following applies:  Load= ‘Load Value' \* ‘Cell Capacity Class Value', where ‘Load Value' and ‘Cell Capacity Class Value' are defined in 3GPP TS 25.413 [19].  If the ‘Cell Capacity Class Value' is not known, then ‘Cell Capacity Class Value' should be set to 1 when calculating the load, and the load threshold should be set in range of 0..100.  allowedValues:  LoadThreshold: Integer 0..10000  TimeDuration: Integer 0..900 (in unit of seconds) | type: data type  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| interRatEsActivationCandidateCellParameters | This attribute is relevant, if the cell acts as a candidate cell.  This attribute indicates the traffic load threshold and the time duration, which are used by distributed inter-RAT ES algorithms to allow an original cell to enter the energySaving state. Threshold and time duration are applied to the candidate cell(s) which will provides coverage backup of an original cell when it is in the energySaving state.  The time duration indicates how long the traffic load (both for UL and DL) in the candidate cell needs to have been below the threshold before any original cells which will be provided backup coverage by the candidate cell enters energySaving state.  In case the candidate cell is a UTRAN or GERAN cell, the load information refers to Cell Load Information Group IE(see 3GPP TS 36.413 [12] Annex B.1.5) and the following applies:  Load= ‘Load Value' \* ‘Cell Capacity Class Value', where ‘Load Value' and ‘Cell Capacity Class Value' are defined in 3GPP TS 25.413 [19] (for UTRAN) / TS 48.008 [20] (for GERAN).  If the ‘Cell Capacity Class Value' is not known, then ‘Cell Capacity Class Value' should be set to 1 when calculating the load, and the load threshold should be set in range of 0..100.  allowedValues:  LoadThreshold: Integer 0..10000  TimeDuration: Integer 0..900 (in unit of seconds) | type: data type  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| interRatEsDeactivationCandidateCellParameters | This attribute is relevant, if the cell acts as a candidate cell.  This attribute indicates the traffic load threshold and the time duration which is used by distributed inter-RAT ES algorithms to allow an original cell to leave the energySaving state. Threshold and time duration are applied to the candidate cell which provides coverage backup for the cell in energySaving state.  The time duration indicates how long the traffic load (either for UL or DL) in the candidate cell needs to have been above the threshold to wake up one or more original cells which have been provided backup coverage by the candidate cell.  For the load see the definition of interRatEsActivationCandidateCellParameters.  allowedValues:  LoadThreshold: Integer 0..10000  TimeDuration: Integer 0..900 (in unit of seconds) | type: data type  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| isProbingCapable | This attribute indicates whether this cell is capable of performing the ES probing procedure. During this procedure the eNB owning the cell indicates its presence to UEs for measurement purposes, but prevents idle mode UEs from camping on the cell and prevents incoming handovers to the same cell.  If this parameter is absent, then probing is not done.  allowedValues: yes, no | type: enumeration  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| dmroControl | This attribute determines whether the MRO function is enabled or disabled.  allowedValues: TRUE,FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| cSonPciList | This holds a list of physical cell identities that can be assigned to the pci attribute by gNB. The assignment algorithm is not specified.  This attribute shall be supported if and only if the C-SON PCI configuration is supported. See 3GPP TS 28.313, ref [57] subclause 7.1.3.  allowedValues: See 3GPP TS 38.211 [32] subclause 7.4.2.1 for legal values of pci. The number of pci in the list is 1 to 100X. | type: Integer  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| ueAccProbabilityDist | This is a list of target Access Probability (*APn*) for the RACH optimization function.  Each instance *APn* of the list is the probability that the UE gets access on the RACH channel per cell within *n* number of preambles sent over an unspecified sampling period.  This target is suitable for RACH optimization.  allowedValues: Each element of the list, ***APn,*** is a pair (*a*, *n*) where *a* is the targetProbability (in %) and *n* is the number of preambles sent.  The legal values for *a* are 25, 50, 75, 90.  The legal values for *n* are 1 to 200.  The number of elements specified is 4. The number of elements supported is vendor specific. The choice of supported values for *a* and *n* is vendor-specific. | type: data type  multiplicity: 0..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| ueAccDelayProbabilityDist | This is a list of target Access Delay probability (*ADP*) for the RACH optimization function.  Each instance *ADP* of the list is the target time before the UE gets access on the RACH channel per cell, for the *P* percent of the successful RACH Access attempts with lowest access delay, over an unspecified sampling period.  This target is suitable for RACH optimization.  allowedValues: Each element of the list, ***ADp,*** is a pair (*p, d*) where *p* is the targetProbability (in %) and *d* is the access delay (in milliseconds).  The legal values for *p* are 25, 50, 75, 90.  The legal values for *d* are 10 to 560.  The number of elements specified is 4. The number of elements supported is vendor specific. The choice of supported values for *a* and *b* is vendor-specific. | type: data type  multiplicity: 0..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| drachOptimizationControl | This attribute determines whether the RACH Optimization function is enabled or disabled.  allowedValues: TRUE,FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| nRPciList | This holds a list of physical cell identities that can be assigned to the NR cells.  This attribute shall be supported if D-SON PCI configuration function is supported. See subclause 8.2.3, 8.3.1 in 3GPP TS 28.313 [57].  allowedValues: See 3GPP TS 38.211 [32] subclause 7.4.2 for legal values of pci. The number of pci in the list is 0 to 1007. | type: Integer  multiplicity: 0..1007  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| dPciConfigurationControl | This attribute determines whether the Distributed SON PCI configuration Function is enabled or disabled.  allowedValues: TRUE,FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| cPciConfigurationControl | This attribute determines whether the Centralized SON PCI configuration function is enabled or disabled.  allowedValues: TRUE,FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| maximumDeviationHoTrigger | This parameter defines the maximum allowed absolute deviation of the Handover Trigger, from the default point of operation (see clause 15.5.2.5 in 3GPP TS 38.300 [3] and clause 9.2.2.61 in 3GPP TS 38.423 [58]).  allowedValues: -20..20  Unit: 0.5 dB | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| minimumTimeBetweenHoTriggerChange | This parameter defines the minimum allowed time interval between two Handover Trigger change performed by MRO. This is used to control the stability and convergence of the algorithm (see clause 15.5.2.5 in 3GPP TS 38.300 [3]).  allowedValues: 0..604800  Unit: Seconds | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tstoreUEcntxt | The timer used for detection of too early HO, too late HO and HO to wrong cell. Corresponds to Tstore\_UE\_cntxt timer described in clause 15.5.2.5 in 3GPP TS 38.300 [3].  This attribute is used for Mobility Robustness Optimization.  allowedValues: 0..1023  Unit: 100 milliseconds | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| configurable5QISetRef | This is the DN of Configurable5QISet.  The detailed definition for Configurable5QISet see clause 5.3.75.  allowedValues: DN of the Configurable5QISet MOI. | type: String  multiplicity: 0..1  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| dynamic5QISetRef | This is the DN of Dynamic5QISet.  The detailed definition for Dynamic5QISet see clause 5.3.94.  allowedValues: DN of the Dynamic5QISet MOI. | type: String  multiplicity: 0..1  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| frequencyDomainPara | This attribute defines configuration parameters of frequency domain resource to support RIM RS.  allowedValues: Not applicable. | type: FrequencyDomainPara  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| sequenceDomainPara | This attribute defines configuration parameters of sequence domain resource to support RIM RS.  allowedValues: Not applicable. | type: SequenceDomainPara  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| timeDomainPara | This attribute defines configuration parameters of time domain resource to support RIM RS.  allowedValues: Not applicable. | type: TimeDomainPara  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rimRSSubcarrierSpacing | It is the subcarrier spacing configuration () for the RIM-RS. Subcarrier spacing (see 38.211 [32], subclause 5.3.3).  allowedValues: 0, 1 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rIMRSBandwidth | It is the bandwidth of the RIM-RS in resource blocks (see 38.211 [32], subclause 5.3.3).  For carrier bandwidth larger than 20MHz, this attribute should be  96 if subcarrier spacing is15kHz;  48 or 96 if subcarrier spacing is 30kHz;  For carrier bandwidth smaller than or equal to 20MHz, this attributer should be  Minimum of {96 , bandwidth of downlink carrier in number of PRBs} if subcarrier spacing is15kHz;  Minimum of {48, bandwidth of downlink carrier in number of PRBs } if subcarrier spacing is 30kHz;  allowedValues: 1,2..96 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| nrofGlobalRIMRSFrequencyCandidates | It is the number of candidate frequency resources in the whole network () (see 38.211 [32], subclause 7.4.1.6).  allowedValues: 1,2,4 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rimRSStartingFrequencyOffsetIdList | It is a list of configured frequency offsets in units of resource blocks, where each element is the frequency offset relative to a configured reference point for RIM-RS. The size of the list is nrofGlobalRIMRSFrequencyCandidates and the resulting frequency resource blocks of RIM-RS corresponding to different configured frequency offset have no overlapping bandwidth. (see 38.211 [32], subclause 7.4.1.6).  .  allowedValues: 0..maxNrofPhysicalResourceBlocks-1 where maxNrofPhysicalResourceBlocks = 550 | type: Integer  multiplicity: 1, 2, 4  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| nrofRIMRSSequenceCandidatesofRS1 | It is the number of candidate sequences assigned for RIM RS-1 () (see 38.211 [32], subclause 7.4.1.6). It should be even when enableEnoughNotEnoughIndication for RS-1 is ON  allowedValues: 1,2..8  see NOTE 10 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rimRSScrambleIdListofRS1 | It is a list of configured scrambling identities for RIM RS-1 (see 38.211 [32], subclause 7.4.1.6). The size of the list is nrofRIMRSSequenceCandidatesofRS1.  allowedValues: 0..2^10-1 | type: Integer  multiplicity: 1, 2..8  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| nrofRIMRSSequenceCandidatesofRS2 | It is the number of candidate sequences assigned for RIM RS-2 () (see 3GPP TS 38.211 [32], subclause 7.4.1.6).  allowedValues: 1,2..8  see NOTE 10 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rimRSScrambleIdListofRS2 | It is a list of configured scrambling identities for RIM RS-2 (see 3GPP TS 38.211 [32], subclause 7.4.1.6).. The size of the list is nrofRIMRSSequenceCandidatesofRS2.  allowedValues: 0..2^10-1 | type: Integer  multiplicity: 1, 2..8  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| enableEnoughNotEnoughIndication | It is indication of whether "Enough" / "Not enough" indication functionality is enabled for RIM RS-1 (see 38.211 [32], subclause 7.4.1.6).  If the indication is "enable",  the first half of nrofRIMRSSequenceCandidatesofRS1 sequences indicates "Not enough mitigation", and the second half indicates "Enough mitigation", where,  "Enough mitigation" indicates that IoT going back to certain level at victim side and/or no further interference mitigation actions are needed at aggressor side  "Not enough mitigation" indicates that IoT exceeding certain level at victim side and/or further interference mitigation actions are needed at aggressor side  enableEnoughNotEnoughIndication is equivalent to EnoughIndication (see 3GPP TS 38.211 [32], subclause 7.4.1.6)  allowedValues: "ENABLE", "DISABLE"  see NOTE 8 | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: DISABLE  isNullable: False |
| RIMRSScrambleTimerMultiplier | It is parameter multiplier factor γ for initialization seed of the pseudo-random sequence c ̅(i) (see 3GPP TS 38.211 [32], subclause 7.4.1.6.2).  allowedValues: 0,1,….2^31-1 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| RIMRSScrambleTimerOffset | It is parameter offset δ for initialization seed of the pseudo-random sequence c ̅(i) (see 3GPP TS 38.211 [32], subclause 7.4.1.6.2).  allowedValues: 0,1,….2^31-1 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| dlULSwitchingPeriod1 | This attribute is used to configure the first uplink-downlink switching period (P1) for RIM RS transmission in the network, where one RIM RS is configured in one uplink-downlink switching period. (see 3GPP TS 38.211 [32], subclause 7.4.1.6).  When only one TDD-UL-DL-Pattern is configured, only dl-UL-SwitchingPeriod1 is configured, where P1 equals to the transmission periodicity of the TDD-UL-DL-Pattern.  When two concatenated TDD-UL-DL-Patterns are configured, and RIM-RS resources is configured only in one of the TDD patterns, only dl-UL-SwitchingPeriod1 is configured, where P1 equals to the addition of the concatenated transmission periodicity of the two TDD-UL-DL-Patterns.  When two concatenated TDD-UL-DL-Patterns are configured, and RIM-RS resources are configured in both TDD patterns, both dl-UL-SwitchingPeriod1 and dl-UL-SwitchingPeriod2 are configured, where P1 equals to the transmission periodicity of the first TDD-UL-DL-Pattern.  P1 is equivalent to (see 3GPP TS 38.211 [32], subclause 7.4.1.6)  See NOTE 6  allowedValues:  MS0P5, MS0P625, MS1, MS1P25, MS2, MS2P5, MS4, MS5, MS10, MS20, if a single uplink-downlink period is configured for RIM-RS purposes;  MS0P5, MS0P625, MS1, MS1P25, MS2, MS2P5, MS3, MS4, MS5, MS10, MS20, if two uplink-downlink periods are configured for RIM-RS purposes.  see NOTE 9 | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| symbolOffsetOfReferencePoint1 | This attribute is used to configure the reference point in the first uplink-downlink switching period, which is the symbols offset of the reference point after the starting boundary of the first uplink-downlink switching period. It's Configured together with dl-UL-SwitchingPeriod1 (see 3GPP TS 38.211 [32], subclause 7.4.1.6).  When only one TDD-UL-DL-Pattern is configured, the reference point configured for the first uplink-downlink switching period is the DL transmission boundary of the TDD-UL-DL-Pattern.  When two concatenated TDD-UL-DL-Patterns are configured, and RIM-RS resources is configured only in one of the TDD patterns, the reference point configured for the first uplink-downlink switching period is the DL transmission boundary of the TDD-UL-DL-Pattern where the RIM-RS resource is configured.  When two concatenated TDD-UL-DL-Patterns are configured, and RIM-RS resources are configured in both TDD patterns, the reference points configured for first uplink-downlink switching period is the DL transmission boundary of the first TDD-UL-DL-Pattern.  allowedValues: 2, 3..20\*2\*maxNrofSymbols-1, where maxNrofSymbols=14 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| dlULSwitchingPeriod2 | This attribute is used to configure the second uplink-downlink switching period (P2) for RIM RS transmission in the network, where one RIM RS is configured in one uplink-downlink switching period (see 3GPP TS 38.211 [32], subclause 7.4.1.6).  When two concatenated TDD-UL-DL-Patterns are configured, and RIM-RS resources are configured in both TDD patterns, both dl-UL-SwitchingPeriod1 and dl-UL-SwitchingPeriod2 are configured, where P2 equals to the transmission periodicity of the second TDD-UL-DL-Pattern, and where (P1 + P2) divides 20 ms.  allowedValues: MS0P5, MS0P625, MS1, MS1P25, MS2, MS2P5, MS3, MS4, MS5, MS10  P2 is equivalent to (see 38.211 [32], subclause 7.4.1.6)  See NOTE 9 | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| symbolOffsetOfReferencePoint2 | This attribute is used to configure the reference point in the second uplink-downlink switching period, which is the symbol offset of the reference point after starting boundary of the second uplink-downlink switching period. Configured together with dl-UL-SwitchingPeriod2 (see 3GPP TS 38.211 [32], subclause 7.4.1.6).  When two concatenated TDD-UL-DL-Patterns are configured, and RIM-RS resources are configured in both TDD patterns, the reference points configured for second uplink-downlink switching period is the DL transmission boundary of the second TDD-UL-DL-Pattern.  allowedValues: 2, 3..20\*2\*maxNrofSymbols-1, where maxNrofSymbols=14 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| totalnrofSetIdofRS1 | It is the total number of set IDs for RIM RS-1 () (see 3GPP TS 38.211 [32], subclause 7.4.1.6).  allowedValues: 0,1...2^22 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| totalnrofSetIdofRS2 | It is total number of set IDs for RIM RS-2 () (see 3GPP TS 38.211 [32], subclause 7.4.1.6).  allowedValues: 0,1...2^22 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| nrofConsecutiveRIMRS1 | It is the number of consecutive uplink-downlink switching periods for RS-1 (R1) for repetition/near-far indication:. (see 3GPP TS 38.211 [32], subclause 7.4.1.6).  allowedValues: 1,2,4,8  see NOTE 7 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| nrofConsecutiveRIMRS2 | It is the number of consecutive uplink-downlink switching periods for RS-2 (R2) for repetition/near-far indication. (see 3GPP TS 38.211 [32], subclause 7.4.1.6).  allowedValues: 1,2,4,8  see NOTE 7 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| consecutiveRIMRS1List | It is used to configure the OFDM symbol position(s) of RIM RS-1 within the uplink-downlink switching period. It is a list of symbol offset of RIM RS-1 () before the reference point. The size of the list is nrofConsecutiveRIMRS1 (see 3GPP TS 38.211 [32], subclause 7.4.1.6).  The resulting RIM RS-1 symbols and its reference point shall belong to the same 10ms frame.  .  allowedValues: 2,3..20\*2\*maxNrofSymbols-1, where maxNrofSymbols=14 | type: Integer  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| consecutiveRIMRS2List | It is used to configure the OFDM symbol position(s) of RIM RS-2 within the uplink-downlink switching period. It is a list of symbol offset of RIM RS-2 () before the reference point. The size of the list is nrofConsecutiveRIMRS2 (see 3GPP TS 38.211 [32], subclause 7.4.1.6).  The resulting RIM RS-2 symbols and its reference point shall belong to the same 10ms frame.  .  allowedValues: 2,3..20\*2\*maxNrofSymbols-1, where maxNrofSymbols=14 | type: Integer  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| enablenearfarIndicationRS1 | It is indication of whether near-far functionality is enabled for RIM RS1.  If the indication is "enable",  the first half of nrofConsecutiveRIMRS1 (R1) consecutive uplink-downlink switching period is for "Near" indication with R1/2 repetitions,  the second half of R1 consecutive uplink-downlink switching period is for "Far" indication with R1/2 repetitions.  allowedValues: "ENABLE", "DISABLE"  see NOTE 10 | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: DISABLE  isNullable: False |
| enablenearfarIndicationRS2 | It is indication of whether near-far functionality is enabled for RIM RS2.  If the indication is "enable",  the first half of nrofConsecutiveRIMRS2 (R2) consecutive uplink-downlink switching period is for "Near" indication with R2/2 repetitions,  the second half of R2 consecutive uplink-downlink switching period is for "Far" indication with R2/2 repetitions.  allowedValues: "ENABLE", "DISABLE"  See NOTE 10 | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: DISABLE  isNullable: False |
| rimRSReportConf | It is used to configure gNBs to report the all necessary information derived from the detected RIM-RS to OAM.  allowedValues: Not applicable | type: RimRSReportConf  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: N/A  isNullable: False |
| reportIndicator | It is used to enable or disable the RS report on a gNB.  If the indication is "enable", the gNB starts to periodically report necessary information derived from the detected RIM-RS to OAM.  If the indication is "disable", the gNB stops reporting.  allowedValues: ENABLE, DISABLE | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: DISABLE  isNullable: False |
| reportInterval | It is used to define reporting interval of a gNB in ms.  allowedValues: Not applicable | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| nrofRIMRSReportInfo | It is used to define the maximum number of RIMRSReportInfo in a single report.  allowedValues: Not applicable | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| maxPropagationDelay | It is used to define the maximum reported OFDM symbol number for the propagation delay of the detected RIM-RS in each RIMRSReportInfo.  allowedValues: 0, 1..20\*2\*maxNrofSymbols-1, where maxNrofSymbols=14. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rimRSReportInfoList | It represents a list (the length of the list is nrofRIMRSReportInfo) of necessary information derived from the detected RIM-RS.  allowedValues:  Not applicable | type: RimRSReportInfo  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: N/A  isNullable: False |
| detectedSetID | This attribute indicates the Set ID of the detected RIM-RS.  allowedValues: 0,1...max{totalnrofSetIdofRS1, totalnrofSetIdofRS2}. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| propagationDelay | This attribute indicates the propagation delay of the detected RIM-RS, in number of OFDM symbol.  allowedValues: 0, 1.. maxPropagationDelay. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| functionalityOfRIMRS | This attribute indicates the functionality of the detected RIM-RS.  If the indication of enableEnoughNotEnoughIndication is "enable", valid values are {RS2, RS1forEnoughMitigation, RS1forNotEnoughMitigation};  If the indication of enableEnoughNotEnoughIndication is "disable", valid values are {RS1, RS2}.  RS1forEnoughMitigation means RIM-RS type 1 is used to indicate 'enough mitigation' functionality.  RS1forNotEnoughMitigation means RIM-RS type 1 is used to indicate 'Not enough mitigation' functionality.  allowedValues: RS1, RS2, RS1forEnoughMitigation, RS1forNotEnoughMitigation | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rimRSMonitoringWindowDuration | This attribute configures a duration of the monitoring window in which gNB monitors the RIM-RS, in unit of , where is the RIM-RS transmission periodicity in units of uplink-downlink switching period (see 38.211 [32], subclause 7.4.1.6).  This field is configured together with rimRSMonitoringInterval, rimRSMonitoringWindowStartingOffset, rimRSMonitoringOccasionInterval and rimRSMonitoringOccasionStartingOffset.  The duration of the monitoring window is expected to be larger than or equal to , where is the interval between adjacent monitoring occasions within the monitoring window (configured by rimRSMonitoringInterval).  The absolute duration of the monitoring window is not expected to be larger than the periodicity of the monitoring window (configured by rimRSMonitoringWindowPeriodicity).  Only the earliest consecutive detection durations in each RIM-RS transmission periodicity () in the monitoring window are taken as valid time for monitoring potential interference, and they are consecutively monitored in the monitoring window, while the residual part of each RIM-RS transmission periodicity is not used for discovering potential interference, where, a consecutive detection duration spans (if only is configured) or (if both and are configured), where,  is the number of consecutive uplink-downlinkswitching periods for RS-1 (configured by nrofConsecutiveRIMRS1),  is the first uplink-downlinkswitching period (configured by dlULSwitchingPeriod1),  is the second uplink-downlink switching period (configured by dlULSwitchingPeriod2), and  is the total number of set IDs for RIM RS-1 (configured by totalnrofSetIdofRS1),  is the number of candidate frequency resources in the whole network (configured by nrofGlobalRIMRSFrequencyCandidates), and  is the number of candidate sequences assigned for RIM RS-1 (configured by nrofRIMRSSequenceCandidatesofRS1).  allowedValues: 1,2,..2^14 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rimRSMonitoringWindowPeriodicity | This attribute configures the periodicity of the monitoring window, in unit of hours.  allowedValues: 1, 2, 3, 4, 6, 8, 12, 24 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rimRSMonitoringWindowStartingOffset | This attribute configures the start offset of the first monitoring window within one day, in unit of hours.  allowedValues: 0,1,2..23 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rimRSMonitoringOccasionInterval | This attribute configures the interval between adjacent monitoring occasions (*M*) within the monitoring window, in unit of consecutive detection duration.  *M* is expected to be prime to , where is given in above attribute rimRSMonitoringWindowDuration.  allowedValues: 1,2..-1. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| rimRSMonitoringOccasionStartingOffset | This attribute configures the start offset of the first monitoring occasions within the monitoring window (), in unit of consecutive detection duration.  gNB starts monitoring potential interference from the -th consecutive detection duration in the first complete RIM-RS transmission periodicity () within the monitoring window.  allowedValues: 0,1,2..M-1  where M is the the interval between adjacent monitoring occasions within the monitoring window (configured by rimRSMonitoringOccasionInterval) | Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| victimSetRef | This attribute contains the DN of a victim Set (RimRSSet)  allowedValues: Not applicable. | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| aggressorSetRef | This attribute contains the DN of an aggressor Set (RimRSSet)  allowedValues: Not applicable. | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| setType | The attribute specifies type of a RIM-RS Set . RIM RS1 is generated and transmitted by victim to indicate its suffering remote interference, and RIM RS2 is generated and transmitted by aggressor to measure if Remote Interference still exist  If the attribute value is "RS1", the RIM-RS Set is victim set.  If the attribute value is "RS2", the RIM-RS Set is aggressor set.  allowedValues:  RS1, RS2. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| nRCellDURef | This attribute contains the DN of a NR Cell (NRCellDU)  allowedValues: Not applicable. | type: DN  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| isENDCAllowed | This indicates if EN-DC is allowed or prohibited.  If TRUE, the target cell is allowed to be used for EN-DC. The target cell is referenced by the NRCellRelation that contains this isENDCAllowed.  If FALSE, EN-DC 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 GeNBIds. If the target node GeNBId is a member of the source node's NRCellCU.x2BlackList, the source node is:  1) prohibited from sending X2 connection requests to the target node;  2) forced to tear down an established X2 connection to the target node;  3) not allowed to accept incoming X2 connection requests from the target node.  The same GeNBId may appear here and in NRCellCU.x2WhiteList. In such case, the GeNBId in x2WhiteList shall be treated as if it is absent.  allowedValues: See NOTE 5. | type: DN  multiplicity: 0..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| xnBlackList | This is a list of GgNBIds. If the target node GgNBId is a member of the source node's NRCellCU.xnBlackList, the source node is:  1) prohibited from sending Xn connection requests to the target node;  2) forced to tear down an established Xn connection to the target node;  3) not allowed to accept incoming Xn connection requests from the target node.  The same GgNBId may appear here and in NRCellCU.xnWhiteList. In such case, the GgNBId in xnWhiteList shall be treated as if it is absent.  allowedValues: See NOTE 5. | type: DN  multiplicity: 0..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| x2WhiteList | This is a list of GeNBIds. If the target node GeNBId is a member of the source node's NRCellCU.x2WhiteList, the source node is:  1) allowed to request the establishment of an X2 connection to the target node;  2) not allowed to initiate the tear down of an established X2 connection to the target node  The same GeNBId may appear here and in NRCellCU.x2BlackList. In such case, the GeNBId here shall be treated as if it is absent.  allowedValues: See NOTE 5. | type: String  multiplicity: 0..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| xnWhiteList | This is a list of GgNBIds. If the target node GgNBId is a member of the source node's NRCellCU.xnWhiteList, the source node is:  1) allowed to request the establishment of Xn connection with the target node;  2) not allowed to initiate the tear down of an established Xn connection to the target node  The same GgNBId may appear here and in NRCellCU.xnBlackList. In such case, the GgNBId here shall be treated as if it is absent.  allowedValues: See NOTE 5. | type: String  multiplicity: 0..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| xnHOBlackList | This is a list of GgNBIds. For all the entries in NRCellCU.xnHOBlackList, the subject NRCellCU is prohibited to use the Xn interface for HOs even if an Xn interface exists to the target cell.  allowedValues: See NOTE 5. | type: String  multiplicity: 0..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| x2HOBlackList | This is a list of GeNBIds. For all the entries in NRCellCU.x2HOBlackList, the subject NRCellCU is prohibited to use the X2 interface for HOs even if an X2 interface exists to the target cell.  allowedValues: See NOTE 5. | type: String  multiplicity: 0..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| tceIDMappingInfoList | This attribute includes a list of TCE ID, PLMN where TCE resides and the corresponding TCE IP address. It is used in Logged MDT case to provide the information to the gNodeB or GNBCUCPFunction to get the corresponding TCE IP address when there is an MDT log received from the UE.  allowedValues: Not applicable | type: tceIDMappingInfo  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| tceIPAddress | This attribute indicates IP address of TCE. (See subclause 4.1.1.9.2 in 3GPP TS 32.422 [68]) | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| tceID | This attribute indicates TCE Id. (See subclause 4.1.1.9.2 in 3GPP TS 32.422 [68]) | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| pLMNTarget | This attribute indicates PLMN where TCE resides. (See subclauses 4.1.1.9.2 and 4.9.2 in 3GPP TS 32.422 [68]) | Type: PLMNId  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| 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). Different RRM Policy maybe applied for different types of radio resource. E.g. RRMPolicyRatio is used for PRB resource.  NOTE 3: Void.  NOTE 4: A RRM Policy can make use of the defined policy (e.g. RRMPolicyRatio) or a vendor specific RRM Policy.  NOTE 5: For Global gNB Identifiers, the entries are formatted according to the pattern <mcc><mnc>-<gNBIdLength>-<gNBId>, where <mcc> is three digits, <mnc> two or three digits, <gNBIdLength> is a string containing a number n as digits, in the range 22 to 32, and <gNBId> is a string containing digits for the number 0 to 2n-1. For Global eNB Identifiers, the entries are formatted according to the pattern <mcc><mnc>-<eNBIdLength>-<eNBId>, where <mcc> is three digits, <mnc> two or three digits, <gNBIdLength> is a string containing a number m as digits, m being one of 18, 20, 21 or 22, and <eNBId> is a string containing digits for the number 0 to 2m-1.  NOTE 6: The maximum number of total RIM RS sequence within 10ms is 32 regardless single or two uplink-downlink period are configured in the 10ms..  NOTE 7:  1. The maximum number of consecutive uplink-downlink switching periods for repetition/near-far-functionality is 8 (the number can be either 2, 4, or 8) with near-far functionality and with repetition.  2. The maximum number of consecutive uplink-downlink switching periods for repetition is 4 (the number can be either 1, 2, or 4) without near-far functionality and with repetition only.  3. The maximum number of consecutive uplink-downlink switching periods is 2 with near-far functionality only and without repetition.  NOTE 8 (for information): "Not enough mitigation" means aggressor gNB needs to increase the interference mitigation level (i.e., further interference mitigation actions) (e.g., further reducing the DL transmission power on DL symbols at aggressor side), while "Enough mitigation" means aggressor gNB keeping the current interference mitigation level unchanged (i.e., no further interference mitigation actions) (e.g., remaining the DL transmission power on DL symbols unchanged at aggressor side).  NOTE 9: Value MS0P5 corresponds to 0.5 ms, MS0P625 corresponds to 0.625 ms, MS1 corresponds to 1 ms, MS1P25 corresponds to 1.25 ms, and so on.  NOTE 10: RIM RS-1, RIM-RS1，RIM RS1 is equivalent to RIM-RS type 1 (see 3GPP TS 38.211 [32], subclause 7.4.1.6). RIM RS-2, RIM-RS2，RIM RS2 is equivalent to RIM-RS type 2 (see 3GPP TS 38.211 [32], subclause 7.4.1.6). | | |

## 4.5 Common notifications

### 4.5.1 Alarm notifications

This clause presents a list of notifications, defined in 3GPP TS 28.532 [35], that an MnS consumer may receive. The notification header attribute objectClass/objectInstance shall capture the DN of an instance of a class defined in the present document.

| Name | Qualifier | Notes |
| --- | --- | --- |
| notifyNewAlarm | M | -- |
| notifyClearedAlarm | M | -- |
| notifyAckStateChanged | M | -- |
| notifyAlarmListRebuilt | M | -- |
| notifyChangedAlarm | O | -- |
| notifyCorrelatedNotificationChanged | O | -- |
| notifyChangedAlarmGeneral | O | -- |
| notifyComments | O | -- |
| notifyPotentialFaultyAlarmList | O | -- |

### 4.5.2 Configuration notifications

This clause presents a list of notifications, defined in 3GPP TS 28.532 [35], that an MnS consumer may receive. The notification header attribute objectClass/objectInstance shall capture the DN of an instance of a class defined in the present document.

| Name | S | Notes |
| --- | --- | --- |
| notifyMOICreation | O | -- |
| notifyMOIDeletion | O | -- |
| notifyMOIAttributeValueChanges | O | -- |
| notifyEvent | O | -- |

### 4.5.3 Threshold Crossing notifications

This clause presents a list of notifications, defined in 3GPP TS 28.532 [35], that an MnS consumer may receive. The notification header attribute objectClass/objectInstance shall capture the DN of an instance of a class defined in the present document.

| Name | S | Notes | |
| --- | --- | --- | --- |
| notifyThresholdCrossing | M |  |

# 5 Information Model definitions for 5GC NRM

## 5.1 Imported information entities and local labels

|  |  |
| --- | --- |
| Label reference | Local label |
| TS 28.622 [30], IOC, SubNetwork | SubNetwork |
| TS 28.622 [30], IOC, ManagedElement | ManagedElement |
| TS 28.622 [30], IOC, ManagedFunction | ManagedFunction |
| TS 28.622 [30], IOC, EP\_RP | EP\_RP |
| TS 28.708 [21], IOC, ServingGWFunction | ServingGWFunction |
| TS 28.702 [20], IOC, SmsIwmscFunction | SmsIwmscFunction |
| TS 28.702 [20], IOC, SmsGmscFunction | SmsGmscFunction |
| TS 28.702 [20], IOC, GmlcFunction | GmlcFunction |
| TS 28.658 [19], dataType, PLMNId | PLMNId |

## 5.2 Class diagram

### 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.

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

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



Figure 5.2.1.1-2: Transport view of AMF NRM

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

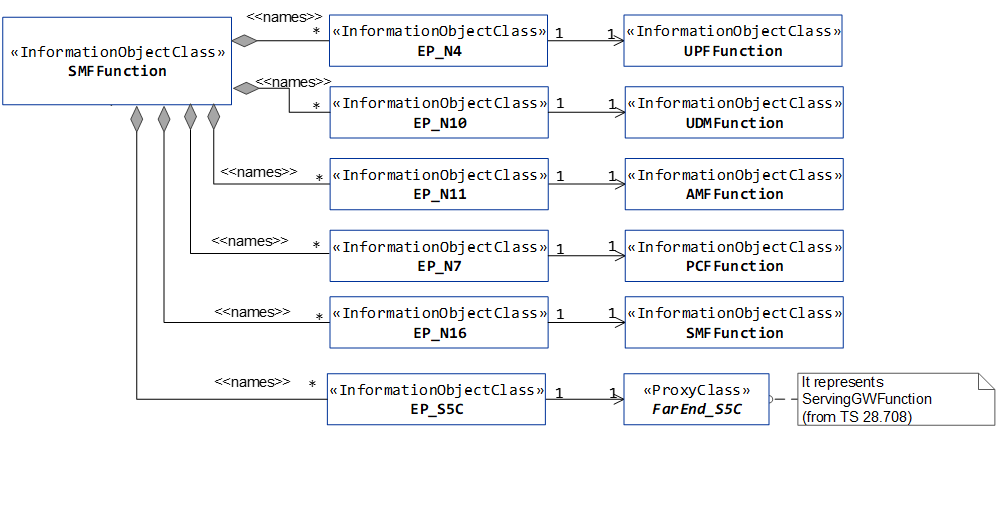


Figure 5.2.1.1-3: Transport view of SMF NRM

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

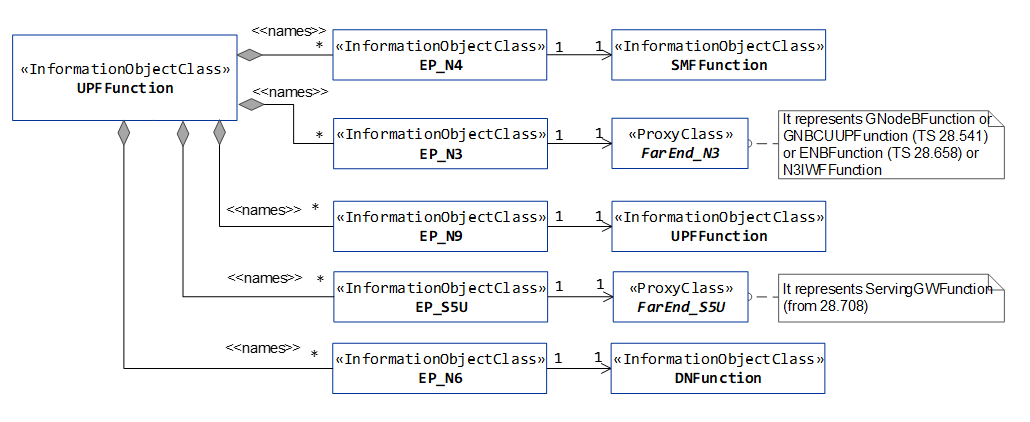


Figure 5.2.1.1-4: Transport view of UPF NRM

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



Figure 5.2.1.1-5: Transport view of N3IWF NRM

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

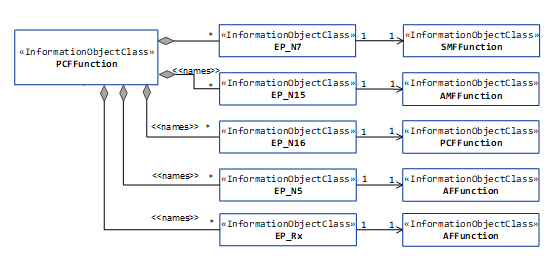


Figure 5.2.1.1-6: Transport view of PCF NRM

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

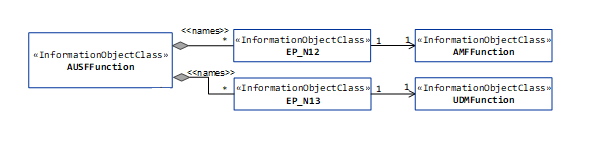


Figure 5.2.1.1-7: Transport view of AUSF NRM

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

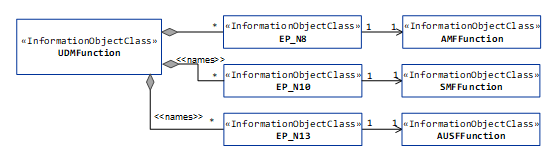


Figure 5.2.1.1-8: Transport view of UDM NRM

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



Figure 5.2.1.1-9: Transport view of NRF NRM

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



Figure 5.2.1.1-10: Transport view of NSSF NRM

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



Figure 5.2.1.1-11: Transport view of SMSF NRM

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

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

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

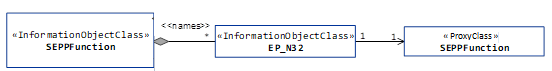


Figure 5.2.1.1-14: Transport view of SEPP NRM

Figure 5.2.1.1-15 shows the NRM fragment for control of QoS monitoring per QoS flow per UE.



Figure 5.2.1.1-15: NRM fragment for control of QoS monitoring per QoS flow per UE

Figure 5.2.1.1-16 shows the NRM fragment for control of GTP-U path QoS monitoring.



Figure 5.2.1.1-16: NRM fragment for control of GTP-U path QoS monitoring

The Figure 5.2.1.1-17 shows the NRM fragment for pre-configured 5QIs in 5GC.



Figure 5.2.1.1-17: NRM fragment for pre-configured 5QIs in 5GC

Figure 5.2.1.1-18 shows the NRM fragment for 5QI and DSCP mapping.



Figure 5.2.1.1-18: NRM fragment for 5QI and DSCP mapping.

Figure 5.2.1.1-19 shows the NRM fragment for predefined PCC rule.



Figure 5.2.1.1-19: NRM fragment for predefined PCC rule

Figure 5.2.1.1-20 shows the NRM fragment for dynamically assigned 5QIs in 5GC.



Figure 5.2.1.1-20: NRM fragment for dynamically assigned 5QIs in 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.

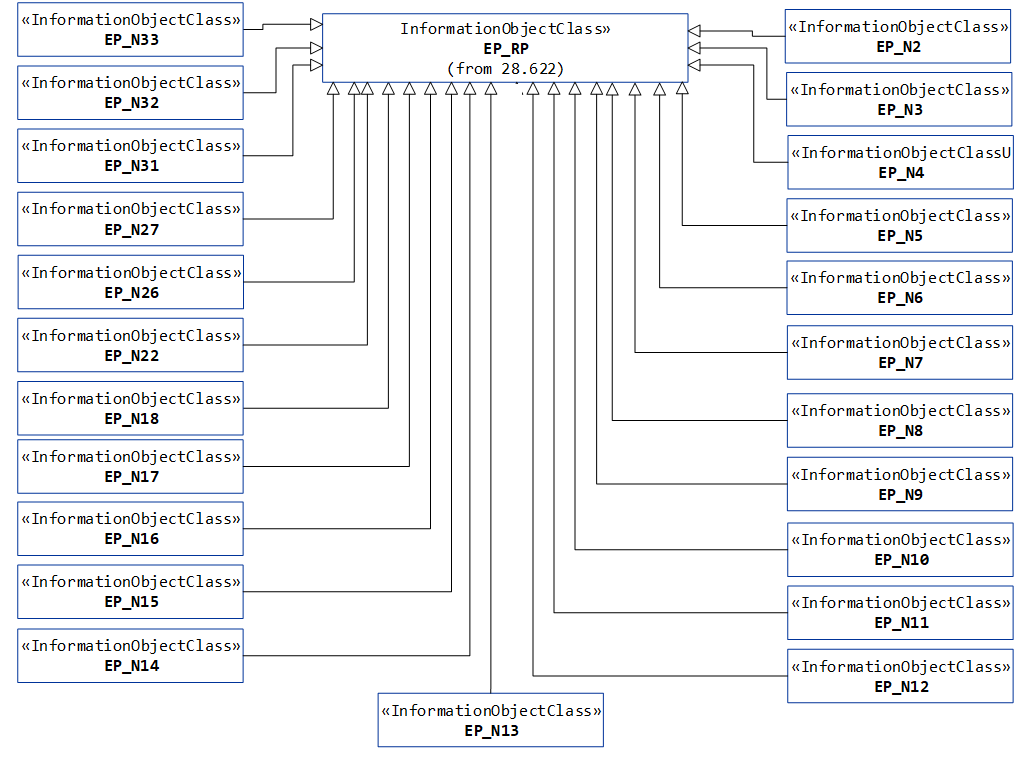


Figure 5.2.1.2-2: Inheritance hierarchy from IOC EP\_RP related to the 5GC NF NRM



Figure 5.2.1.2-3: Inheritance hierarchy for IOC QFQoSMonitoringControl



Figure 5.2.1.2-4: Inheritance hierarchy for IOC GtpUPathQoSMonitoringControl



Figure 5.2.1.2-5: Inheritance hierarchy for IOC Configurable5QISet



Figure 5.2.1.2-6: Inheritance hierarchy for IOC FiveQiDscpMapping



Figure 5.2.1.2-7: Inheritance hierarchy for predefined PCC rule modeling



Figure 5.2.1.2-8: Inheritance hierarchy for IOC Dynamic5QISet

### 5.2.2 Class diagram of AMF Region/AMF Set

#### 5.2.2.1 Relationships

This clause depicts the set of classes (e.g. IOCs) that encapsulates the information relevant for NRM of AMF Region/AMF Set 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.

Figure 5.2.2.1-1 shows the AMF Region/AMF Set NRM containment/naming relationship.



Figure 5.2.2.1-1: AMF Region/AMF Set NRM

#### 5.2.2.2 Inheritance

This clause depicts the inheritance relationships that exist between IOCs.

Figure 5.2.2.2-1 shows the inheritance hierarchy from IOC ManagedFunction related to the AMF Region/AMF Set NRM.



Figure 5.2.2.2-1: AMF Region/AMF Set Inheritance

## 5.3 Class definitions

### 5.3.1 AMFFunction

#### 5.3.1.1 Definition

This IOC represents the AMF functionality in 5GC. For more information about the AMF, see 3GPP TS 23.501 [2].

#### 5.3.1.2 Attributes

The AMFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| aMFIdentifier | M | T | T | F | T |
| sBIFQDN | M | T | T | F | T |
| sNSSAIList | CM | T | F | F | T |
| managedNFProfile | M | T | T | F | T |
| commModelList | M | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| aMFSetRef | M | T | T | F | T |

#### 5.3.1.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: Network slicing feature is supported. |

#### 5.3.1.4 Notifications

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

### 5.3.2 SMFFunction

#### 5.3.2.1 Definition

This IOC represents the SMF function in 5GC. For more information about the SMF, see 3GPP TS 23.501 [2].

#### 5.3.2.2 Attributes

The SMFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| nRTAClist | M | T | T | F | T |
| sBIFQDN | M | T | T | F | T |
| sNSSAIList | CM | 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 |
| dynamic5QISetRef | O | T | F | F | T |

#### 5.3.2.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: Network slicing feature is supported. |

#### 5.3.2.4 Notifications

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

### 5.3.3 UPFFunction

#### 5.3.3.1 Definition

This IOC represents the UPF function in 5GC. For more information about the UPF, see 3GPP TS 23.501 [2].

#### 5.3.3.2 Attributes

The UPFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| nRTAClist | M | T | T | F | T |
| sNSSAIList | CM | T | T | F | T |
| managedNFProfile | M | T | T | F | T |
| supportedBMOList | O | T | T | F | T |

#### 5.3.3.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList CM S | The condition is "network slicing feature is supported". |

#### 5.3.3.4 Notifications

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

### 5.3.4 N3IWFFunction

#### 5.3.4.1 Definition

This IOC represents the N3IWF function which is used to enable non-3GPP access networks connected to the 5GC. For more information about the N3IWF, see 3GPP TS 23.501 [2].

#### 5.3.4.2 Attributes

The N3IWFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| commModelList | M | T | T | F | T |

#### 5.3.4.3 Attribute constraints

None.

#### 5.3.4.4 Notifications

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

### 5.3.5 PCFFunction

#### 5.3.5.1 Definition

This IOC represents the PCF function in 5GC. For more information about the PCF, see 3GPP TS 23.501 [2].

#### 5.3.5.2 Attributes

The PCFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| sBIFQDN | M | T | T | F | T |
| sNSSAIList | CM | T | T | F | T |
| managedNFProfile | M | T | T | F | T |
| commModelList | M | T | T | F | T |
| supportedBMOList | O | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| configurable5QISetRef | O | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| dynamic5QISetRef | O | T | F | F | T |

#### 5.3.5.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: network slicing feature is supported. |

#### 5.3.5.4 Notifications

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

### 5.3.6 AUSFFunction

#### 5.3.6.1 Definition

This IOC represents the AUSF function in 5GC. For more information about the AUSF, see 3GPP TS 23.501 [2].

#### 5.3.6.2 Attributes

The AUSFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| sBIFQDN | M | T | T | F | T |
| sNSSAIList | CM | T | T | F | T |
| managedNFProfile | M | T | T | F | T |
| commModelList | M | T | T | F | T |

#### 5.3.6.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: Network slicing feature is supported. |

#### 5.3.6.4 Notifications

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

### 5.3.7 UDMFunction

#### 5.3.7.1 Definition

This IOC represents the UDM function in 5GC. For more information about the UDM, see 3GPP TS 23.501 [2].

#### 5.3.7.2 Attributes

The UDMFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| sBIFQDN | M | T | T | F | T |
| sNSSAIList | CM | T | T | F | T |
| managedNFProfile | M | T | T | F | T |
| commModelList | M | T | T | F | T |

#### 5.3.5.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: network slicing feature is supported. |

#### 5.3.5.4 Notifications

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

### 5.3.8 UDRFunction

#### 5.3.8.1 Definition

This IOC represents the UDR function in 5GC. For more information about the UDR, see 3GPP TS 23.501 [2].

#### 5.3.8.2 Attributes

The UDRFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| sBIFQDN | M | T | T | F | T |
| sNSSAIList | CM | T | T | F | T |
| managedNFProfile | M | T | T | F | T |

#### 5.3.8.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: Network slicing feature is supported. |

#### 5.3.8.4 Notifications

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

### 5.3.9 UDSFFunction

#### 5.3.9.1 Definition

This IOC represents the UDSF function which can be interacted with any other 5GC NF defined in 3GPP TS 23.501 [2]. For more information about the UDSF, see 3GPP TS 23.501 [2].

#### 5.3.9.2 Attributes

The UDSFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| sBIFQDN | M | T | T | F | T |
| sNSSAIList | CM | T | T | F | T |
| managedNFProfile | M | T | T | F | T |

#### 5.3.9.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: Network slicing feature is supported. |

#### 5.3.9.4 Notifications

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

### 5.3.10 NRFFunction

#### 5.3.10.1 Definition

This IOC represents the NRF function in 5GC. For more information about the NRF, see 3GPP TS 23.501 [2].

#### 5.3.10.2 Attributes

The NRFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| sBIFQDN | M | T | T | F | T |
| sNSSAIList | CM | T | T | F | T |
| nFProfileList | CM | T | T | F | T |
| cNSIIdList | CO | T | T | F | T |

#### 5.3.10.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: network slicing feature is supported. |
| nfProfileList S | Condition: NF profile is registered and deregistered by management system. |
| cNSIIdList S | Condition: Network slicing feature is supported and the NSI ID is configured for identifying the Core Network part of a Network Slice instance when multiple Network Slice instances of the same Network Slice are deployed, and there is a need to differentiate between them in the 5GC. |

#### 5.3.10.4 Notifications

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

### 5.3.11 NSSFFunction

#### 5.3.11.1 Definition

This IOC represents the NSSF function in 5GC. For more information about the NSSF, see 3GPP TS 23.501 [2].

#### 5.3.11.2 Attributes

The NSSFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| sBIFQDN | M | T | T | F | T |
| sNSSAIList | M | T | T | F | T |
| cNSIIdList | O | T | T | F | T |
| managedNFProfile | M | T | T | F | T |
| commModelList | M | T | T | F | T |

#### 5.3.11.3 Attribute constraints

None.

#### 5.3.11.4 Notifications

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

### 5.3.12 AFFunction

#### 5.3.12.1 Definition

This IOC is defined for only purpose to describe the IOCs representing its interaction interface with 5GC (i.e. EP\_Rx and EP\_N5). It has no any attributes defined.

### 5.3.13 DNFunction

#### 5.3.13.1 Definition

This IOC is defined for only purpose to describe the IOCs representing Data Network (DN) interaction interface with 5GC (i.e. EP\_N6). It has no any attributes defined.

### 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 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| managedNFProfile | M | T | T | F | T |
| commModelList | M | 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.

### 5.3.15 LMFFunction

#### 5.3.15.1 Definition

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

#### 5.3.15.2 Attributes

The LMFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| managedNFProfile | M | T | T | F | T |
| commModelList | M | T | T | F | T |

#### 5.3.15.3 Attribute constraints

None.

#### 5.3.15.4 Notifications

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

### 5.3.16 NGEIRFunction

#### 5.3.16.1 Definition

This IOC represents the 5G-EIR function in 5GC. For more information about the 5G-EIR, see 3GPP TS 23.501 [2].

#### 5.3.16.2 Attributes

The NGEIRFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| sNSSAIList | CM | T | T | F | T |
| managedNFProfile | M | T | T | F | T |
| commModelList | M | T | T | F | T |

#### 5.3.16.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: network slicing feature is supported. |

#### 5.3.16.4 Notifications

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

### 5.3.17 SEPPFunction

#### 5.3.17.1 Definition

This IOC represents the SEPP function which support message filtering and policing on inter-PLMN control plane interface. For more information about the SEPP, see 3GPP TS 23.501 [2].

#### 5.3.17.2 Attributes

The SEPPFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNId | M | T | F | T | T |
| sEPPType | M | T | F | T | T |
| sEPPId | M | T | F | T | T |
| fqdn | M | T | T | F | T |

#### 5.3.17.3 Attribute constraints

None.

#### 5.3.17.4 Notifications

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

### 5.3.18 NWDAFFunction

#### 5.3.18.1 Definition

This IOC represents the NWDAF function in 5GC. For more information about the NWDAF, see 3GPP TS 23.501 [2].

#### 5.3.18.2 Attributes

The NWDAFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| sBIFQDN | M | T | T | F | T |
| sNSSAIList | CM | T | T | F | T |
| managedNFProfile | M | T | T | F | T |
| commModelList | M | T | T | F | T |

#### 5.3.18.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: Network slicing feature is supported. |

#### 5.3.18.4 Notifications

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

### 5.3.19 EP\_N2

#### 5.3.19.1 Definition

This IOC represents the N2 interface between (R)AN and AMF, which is defined in 3GPP TS 23.501 [2].

#### 5.3.19.2 Attributes

The EP\_N2 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.19.3 Attribute constraints

None.

#### 5.3.19.4 Notifications

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

### 5.3.20 EP\_N3

#### 5.3.20.1 Definition

This IOC represents the N3 interface between (R)AN and UPF, which is defined in 3GPP TS 23.501 [2].

#### 5.3.20.2 Attributes

The EP\_N3 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| epTransportRef | O | T | F | F | T |

#### 5.3.20.3 Attribute constraints

None.

#### 5.3.20.4 Notifications

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

### 5.3.21 EP\_N4

#### 5.3.21.1 Definition

This IOC represents the N4 interface between SMF and UPF, which is defined in 3GPP TS 23.501 [2].

#### 5.3.21.2 Attributes

The EP\_N4 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.21.3 Attribute constraints

None.

#### 5.3.21.4 Notifications

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

### 5.3.22 EP\_N5

#### 5.3.22.1 Definition

This IOC represents the N5 interface between PCF and AF, which is defined in 3GPP TS 23.501 [2].

#### 5.3.22.2 Attributes

The EP\_N5 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.22.3 Attribute constraints

None.

#### 5.3.22.4 Notifications

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

### 5.3.23 EP\_N6

#### 5.3.23.1 Definition

This IOC represents the N6 interface between UPF and DN, which is defined in 3GPP TS 23.501 [2].

#### 5.3.23.2 Attributes

The EP\_N6 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.23.3 Attribute constraints

None.

#### 5.3.23.4 Notifications

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

### 5.3.24 EP\_N7

#### 5.3.24.1 Definition

This IOC represents the N7 interface between SMF and PCF, which is defined in 3GPP TS 23.501 [2].

#### 5.3.24.2 Attributes

The EP\_N7 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.24.3 Attribute constraints

None.

#### 5.3.24.4 Notifications

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

### 5.3.25 EP\_N8

#### 5.3.25.1 Definition

This IOC represents the N8 interface between AMF and UDM, which is defined in 3GPP TS 23.501 [2].

#### 5.3.25.2 Attributes

The EP\_N8 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.25.3 Attribute constraints

None.

#### 5.3.25.4 Notifications

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

### 5.3.26 EP\_N9

#### 5.3.26.1 Definition

This IOC represents the N7 interface between two UPFs, which is defined in 3GPP TS 23.501 [2].

#### 5.3.26.2 Attributes

The EP\_N9 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.26.3 Attribute constraints

None.

#### 5.3.26.4 Notifications

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

### 5.3.27 EP\_N10

#### 5.3.27.1 Definition

This IOC represents the N10 interface between SMF and UDM, which is defined in 3GPP TS 23.501 [2].

#### 5.3.27.2 Attributes

The EP\_N10 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.27.3 Attribute constraints

None.

#### 5.3.27.4 Notifications

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

### 5.3.28 EP\_N11

#### 5.3.28.1 Definition

This IOC represents the N11 interface between AMF and SMF, which is defined in 3GPP TS 23.501 [2].

#### 5.3.28.2 Attributes

The EP\_N11 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.28.3 Attribute constraints

None.

#### 5.3.28.4 Notifications

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

### 5.3.29 EP\_N12

#### 5.3.29.1 Definition

This IOC represents the N12 interface between AMF and AUSF, which is defined in 3GPP TS 23.501 [2].

#### 5.3.29.2 Attributes

The EP\_N12 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.29.3 Attribute constraints

None.

#### 5.3.29.4 Notifications

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

### 5.3.30 EP\_N13

#### 5.3.30.1 Definition

This IOC represents the N13 interface between AUSF and UDM, which is defined in 3GPP TS 23.501 [2].

#### 5.3.30.2 Attributes

The EP\_N13 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.30.3 Attribute constraints

None.

#### 5.3.30.4 Notifications

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

### 5.3.31 EP\_N14

#### 5.3.31.1 Definition

This IOC represents the N14 interface between two AMFs, which is defined in 3GPP TS 23.501 [2].

#### 5.3.31.2 Attributes

The EP\_N14 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.31.3 Attribute constraints

None.

#### 5.3.31.4 Notifications

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

### 5.3.32 EP\_N15

#### 5.3.32.1 Definition

This IOC represents the N15 interface between AMF and PCF, which is defined in 3GPP TS 23.501 [2].

#### 5.3.32.2 Attributes

The EP\_N15 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.32.3 Attribute constraints

None.

#### 5.3.32.4 Notifications

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

### 5.3.33 EP\_N16

#### 5.3.33.1 Definition

This IOC represents the N16 interface between two SMFs, which is defined in 3GPP TS 23.501 [2].

#### 5.3.33.2 Attributes

The EP\_N16 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.33.3 Attribute constraints

None.

#### 5.3.33.4 Notifications

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

### 5.3.34 EP\_N17

#### 5.3.34.1 Definition

This IOC represents the N17 interface between AMF and 5G-EIR, which is defined in 3GPP TS 23.501 [2].

#### 5.3.34.2 Attributes

The EP\_N17 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.34.3 Attribute constraints

None.

#### 5.3.34.4 Notifications

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

### 5.3.35 EP\_N20

#### 5.3.35.1 Definition

This IOC represents the N20 interface between AMF and SMSF, which is defined in 3GPP TS 23.501 [2].

#### 5.3.35.2 Attributes

The EP\_N20 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.35.3 Attribute constraints

None.

#### 5.3.35.4 Notifications

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

### 5.3.36 EP\_N21

#### 5.3.36.1 Definition

This IOC represents the N21 interface between SMSF and UDM, which is defined in 3GPP TS 23.501 [2].

#### 5.3.36.2 Attributes

The EP\_N21 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.36.3 Attribute constraints

None.

#### 5.3.36.4 Notifications

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

### 5.3.37 EP\_N22

#### 5.3.37.1 Definition

This IOC represents the N22 interface between AMF and NSSF, which is defined in 3GPP TS 23.501 [2].

#### 5.3.37.2 Attributes

The EP\_N22 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.37.3 Attribute constraints

None.

#### 5.3.37.4 Notifications

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

### 5.3.38 EP\_N26

#### 5.3.38.1 Definition

This IOC represents the N26 interface between AMF and MME, which is defined in 3GPP TS 23.501 [2].

#### 5.3.38.2 Attributes

The EP\_N26 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.38.3 Attribute constraints

None.

#### 5.3.38.4 Notifications

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

### 5.3.39 Void

### 5.3.40 Void

### 5.3.41 EP\_S5C

#### 5.3.41.1 Definition

This IOC represents the S5-C interface between SGW and SMF/PGW-C, which is defined in 3GPP TS 23.501 [2].

#### 5.3.41.2 Attributes

The EP\_S5C IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.41.3 Attribute constraints

None.

#### 5.3.41.4 Notifications

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

### 5.3.42 EP\_S5U

#### 5.3.42.1 Definition

This IOC represents the S5-U interface between SGW and UPF/PGW-U, which is defined in 3GPP TS 23.501 [2].

#### 5.3.42.2 Attributes

The EP\_S5U IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.42.3 Attribute constraints

None.

#### 5.3.42.4 Notifications

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

### 5.3.43 EP\_Rx

#### 5.3.43.1 Definition

This IOC represents the Rx interface between PCF and AF, which is defined in 3GPP TS 23.501 [2].

#### 5.3.43.2 Attributes

The EP\_Rx IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.43.3 Attribute constraints

None.

#### 5.3.43.4 Notifications

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

### 5.3.44 EP\_MAP\_SMSC

#### 5.3.44.1 Definition

This IOC represents the MAP interface between SMSF and MSC-IWMSC/GMSC, which is defined in 3GPP TS 23.040 [22].

#### 5.3.44.2 Attributes

The EP\_MAP\_SMSC IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.44.3 Attribute constraints

None.

#### 5.3.44.4 Notifications

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

### 5.3.45 EP\_NLS

#### 5.3.45.1 Definition

This IOC represents the NLs interface between AMF and LMF, which is defined in 3GPP TS 23.501 [2].

#### 5.3.45.2 Attributes

The EP\_NLS IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.45.3 Attribute constraints

None.

#### 5.3.45.4 Notifications

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

### 5.3.46 EP\_NLG

#### 5.3.46.1 Definition

This IOC represents the NLg interface between AMF and GMLC, which is defined in 3GPP TS 23.501 [2].

#### 5.3.46.2 Attributes

The EP\_NLG IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.46.3 Attribute constraints

None.

#### 5.3.46.4 Notifications

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

### 5.3.47 EP\_N27

#### 5.3.47.1 Definition

This IOC represents an end point of N27 interface between vNRF and hNRF, which is defined in 3GPP TS 29.510 [10].

#### 5.3.47.2 Attributes

The EP\_N27 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.47.3 Attribute constraints

None.

#### 5.3.47.4 Notifications

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

### 5.3.48 EP\_N31

#### 5.3.48.1 Definition

This IOC represents an end point of N31 interface between vNSSF and hNSSF, which is defined in 3GPP TS 29.531 [11].

#### 5.3.48.2 Attributes

The EP\_N31 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

#### 5.3.48.3 Attribute constraints

None.

#### 5.3.48.4 Notifications

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

### 5.3.49 ExternalNRFFunction

#### 5.3.49.1 Definition

This IOC represents external NRF function controlled by another management domain. For more information about the NRF, see 3GPP TS 23.501 [2].

#### 5.3.49.2 Attributes

The ExternalNRFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| id | M | T | F | F | T |
| pLMNIdList | M | T | T | F | T |

#### 5.3.49.3 Attribute constraints

None.

#### 5.3.49.4 Notifications

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

### 5.3.50 ExternalNSSFFunction

#### 5.3.50.1 Definition

This IOC represents external NSSF function controlled by another management domain. For more information about the NSSF, see 3GPP TS 23.501 [2].

#### 5.3.50.2 Attributes

The ExternalNSSFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| id | M | T | F | F | T |
| pLMNIdList | M | T | T | F | T |

#### 5.3.50.3 Attribute constraints

None.

#### 5.3.50.4 Notifications

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

### 5.3.51 AMFSet

#### 5.3.51.1 Definition

This IOC represents the AMF Set which consists of some AMFs that serve a given area and Network Slice. For more information about the AMF Set, see 3GPP TS 23.501 [2].

#### 5.3.51.2 Attributes

The AMFSet IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| nRTAClist | M | T | T | F | T |
| aMFSetId | M | T | T | F | T |
| sNSSAIList | CM | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| aMFRegionRef | M | T | T | F | T |
| aMFSetMemberList | M | T | T | F | T |

#### 5.3.51.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: Network slicing feature is supported. |

#### 5.3.51.4 Notifications

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

### 5.3.52 AMFRegion

#### 5.3.52.1 Definition

This IOC represents the AMF Region which consists one or multiple AMF Sets. For more information about the AMF Region, see 3GPP TS 23.501 [2].

#### 5.3.52.2 Attributes

The AMFRegion IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| nRTAClist | M | T | T | F | T |
| aMFRegionId | M | T | T | F | T |
| sNSSAIList | CM | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| aMFSetListRef | M | T | T | F | T |

#### 5.3.52.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: Network slicing feature is supported. |

#### 5.3.52.4 Notifications

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

### 5.3.53 ExternalAMFFunction

#### 5.3.53.1 Definition

This IOC represents an external AMF functionality used in EN-DC. For more information about the AMF, see 3GPP TS 23.501 [2].

#### 5.3.53.2 Attributes

The ExternalAMFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| Id | M | T | F | F | T |
| pLMNIdList | M | T | T | F | T |
| aMFIdentifier | M | T | T | F | T |

#### 5.3.53.3 Attribute constraints

None.

#### 5.3.53.4 Notifications

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

### 5.3.54 ManagedNFProfile <<dataType>>

#### 5.3.54.1 Definition

This data type represents a Profile definition of a Managed NF (See 3GPP TS 23.501 [22]).

#### 5.3.54.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| nfInstanceID | M | T | F | T | F |
| nfType | M | T | F | F | F |
| hostAddr | M | T | T | F | T |
| authzInfo | O | T | T | F | T |
| location | O | T | T | F | T |
| capacity | O | T | T | F | T |
| nFInfo | M | T | T | F | T |

#### 5.3.54.3 Attribute constraints

None.

#### 5.3.54.4 Notifications

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

### 5.3.55 HostAddr <<choice>>

#### 5.3.55.1 Definition

This <<choice>> stereotype represents one of a set of data types as shown in Figure 5.3.55.1-1: HostAddr <<choice>> for data types.



Figure 5.3.55.1-1: HostAddr <<choice>> for data types

NOTE: The IpAddress can be IPv4 address (See RFC 791 [24]) or IPv6 address (See RFC 2373 [25]). Refer 3GPP TS 23.003 [5] for Fqdn.

### 5.3.56 NFInfo <<choice>>

#### 5.3.56.1 Definition

This <<choice>> stereotype represents one of a set of data types as shown in Figure 5.3.56.1-1: NFInfo <<choice>> for data types.



Figure 5.3.56.1-1: NFInfo choice for data types

NOTE: The AmfInfo <<dataType>> is chosed for AFMFunction, the UdrInfo <<dataType>> is chosed for UDRFunction, the UdmInfo <<dataType>> is chosed for UDMFunction, the AusfInfo<<dataType>> is chosed for AUSFFunction, the UpfInfo <<dataType>> is chosed for UPFFunction

### 5.3.57 UdmInfo <<dataType>>

#### 5.3.57.1 Definition

This data type represents a generic NFProfile definition (See 3GPP TS 23.501 [22]).

#### 5.3.57.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| nFSrvGroupId | M | T | F | F | F |

#### 5.3.57.3 Attribute constraints

None

#### 5.3.57.4 Notifications

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

### 5.3.58 AusfInfo <<dataType>>

#### 5.3.58.1 Definition

This data type represents a generic NFProfile definition (See 3GPP TS 23.501 [22]).

#### 5.3.58.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| nFSrvGroupId | M | T | F | T | F |

#### 5.3.58.3 Attribute constraints

None.

#### 5.3.58.4 Notifications

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

### 5.3.59 UpfInfo <<dataType>>

#### 5.3.59.1 Definition

This data type represents a generic NFProfile definition (See 3GPP TS 23.501 [22]).

#### 5.3.59.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| smfServingAreas | O | T | T | F | T |

#### 5.3.59.3 Attribute constraints

None.

#### 5.3.59.4 Notifications

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

### 5.3.60 AmfInfo <<dataType>>

#### 5.3.60.1 Definition

This data type represents AMF specific data in NFProfile definition (See 3GPP TS 23.501 [22]).

#### 5.3.60.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| priority | O | T | T | F | T |

#### 5.3.60.3 Attribute constraints

None.

#### 5.3.60.4 Notifications

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

### 5.3.61 Udrinfo <<dataType>>

#### 5.3.61.1 Definition

This data type represents UDR specific data in NFProfile definition (See 3GPP TS 23.501 [22]).

#### 5.3.61.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| supportedDataSetIds | O | T | T | F | T |
| nFSrvGroupId | O | T | T | F | T |

#### 5.3.61.3 Attribute constraints

None.

#### 5.3.61.4 Notifications

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

### 5.3.62 EP\_N32

#### 5.3.62.1 Definition

This IOC represents an end point of N32 interface between cSEPP and pSEPP, which is defined in 3GPP TS 23.501 [2] and 33.501 [52].

#### 5.3.62.2 Attributes

The EP\_N32 IOC includes attributes inherited from EP\_RP IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| remotePlmnId | M | T | T | F | T |
| remoteSeppAddress | M | T | T | F | T |
| remoteSeppId | O | T | T | F | T |
| n32cParas | O | T | T | F | T |
| n32fPolicy | O | T | T | F | T |
| withIPX | M | T | T | F | T |

#### 5.3.62.3 Attribute constraints

None.

#### 5.3.62.4 Notifications

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

### 5.3.63 ExternalSEPPFunction

#### 5.3.63.1 Definition

This IOC represents the properties, known by the management function, of a SEPP managed by another management function. For more information about SEPPFunction, see subclause 5.3.17.

#### 5.3.63.2 Attributes

The ExternalSEPPFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNId | M | T | F | F | T |
| sEPPId | M | T | F | T | T |
| fqdn | M | T | F | F | T |

#### 5.3.63.3 Attribute constraints

None.

#### 5.3.63.4 Notifications

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

### 5.3.64 SEPPFunction <<ProxyClass>>

#### 5.3.64.1 Definition

This IOC represents an <<IOC>>SEPPFunction and <<IOC>>ExternalSEPPFunction.

#### 5.3.64.2 Attributes

See that defined in <<IOC>>SEPPFunction and <<IOC>>ExternalSEPPFunction.

#### 5.3.64.3 Attribute constraints

See respective IOCs.

#### 5.3.64.4 Notifications

See respective IOCs.

### 5.3.65 NEFFunction

#### 5.3.65.1 Definition

This IOC represents the NEF function in 5GC. For more information about the NEF, see 3GPP TS 23.501 [2].

#### 5.3.65.2 Attributes

The NEFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| sBIFQDN | M | T | T | F | T |
| sNSSAIList | CM | T | T | F | T |
| managedNFProfile | M | T | T | F | T |
| capabilityList | M | T | T | F | T |
| isCAPIFSup | M | T | F | T | F |

#### 5.3.65.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sNSSAIList S | Condition: Network slicing feature is supported. |

#### 5.3.65.4 Notifications

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

### 5.3.66 SCPFunction

#### 5.3.67.1 Definition

This IOC represents a Service Communication Proxy, which is defined in 3GPP TS 23.501 [2].

#### 5.3.67.2 Attributes

The SCPFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| supportedFuncList | M | T | T | F | T |
| address | M | T | T | F | T |

#### 5.3.67.3 Attribute constraints

None.

#### 5.3.67.4 Notifications

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

### 5.3.68 SupportedFunction <<dataType>>

#### 5.3.68.1 Definition

This dataType represents a functionality supported by a SCP, which is defined in 3GPP TS 23.501 [2].

#### 5.3.68.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| function | M | T | T | F | T |
| policy | O | T | T | F | T |

#### 5.3.68.3 Attribute constraints

None.

#### 5.3.68.4 Notifications

The subclause 5.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 5.3.69 CommModel <<dataType>>

#### 5.3.69.1 Definition

This data type represents a communication model definition (See 3GPP TS 23.501 [22]).

#### 5.3.69.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| groupId | M | T | T | F | T |
| commModelType | M | T | T | F | T |
| targetNFServiceList | M | T | T | F | T |
| commModelConfiguration | M | T | T | F | T |

#### 5.3.69.3 Attribute constraints

None

#### 5.3.69.4 Notifications

The subclause 5.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 5.3.70 QFQoSMonitoringControl

#### 5.3.70.1 Definition

This IOC specifies the capabilities and properties for control of QoS monitoring per QoS flow per UE for URLLC service. For more information about QoS monitoring per QoS flow per UE, see 3GPP TS 23.501 [2].

If the QoS monitoring per QoS flow per UE is enabled, the SMF requests the PSA UPF to perform the QoS monitoring per QoS flow per UE based on the attributes of the instance of this IOC.

#### 5.3.70.2 Attributes

The QFQoSMonitoringControl IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| qFQoSMonitoringState | M | T | T | F | T |
| qFMonitoredSNSSAIs | M | T | T | F | T |
| qFMonitored5QIs | M | T | T | F | T |
| isEventTriggeredQFMonitoringSupported | M | T | F | F | T |
| isPeriodicQFMonitoringSupported | M | T | F | F | T |
| isSessionReleasedQFMonitoringSupported | M | T | F | F | T |
| qFPacketDelayThresholds | CM | T | T | F | T |
| qFMinimumWaitTime | CM | T | T | F | T |
| qFMeasurementPeriod | CM | T | T | F | T |

#### 5.3.70.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| qFPacketDelayThresholds S | Condition: isEventTriggeredQFMonitoringSupported attribute of the same MOI is set to "Yes". |
| qFMinimumWaitTime S | Condition: isEventTriggeredQFMonitoringSupported attribute of the same MOI is set to "Yes". |
| qFMeasurementPeriod S | Condition: isPeriodicQFMonitoringSupported attribute of the same MOI is set to "Yes". |

#### 5.3.70.4 Notifications

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

### 5.3.71 QFDelayThresholdsType <<dataType>>

#### 5.3.71.1 Definition

This data type specifies the thresholds for reporting the packet delay for QoS monitoring per QoS flow per UE, see 3GPP TS 29.244 [56].

#### 5.3.71.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| thresholdDl | M | T | T | F | T |
| thresholdUl | M | T | T | F | T |
| thresholdRtt | M | T | T | F | T |

#### 5.3.71.3 Attribute constraints

None

#### 5.3.71.4 Notifications

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

### 5.3.72 GtpUPathQoSMonitoringControl

#### 5.3.72.1 Definition

This IOC specifies the capabilities and properties for control of GTP-U path QoS monitoring. For more information about the GTP-U path QoS monitoring, see 3GPP TS 23.501 [2].

If the GTP-U path QoS monitoring is enabled, the SMF requests the UPF(s) and NG-RAN to perform the GTP-U path QoS monitoring based on the attributes of the instance of this IOC.

#### 5.3.72.2 Attributes

The GtpUPathQoSMonitoringControl IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| gtpUPathQoSMonitoringState | M | T | T | F | T |
| gtpUPathMonitoredSNSSAIs | M | T | T | F | T |
| monitoredDSCPs | M | T | T | F | T |
| isEventTriggeredGtpUPathMonitoringSupported | M | T | F | F | T |
| isPeriodicGtpUMonitoringSupported | M | T | F | F | T |
| isImmediateGtpUMonitoringSupported | M | T | F | F | T |
| gtpUPathDelayThresholds | CM | T | T | F | T |
| gtpUPathMinimumWaitTime | CM | T | T | F | T |
| gtpUPathMeasurementPeriod | CM | T | T | F | T |

#### 5.3.72.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| gtpUPathDelayThresholds S | Condition: isEventTriggeredGtpUPathMonitoringSupported attribute of the same MOI is set to "Yes". |
| gtpUPathMinimumWaitTime S | Condition: isEventTriggeredGtpUPathMonitoringSupported attribute of the same MOI is set to "Yes". |
| gtpUPathMeasurementPeriod S | Condition: isPeriodicGtpUMonitoringSupported attribute of the same MOI is set to "Yes". |

#### 5.3.72.4 Notifications

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

### 5.3.73 GtpUPathDelayThresholdsType <<dataType>>

#### 5.3.73.1 Definition

This data type specifies the thresholds for reporting the packet delay for GTP-U path QoS monitoring, see 3GPP TS 29.244 [56].

#### 5.3.73.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| n3AveragePacketDelayThreshold | M | T | T | F | T |
| n3MinPacketDelayThreshold | M | T | T | F | T |
| n3MaxPacketDelayThreshold | M | T | T | F | T |
| n9AveragePacketDelayThreshold | M | T | T | F | T |
| n9MinPacketDelayThreshold | M | T | T | F | T |
| n9MaxPacketDelayThreshold | M | T | T | F | T |

#### 5.3.73.3 Attribute constraints

None.

#### 5.3.73.4 Notifications

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

### 5.3.75 Configurable5QISet

#### 5.3.75.1 Definition

This IOC specifies the pre-configured 5QIs including their QoS characteristics, see 3GPP TS 23.501 [2].

#### 5.3.75.2 Attributes

The Configurable5QISet IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

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

#### 5.3.75.3 Attribute constraints

None.

#### 5.3.75.4 Notifications

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

### 5.3.76 FiveQICharacteristics <<dataType>>

#### 5.3.76.1 Definition

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

#### 5.3.76.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| fiveQIValue | M | T | T/F (NOTE ) | F | T |
| resourceType | M | T | T/F (NOTE ) | F | T |
| priorityLevel | O | T | T/F (NOTE ) | F | T |
| packetDelayBudget | O | T | T/F (NOTE ) | F | T |
| packetErrorRate | O | T | T/F (NOTE ) | F | T |
| averagingWindow | O | T | T/F (NOTE ) | F | T |
| maximumDataBurstVolume | O | T | T/F (NOTE ) | F | T |
| NOTE: The isWritable qualifier is "T" if the attribute 1) describes a 5QI in Configurable5QISet MOI, or 2) describes a 5QI in Dynamic5QISet MOI which is associated to PCFFunction MOI or SMFFunction MOI when the PCF is not deployed; The isWritable qualifier is "F" otherwise. | | | | | |

#### 5.3.76.3 Attribute constraints

None.

#### 5.3.76.4 Notifications

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

### 5.3.77 PacketErrorRate <<dataType>>

#### 5.3.77.1 Definition

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

#### 5.3.77.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| scalar | M | T | T/F (NOTE) | F | T |
| exponent | M | T | T/F (NOTE) | F | T |
| NOTE: The isWritable qualifier is "T" if the attribute 1) describes a 5QI in Configurable5QISet MOI, or 2) describes a 5QI in Dynamic5QISet MOI which is associated to PCFFunction MOI or SMFFunction MOI when the PCF is not deployed; The isWritable qualifier is "F" otherwise. | | | | | |

#### 5.3.77.3 Attribute constraints

None

#### 5.3.77.4 Notifications

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

### 5.3.78 FiveQiDscpMappingSet

#### 5.3.78.1 Definition

This IOC specifies the set of mapping between 5QIs and DSCP.

#### 5.3.78.2 Attributes

The FiveQiDscpMappingSet IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| fiveQiDscpMappingList | M | T | T | F | T |

#### 5.3.78.3 Attribute constraints

None.

#### 5.3.78.4 Notifications

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

### 5.3.79 FiveQiDscpMapping <<dataType>>

#### 5.3.79.1 Definition

This data type specifies the mapping between 5QIs to DSCP.

#### 5.3.79.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| fiveQIValues | M | T | T | F | T |
| dscp | M | T | T | F | T |

#### 5.3.79.3 Attribute constraints

None

#### 5.3.79.4 Notifications

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

### 5.3.80 PredefinedPccRuleSet

#### 5.3.80.1 Definition

This IOC specifies the predefined PCC rules, which are configured to SMF and referenced by PCF, see 3GPP TS 23.503 [59].

#### 5.3.80.2 Attributes

The PredefinedPccRuleSet IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| predefinedPccRules | M | T | T | F | T |

#### 5.3.80.3 Attribute constraints

None.

#### 5.3.80.4 Notifications

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

### 5.3.81 PccRule <<dataType>>

#### 5.3.81.1 Definition

This data type specifies the PCC rule, see 3GPP TS 29.512 [60].

#### 5.3.81.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pccRuleId | M | T | T | F | T |
| flowInfoList | CM | T | T | F | T |
| applicationId | CM | T | T | F | T |
| appDescriptor | O | T | T | F | T |
| contentVersion | O | T | T | F | T |
| precedence | CM | T | T | F | T |
| afSigProtocol | O | T | T | F | T |
| isAppRelocatable | O | T | T | F | T |
| isUeAddrPreserved | O | T | T | F | T |
| qosData | M | T | T | F | T |
| altQosParams | O | T | T | F | T |
| trafficControlData | M | T | T | F | T |
| conditionData | O | T | T | F | T |
| tscaiInputUl | O | T | T | F | T |
| tscaiInputDl | O | T | T | F | T |

#### 5.3.81.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| flowInfoList S | Condition: The applicationId is not supported. |
| applicationId S | Condition: The flowInfoList is not supported. |
| precedence S | Condition: The flowInfoList is provided. |

#### 5.3.81.4 Notifications

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

### 5.3.82 FlowInformation <<dataType>>

#### 5.3.82.1 Definition

This data type specifies the flow information of a PCC rule.

#### 5.3.82.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| flowDescription | M | T | T | F | T |
| ethFlowDescription | M | T | T | F | T |
| packFiltId | M | T | T | F | T |
| packetFilterUsage | M | T | T | F | T |
| tosTrafficClass | M | T | T | F | T |
| spi | M | T | T | F | T |
| flowLabel | O | T | T | F | T |
| flowDirection | M | T | T | F | T |

#### 5.3.82.3 Attribute constraints

None.

#### 5.3.82.4 Notifications

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

### 5.3.83 EthFlowDescription <<dataType>>

#### 5.3.83.1 Definition

This data type describes an Ethernet flow.

#### 5.3.83.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| destMacAddr | M | T | T | F | T |
| ethType | M | T | T | F | T |
| fDesc | CM | T | T | F | T |
| fDir | M | T | T | F | T |
| sourceMacAddr | M | T | T | F | T |
| vlanTags | M | T | T | F | T |
| srcMacAddrEnd | O | T | T | F | T |
| destMacAddrEnd | O | T | T | F | T |

#### 5.3.83.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| fDesc S | Condition: The ethType is IP. |

#### 5.3.83.4 Notifications

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

### 5.3.84 QoSData <<dataType>>

#### 5.3.84.1 Definition

This data type specifies the QoS control policy data for a service flow of a PCC rule.

#### 5.3.84.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| qosId | M | T | T | F | T |
| fiveQIValue | M | T | T | F | T |
| maxbrUl | O | T | T | F | T |
| maxbrDl | O | T | T | F | T |
| gbrUl | O | T | T | F | T |
| gbrDl | O | T | T | F | T |
| arp | M | T | T | F | T |
| qosNotificationControl | O | T | T | F | T |
| reflectiveQos | O | T | T | F | T |
| sharingKeyDl | O | T | T | F | T |
| sharingKeyUl | O | T | T | F | T |
| maxPacketLossRateDl | O | T | T | F | T |
| maxPacketLossRateUl | O | T | T | F | T |
| extMaxDataBurstVol | O | T | T | F | T |

#### 5.3.84.3 Attribute constraints

None.

#### 5.3.84.4 Notifications

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

### 5.3.85 ARP <<dataType>>

#### 5.3.85.1 Definition

This data type specifies the allocation and retention priority of a QoS control policy.

#### 5.3.85.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| priorityLevel | M | T | T | F | T |
| preemptCap | M | T | T | F | T |
| preemptVuln | M | T | T | F | T |

#### 5.3.85.3 Attribute constraints

None

#### 5.3.85.4 Notifications

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

### 5.3.86 TrafficControlData <<dataType>>

#### 5.3.86.1 Definition

This data type specifies the traffic control data for a service flow of a PCC rule.

#### 5.3.86.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| tcId | M | T | T | F | T |
| flowStatus | M | T | T | F | T |
| redirectInfo | O | T | T | F | T |
| addRedirectInfo | O | T | T | F | T |
| muteNotif | O | T | T | F | T |
| trafficSteeringPolIdDl | O | T | T | F | T |
| trafficSteeringPolIdUl | O | T | T | F | T |
| routeToLocs | M | T | T | F | T |
| traffCorreInd | O | T | T | F | T |
| upPathChgEvent | O | T | T | F | T |
| steerFun | O | T | T | F | T |
| steerModeDl | O | T | T | F | T |
| steerModeUl | O | T | T | F | T |
| mulAccCtrl | O | T | T | F | T |

#### 5.3.86.3 Attribute constraints

None

#### 5.3.86.4 Notifications

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

### 5.3.87 RedirectInformation <<dataType>>

#### 5.3.87.1 Definition

This data type specifies the redirect information for traffic control in the PCC rule.

#### 5.3.87.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| redirectEnabled | M | T | T | F | T |
| redirectAddressType | M | T | T | F | T |
| redirectServerAddress | M | T | T | F | T |

#### 5.3.87.3 Attribute constraints

None

#### 5.3.87.4 Notifications

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

### 5.3.88 RouteToLocation <<dataType>>

#### 5.3.88.1 Definition

This data type specifies a list of location which the traffic shall be routed to for the AF request.

#### 5.3.88.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| dnai | M | T | T | F | T |
| routeInfo | CM | T | T | F | T |
| routeProfId | CM | T | T | F | T |

#### 5.3.88.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| routeInfo S | Condition: The routeProfId is not supported. |
| routeProfId S | Condition: The routeInfo is not supported. |

#### 5.3.88.4 Notifications

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

### 5.3.89 RouteInformation <<dataType>>

#### 5.3.89.1 Definition

This data type specifies the traffic routing information.

#### 5.3.89.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| ipv4Addr | CM | T | T | F | T |
| ipv6Addr | CM | T | T | F | T |
| portNumber | M | T | T | F | T |

#### 5.3.89.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| ipv4Addr S | Condition: The ipv6Addr is not supported. |
| ipv6Addr S | Condition: The ipv4Addr is not supported. |

#### 5.3.89.4 Notifications

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

### 5.3.90 UpPathChgEvent <<dataType>>

#### 5.3.90.1 Definition

This data type specifies the information about the AF subscriptions of the UP path change, see 3GPP TS 29.512 [60].

#### 5.3.90.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| notificationUri | M | T | T | F | T |
| notifCorreId | M | T | T | F | T |
| dnaiChgType | M | T | T | F | T |
| afAckInd | O | T | T | F | T |

#### 5.3.90.3 Attribute constraints

None

#### 5.3.90.4 Notifications

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

### 5.3.91 SteeringMode <<dataType>>

#### 5.3.91.1 Definition

This data type specifies the traffic distribution rule, see 3GPP TS 29.512 [60].

#### 5.3.91.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| steerModeValue | M | T | T | F | T |
| active | CM | T | T | F | T |
| standby | O | T | T | F | T |
| threeGLoad | CM | T | T | F | T |
| prioAcc | CM | T | T | F | T |

#### 5.3.91.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| active S | Condition: The steerModeValue supports "ACTIVE\_STANDBY". |
| threeGLoad S | Condition: The steerModeValue supports "LOAD\_BALANCING". |
| prioAcc S | Condition: The steerModeValue supports "PRIORITY\_BASED". |

#### 5.3.91.4 Notifications

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

### 5.3.92 ConditionData <<dataType>>

#### 5.3.92.1 Definition

This data type specifies the condition data for a PCC rule.

#### 5.3.92.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| condId | M | T | T | F | T |
| activationTime | O | T | T | F | T |
| deactivationTime | O | T | T | F | T |
| accessType | O | T | T | F | T |
| ratType | O | T | T | F | T |

#### 5.3.92.3 Attribute constraints

None

#### 5.3.92.4 Notifications

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

### 5.3.93 TscaiInputContainer <<dataType>>

#### 5.3.93.1 Definition

This data type specifies the transports TSCAI input parameters for TSC traffic at the ingress interface of the DS-TT/UE for a PCC rule, see 3GPP TS 29.512 [60].

#### 5.3.93.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| periodicity | O | T | T | F | T |
| burstArrivalTime | O | T | T | F | T |

#### 5.3.93.3 Attribute constraints

None

#### 5.3.93.4 Notifications

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

### 5.3.94 Dynamic5QISet

#### 5.3.94.1 Definition

This IOC specifies the dynamically assigned 5QIs including their QoS characteristics, see 3GPP TS 23.501 [2]. The instance of this IOC shall not be created or modified by the MnS consumer except the instance is associated to PCFFunction MOI or SMFFunction MOI when the PCF is not deployed.

#### 5.3.94.2 Attributes

The Dynamic5QISet IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| dynamic5QIs | M | T | T/F (NOTE) | F | T |
| NOTE: The isWritable qualifier is "T" if the Dynamic5QISet MOI is associated to PCFFunction MOI or SMFFunction MOI when the PCF is not deployed; The isWritable qualifier is "F" otherwise. | | | | | |

#### 5.3.94.3 Attribute constraints

None.

#### 5.3.94.4 Notifications

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

## 5.4 Attribute definitions

### 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 |
| aMFSet.aMFRegionRef | It is the DN of AMFRegion instance of the AMFSet. This holds a DN of AMFRegion instance for which the AMFSet instance belongs to.  allowedValues: N/A | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| aMFSetMemberList | It is the list of DNs of AMFFunction instances of the AMFSet.  allowedValues: N/A | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  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 |
| aMFSetRef | This is the DN of AMFSet.  allowedValues: N/A | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| aMFRegion.aMFSetListRef | This holds a list of DN of AMFSet instances in the same AMFRegion instance.  allowedValues: N/A | type: DN  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: True |
| 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: True  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 IETF RFC 791 [37]) or an IPv6 address (See IETF 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: False  isUnique: True  defaultValue: None  allowedValues: N/A  isNullable: False |
| cNSIIdList | It is a set of NSI ID. NSI ID is an identifier for identifying the Core Network part of a Network Slice instance when multiple Network Slice instances of the same Network Slice are deployed, and there is a need to differentiate between them in the 5GC. See NSI ID definition in clause 3.1 of 3GPP TS 23.501 [2] and subclause 6.1.6.2.7 of 3GPP TS 29.531 [24]. | type: String  multiplicity: \*  isOrdered: False  isUnique: True  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: False  isUnique: True  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 3GPP TS 38.413 [5]. | type: Integer  multiplicity: 1..\*  isOrdered: False  isUnique: True  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: False  isUnique: True  defaultValue: None  allowedValues: N/A  isNullable: False |
| managedNFProfile | This parameter defines profile for managed NF (See 3GPP 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: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| nfType | This parameter defines type of Network Function  allowedValues: See 3GPP TS 23.501[22] for NF types | type: ENUM  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| fqdn | This parameter defines FQDN of the Network Function (See 3GPP TS 23.003 [5])  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ipAddress | This parameter defines IP Address of the Network Function. It can be IPv4 address (See IETF RFC 791 [37]) or IPv6 address (See IETF RFC 2373 [38]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  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 3GPP TS 23.501 [22]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  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 3GPP TS 29.510 [23]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  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 3GPP 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 3GPP 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 3GPP TS 29.510 [23]).  allowedValues: "SUBSCRIPTION", "POLICY", EXPOSURE", "APPLICATION" | type: ENUM  multiplicity: 1..\*  isOrdered: False  isUnique: False  defaultValue: None  isNullable: False |
| nFSrvGroupId | This parameter defines identity of the group that is served by the NF instance (See 3GPP TS 29.510 [23]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| smfServingAreas | This parameter defines the SMF service area(s) the UPF can serve (See 3GPP TS 29.510 [23]).  allowedValues: N/A | type: String  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| isESCoveredBy | This indicates whether the adjacentCell provides no, partial or full coverage for the cell which name-contains the NRCellRelation instance.  Adjacent cells with this attribute equal to "FULL" are recommended to be considered as candidate cells to take over the coverage when the original cell state is about to be changed to energySaving.  All adjacent cells with this attribute value equal to "PARTIAL" are recommended to be considered as entirety of candidate cells to take over the coverage when the original cell state is about to be changed to energySaving.  allowedValues: NO, PARTIAL, FULL | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| commModelList | The attribute specifies a list of commModel which is defined as a datatype (see clause 5.3.69). It can be used by NF and NF services to interact with each other in 5G Core network (see 3GPP TS 23.501 [2]).  allowedValues: Not applicable | type: commModel  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: N/A  defaultValue: None  isNullable: False |
| commModelType | This parameter defines communication model used by a NF to interact with NF service(s) (See 3GPP 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: False  isUnique: True  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 3GPP TS 23.501 [2]. | type: SupportedFunction  multiplicity: 1..\*  isOrdered: False  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 [37]) or IPv6 address (See IETF RFC 2373 [38])) or FQDN (See 3GPP 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: N/A  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 3GPP TS 23.501 [2].  allowedValues: N/A | type: String  multiplicity: 1..\*  isOrdered: False  isUnique: False  defaultValue: None  isNullable: False |
| isCAPIFSup | This parameter defines if the NEF support Common API Framework.  allowedValues: TRUE, FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| sEPPType | This parameter defines the type of a SEPP entity. Refer to 3GPP TS 33.501 [52].  allowedValues: "CSEPP", "PSEPP" | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  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 IETF RFC 791 [37]) or IPv6 address (See RFC 2373 [38])) or FQDN(See 3GPP TS 23.003 [5]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  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: N/A  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: N/A  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 |
| FiveQiDscpMappingList | It provides the list of mapping between 5QIs and DSCP.  allowedValues: N/A | type: FiveQiDscpMapping  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| fiveQIValues | It indicates a list of 5QI value.  allowedValues: 0 - 255 | type: Integer  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| dscp | It indicates a DSCP.  allowedValues: 0 - 255 | type: Integer  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: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| configurable5QIs | It indicates the pre-configured 5QIs, including their QoS characteristics.  allowedValues: N/A | type: FiveQICharacteristics  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| dynamic5QISetRef | This is the DN of Dynamic5QISet MOI.  allowedValues: DN of the Dynamic5QISet MOI. | type: String  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| dynamic5QIs | It indicates the dynamically assigned 5QIs, including their QoS characteristics.  allowedValues: N/A | type: FiveQICharacteristics  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| fiveQIValue | It identifies the 5QI value.  allowedValues: 0 - 255 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| resourceType | It indicates the Resource Type of a 5QI, as specified in 3GPP TS 23.501 [2].  allowedValues: "GBR", "Non-GBR" | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| priorityLevel | It indicates the Priority Level of a 5QI, as specified in 3GPP TS 23.501 [2].  allowedValues: 0 - 127 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| packetDelayBudget | It indicates the Packet Delay Budget (in unit of 0.5ms) of a 5QI, as specified in 3GPP TS 23.501 [2].  allowedValues: 0 - 1023 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| packetErrorRate | It indicates the Packet Error Rate of a 5QI, as specified in 3GPP TS 23.501 [2].  allowedValues: N/A | type: PacketErrorRate  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| averagingWindow | It indicates the Averaging Window (in unit of ms) of a 5QI, as specified in 3GPP 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 3GPP TS 23.501 [2].  allowedValues: 0 - 4095 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  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: N/A  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 |
| gtpUPathQoSMonitoringState | It indicates the state of GTP-U path QoS monitoring for URLLC service.  allowedValues: "Enabled", "Disabled". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Enabled  isNullable: False |
| gtpUPathMonitoredSNSSAIs | It specifies the S-NSSAIs for which the GTP-U path QoS monitoring is to be performed.  allowedValues: See 3GPP TS 23.003 [13] | type: S-NSSAI  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| monitoredDSCPs | It specifies the DSCPs for which the GTP-U path QoS monitoring is to be performed.  allowedValues: See 3GPP TS 29.244 [56] | type: Integer  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| isEventTriggeredGtpUPathMonitoringSupported | It indicates whether the event triggered GTP-U path QoS monitoring reporting based on thresholds is supported, see 3GPP TS 29.244 [56].  allowedValues: "Yes", "No". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Yes  isNullable: False |
| isPeriodicGtpUMonitoringSupported | It indicates whether the periodic GTP-U path QoS monitoring reporting is supported, see 3GPP TS 29.244 [56].  allowedValues: "Yes", "No". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Yes  isNullable: False |
| isImmediateGtpUMonitoringSupported | It indicates whether the immediate GTP-U path QoS monitoring reporting is supported, see 3GPP TS 29.244 [56].  allowedValues: "Yes", "No". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Yes  isNullable: False |
| gtpUPathDelayThresholds | It specifies the thresholds for reporting the packet delay for the GTO-U path QoS monitoring, if the isEventTriggeredGtpUPathMonitoringSupported attribute of the same MOI is set to "yes".  The packet delay will be reported to SMF when it exceeds the threshold (in milliseconds).  allowedValues: N/A. | type: GtpUPathDelayThresholdsType  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| gtpUPathMinimumWaitTime | It specifies the minimum waiting time (in seconds) between two consecutive reports for event triggered GTP-U path QoS monitoring reporting, if the isEventTriggeredGtpUPathMonitoringSupported attribute of the same MOI is set to "yes".  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| gtpUPathMeasurementPeriod | It specifies the period (in seconds) for reporting the packet delay for GTP-U path QoS monitoring, if the isPeriodicGtpUMonitoringSupported attribute of the same MOI is set to "yes".  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| n3AveragePacketDelayThreshold | It specifies the threshold for reporting the average packet delay of a GTP-U path on N3 interface.  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| n3MinPacketDelayThreshold | It specifies the threshold for reporting the minimum packet delay of a GTP-U path on N3 interface.  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| n3MaxPacketDelayThreshold | It specifies the threshold for reporting the maxinum packet delay of a GTP-U path on N3 interface.  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| n9AveragePacketDelayThreshold | It specifies the threshold for reporting the average packet delay of a GTP-U path on N9 interface.  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| n9MinPacketDelayThreshold | It specifies the threshold for reporting the minimum packet delay of a GTP-U path on N9 interface.  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| n9MaxPacketDelayThreshold | It specifies the threshold for reporting the maxinum packet delay of a GTP-U path on N9 interface.  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| qFQoSMonitoringState | It indicates the state of QoS monitoring per QoS flow per UE for URLLC service.  allowedValues: "Enabled", "Disabled". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Enabled  isNullable: False |
| qFMonitoredSNSSAIs | It specifies the S-NSSAIs for which the QoS monitoring per QoS flow per UE is to be performed.  allowedValues: See 3GPP TS 23.003 [13] | type: S-NSSAI  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| qFMonitored5QIs | It specifies the 5QIs for which the QoS monitoring per QoS flow per UE is to be performed.  allowedValues: See 3GPP TS 23.501[2] | type: Integer  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| isEventTriggeredQFMonitoringSupported | It indicates whether the event based QoS monitoring reporting per QoS flow per UE is supported, see 3GPP TS 29.244 [56].  allowedValues: "Yes", "No". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Yes  isNullable: False |
| isPeriodicQFMonitoringSupported | It indicates whether the periodic QoS monitoring reporting per QoS flow per UE is supported, see 3GPP TS 29.244 [56].  allowedValues: "Yes", "No". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Yes  isNullable: False |
| isSessionReleasedQFMonitoringSupported | It indicates whether the session release based QoS monitoring reporting per QoS flow per UE is supported, see 3GPP TS 29.244 [56].  allowedValues: "Yes", "No". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Yes  isNullable: False |
| qFPacketDelayThresholds | It specifies the thresholds for reporting the packet delay between PSA and UE for QoS monitoring per QoS flow per UE, if the isEventTriggeredQFMonitoringSupported attribute of the same MOI is set to "yes".".  The packet delay will be reported by PSA UPF to SMF when it exceeds the threshold (in milliseconds).  allowedValues: see 3GPP TS 29.244 [56]. | type: QFPacketDelayThresholdsType  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| qFMinimumWaitTime | It specifies the minimum waiting time (in seconds) between two consecutive reports for event triggered QoS monitoring reporting per QoS flow per UE, if the isEventTriggeredQFMonitoringSupported attribute of the same MOI is set to "yes".  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| qFMeasurementPeriod | It specifies the period (in seconds) for reporting the packet delay for QoS monitoring per QoS flow per UE, if the isPeriodicQFMonitoringSupported attribute of the same MOI is set to "yes".  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| thresholdDl | It specifies the threshold for reporting the DL packet delay between PSA UPF and UE.  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| thresholdUl | It specifies the threshold for reporting the UL packet delay between PSA UPF and UE.  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| thresholdRtt | It specifies the threshold for reporting the round-trip packet delay between PSA UPF and UE.  allowedValues: see 3GPP TS 29.244 [56]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| predefinedPccRules | It specifies the predefined PCC Rules, see 3GPP TS 25.503 [59].  allowedValues: N/A | type: PccRule  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| pccRuleId | It identifies the PCC rule.  allowedValues: N/A | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| flowInfoList | It is a list of IP flow packet filter information.  allowedValues: N/A | type: FlowInformation  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| applicationId | A reference to the application detection filter configured at the UPF.  allowedValues: N/A | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| appDescriptor | It is the ATSSS rule application descriptor.  allowedValues: see 3GPP TS 29.571 [61]. | type: BitString  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| contentVersion | Indicates the content version of the PCC rule.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| precedence | It indicates the order in which this PCC rule is applied relative to other PCC rules within the same PDU session.  allowedValues: 0..255. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| afSigProtocol | Indicates the protocol used for signalling between the UE and the AF. The default value is "NO\_INFORMATION".  allowedValues: "NO\_INFORMATION", "SIP". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: "NO\_INFORMATION"  isNullable: False |
| isAppRelocatable | It indicates the application relocation possibility. The default value is "FALSE.  allowedValues: "TRUE", "FALSE". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| isUeAddrPreserved | It Indicates whether UE IP address should be preserved.  The default value is "FALSE".  allowedValues: "TRUE", "FALSE". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: "FALSE"  isNullable: False |
| qosData | It contains the QoS control policy data for a PCC rule.  allowedValues: N/A | type: QoSData  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| altQosParams | It contains the QoS control policy data for the Alternative QoS parameter sets of the service data flow. Only the "qosId" attribute, "5qi" attribute, "maxbrUl" attribute, "maxbrDl" attribute, "gbrUl" attribute and "gbrDl" attribute are applicable within the QosData data type. This data type represents an ordered list, where the lower the index of the array for a given entry, the higher the priority.  allowedValues: N/A | type: QoSData  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| trafficControlData | It contains the traffic control policy data for a PCC rule.  allowedValues: N/A | type: TrafficControlData  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| conditionData | It contains the condition data for a PCC rule.  allowedValues: N/A | type: ConditionData  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| tscaiInputUl | It contains transports TSCAI input parameters for TSC traffic at the ingress interface of the DS-TT/UE (uplink flow direction).  allowedValues: N/A | type: TscaiInputContainer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| tscaiInputDl | It contains transports TSCAI input parameters for TSC traffic at the ingress of the NW-TT (downlink flow direction).  allowedValues: N/A | type: TscaiInputContainer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| flowDescription | It defines a packet filter for an IP flow.  allowedValues: see 3GPP TS 29.214 [62]. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ethFlowDescription | It defines a packet filter for an Ethernet flow.  allowedValues: see 3GPP TS 29.514 [62]. | type: EthFlowDescription  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| destMacAddr | It specifies the destination MAC address formatted in the hexadecimal notation according to clause 1.1 and clause 2.1 of IETF RFC 7042 [63].  Pattern: '^([0-9a-fA-F]{2})((-[0-9a-fA-F]{2}){5})$'.  allowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ethType | A two-octet string that represents the Ethertype, as described in IEEE 802.3 [64] and IETF RFC 7042 [63] in hexadecimal representation.  Each character in the string shall take a value of "0" to "9" or "A" to "F" and shall represent 4 bits. The most significant character representing the 4 most significant bits of the ethType shall appear first in the string, and the character representing the 4 least significant bits of the ethType shall appear last in the string.  allowedValues: see IEEE 802.3 [64] and IETF RFC 7042 [63]. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| fDesc | It contains the flow description for the Uplink or Downlink IP flow. It shall be present when the ethtype is IP.  allowedValues: see flowDescription in 3GPP TS 29.214 [62]. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| fDir | It indicates the packet filter direction.  allowedValues: "DOWNLINK", "UPLINK". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| sourceMacAddr | It specifies the source MAC address formatted in the hexadecimal notation according to clause 1.1 and clause 2.1 of IETF RFC 7042 [63].  Pattern: '^([0-9a-fA-F]{2})((-[0-9a-fA-F]{2}){5})$'.  allowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| vlanTags | It specifies the Customer-VLAN and/or Service-VLAN tags containing the VID, PCP/DEI fields as defined in IEEE 802.1Q [65] and IETF RFC 7042 [63]. The first/lower instance in the array stands for the Customer-VLAN tag and the second/higher instance in the array stands for the Service-VLAN tag.  Each field is encoded as a two-octet string in hexadecimal representation. Each character in the string shall take a value of "0" to "9" or "A" to "F" and shall represent 4 bits. The most significant character representing the PCP/DEI field shall appear first in the string, followed by character representing the 4 most significant bits of the VID field, and the character representing the 4 least significant bits of the VID field shall appear last in the string.  If only Service-VLAN tag is provided, empty string for Customer-VLAN tag shall be provided.  allowedValues: see IEEE 802.1Q [65] and IETF RFC 7042 [63]. | type: String  multiplicity: \*  isOrdered: True  isUnique: True  defaultValue: None  isNullable: False |
| srcMacAddrEnd | It specifies the source MAC address end. If this attribute is present, the sourceMacAddr attribute specifies the source MAC address start. E.g. srcMacAddrEnd with value 00-10-A4-23-3E-FE and sourceMacAddr with value 00-10-A4-23-3E-02 means all MAC addresses from 00-10-A4-23-3E-02 up to and including 00-10-A4-23-3E-FE.  allowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| destMacAddrEnd | It specifies the destination MAC address end. If this attribute is present, the destMacAddr attribute specifies the destination MAC address start.  allowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| packFiltId | It is the identifier of the packet filter.  allowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| packetFilterUsage | It indicates if the packet shall be sent to the UE.  The default value is "FALSE".  allowedValues: TRUE, FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: "FALSE"  isNullable: False |
| tosTrafficClass | It contains the Ipv4 Type-of-Service and mask field or the Ipv6 Traffic-Class field and mask field.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| spi | It is the security parameter index of the IPSec packet, see IETF RFC 4301 [66].  allowedValues: see IETF RFC 4301 [66]. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| flowLabel | It specifies the Ipv6 flow label header field.  AllowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| flowDirection | It indicates the direction/directions that a filter is applicable.  AllowedValues: "DOWNLINK", "UPLINK", "BIDIRECTIONAL", "UNSPECIFIED". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| qosId | It identifies the QoS control policy data for a PCC rule.  AllowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| maxbrUl | It represents the maximum uplink bandwidth formatted as follows:  Pattern: '^\d+(\.\d+)? (bps|Kbps|Mbps|Gbps|Tbps)$', see 3GPP TS 29.512 [60].  Examples:  "125 Mbps", "0.125 Gbps", "125000 Kbps"  AllowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| maxbrDl | It represents the maximum downlink bandwidth formatted as follows:  Pattern: '^\d+(\.\d+)? (bps|Kbps|Mbps|Gbps|Tbps)$', see 3GPP TS 29.512 [60].  Examples:  "125 Mbps", "0.125 Gbps", "125000 Kbps".  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| gbrUl | It represents the guaranteed uplink bandwidth formatted as follows:  Pattern: '^\d+(\.\d+)? (bps|Kbps|Mbps|Gbps|Tbps)$', see 3GPP TS 29.512 [60].  Examples:  "125 Mbps", "0.125 Gbps", "125000 Kbps".  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| gbrDl | It represents the guaranteed downlink bandwidth formatted as follows:  Pattern: '^\d+(\.\d+)? (bps|Kbps|Mbps|Gbps|Tbps)$', see 3GPP TS 29.512 [60].  Examples:  "125 Mbps", "0.125 Gbps", "125000 Kbps".  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| extMaxDataBurstVol | It denotes the largest amount of data that is required to be transferred within a period of 5G-AN PDB, see 3GPP TS 29.512 [60].  AllowedValues: 4096..2000000. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| arp | It indicates the allocation and retention priority.  AllowedValues: N/A. | type: ARP  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ARP.priorityLevel | It defines the relative importance of a resource request.  AllowedValues: 1..15. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| preemptCap | It defines whether a service data flow may get resources that were already assigned to another service data flow with a lower priority level.  AllowedValues: "NOT\_PREEMPT", "MAY\_PREEMPT". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| preemptVuln | It defines whether a service data flow may lose the resources assigned to it in order to admit a service data flow with higher priority level.  AllowedValues: "NOT\_PREEMPTABLE", "PREEMPTABLE". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| qosNotificationControl | It indicates whether notifications are requested from 3GPP NG-RAN when the GFBR can no longer (or again) be guaranteed for a QoS Flow during the lifetime of the QoS Flow. The default value is "FALSE".  AllowedValues: "TRUE", "FALSE". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: "FALSE"  isNullable: False |
| reflectiveQos | Indicates whether the QoS information is reflective for the corresponding non-GBR service data flow. The default value is "FALSE".  AllowedValues: "TRUE", "FALSE". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: "FALSE"  isNullable: False |
| sharingKeyDl | It indicates, by containing the same value, what PCC rules may share resource in downlink direction.  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| sharingKeyUl | It indicates, by containing the same value, what PCC rules may share resource in uplink direction.  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| maxPacketLossRateDl | It indicates the downlink maximum rate for lost packets that can be tolerated for the service data flow.  AllowedValues: 0..1000. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| maxPacketLossRateUl | It indicates the uplink maximum rate for lost packets that can be tolerated for the service data flow.  AllowedValues: 0..1000. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| tcId | It univocally identifies the traffic control policy data within a PDU session.  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| flowStatus | It represents whether the service data flow(s) are enabled or disabled. The default value is "ENABLED". See 3GPP TS 29.514 [67].  AllowedValues: "ENABLED-UPLINK", "ENABLED-DOWNLINK", "ENABLED", "DISABLED", "REMOVED". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: "ENABLED"  isNullable: False |
| redirectInfo | It indicates whether the detected application traffic should be redirected to another controlled address.  AllowedValues: N/A. | type: RedirectInformation  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: "ENABLED"  isNullable: False |
| addRedirectInfo | It contains the additional redirect information indicating whether the detected application traffic should be redirected to another controlled address.  AllowedValues: N/A. | type: RedirectInformation  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: "ENABLED"  isNullable: False |
| redirectEnabled | It indicates whether the redirect instruction is enabled.  AllowedValues: "TRUE", "FALSE". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| redirectAddressType | It indicates the type of redirect address, see 3GPP TS 29.512 [60].  AllowedValues: " IPV4\_ADDR", "IPV6\_ADDR", "URL", "SIP\_URI". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| redirectServerAddress | It indicates the address of the redirect server.  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| muteNotif | It indicates whether applicat'on's start or stop notification is to be muted. The default value is "FALSE".  AllowedValues: "TRUE", "FALSE". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: "FALSE"  isNullable: False |
| trafficSteeringPolIdDl | It references to a pre-configured traffic steering policy for downlink traffic at the SMF, see 3GPP TS 29.512 [60].  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| trafficSteeringPolIdUl | It references to a pre-configured traffic steering policy for uplink traffic at the SMF, see 3GPP TS 29.512 [60].  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| routeToLocs | It provides a list of location which the traffic shall be routed to for the AF request.  AllowedValues: N/A. | type: RouteToLocation  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| traffCorreInd | It indicates the traffic correlation.  AllowedValues: "TRUE", "FALSE". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: "FALSE"  isNullable: False |
| dnai | It represents the DNAI (Data network access identifier), see 3GPP TS 23.501 [2].  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| routeInfo | It provides the traffic routing information.  AllowedValues: N/A. | type: RouteInformation  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ipv4Addr | It defines the Ipv4 address of the tunnel end point in the data network, formatted in the "dotted decimal" notation.  Pattern: '^(([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])\.){3}([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])$'.  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ipv6Addr | It defines the Ipv6 address of the tunnel end point in the data network.  Pattern: '^((:|(0?|([1-9a-f][0-9a-f]{0,3}))):)((0?|([1-9a-f][0-9a-f]{0,3})):){0,6}(:|(0?|([1-9a-f][0-9a-f]{0,3})))$'  and  Pattern: '^((([^:]+:){7}([^:]+))|((([^:]+:)\*[^:]+)?::(([^:]+:)\*[^:]+)?))$'.  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| portNumber | It defines the UDP port number of the tunnel end point in the data network, see 3GPP TS 29.571 [61].  AllowedValues: N/A. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| routeProfId | It identifies the routing profile.  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| upPathChgEvent | It contains the information about the AF subscriptions of the UP path change.  AllowedValues: N/A. | type: UpPathChgEvent  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| notificationUri | It provides notification address (Uri) of AF receiving the event notification.  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| notifCorreId | It is used to set the value of Notification Correlation ID in the notification sent by the SMF, see 3GPP TS 29.512 [60].  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| dnaiChgType | It indicates the type of DNAI change, see 3GPP TS 29.512 [60].  AllowedValues: "EARLY", "EARLY\_LATE", "LATE". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| afAckInd | It identifies whether the AF acknowledgement of UP path event notification is expected.The default value is "FALSE".  AllowedValues: "TRUE", "FALSE". | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: "FALSE"  isNullable: False |
| steerFun | It indicates the applicable traffic steering functionality, see 3GPP TS 29.512 [60].  AllowedValues: "MPTCP", "ATSSS\_LL". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| steerModeDl | It provides the traffic distribution rule across 3GPP and Non-3GPP accesses to apply for downlink traffic.  AllowedValues: N/A. | type: SteeringMode  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| steerModeUl | It provides the traffic distribution rule across 3GPP and Non-3GPP accesses to apply for uplink traffic.  AllowedValues: N/A. | type: SteeringMode  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| mulAccCtrl | It indicates whether the service data flow, corresponding to the service data flow template, is allowed or not allowed. The default value is "NOT\_ALLOWED".  AllowedValues: "ALLOWED", "NOT\_ALLOWED". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: "NOT\_ALLOWED"  isNullable: False |
| steerModeValue | It indicates the value of the steering mode, see 3GPP TS 29.512 [60].  AllowedValues: "ACTIVE\_STANDBY", "LOAD\_BALANCING", "SMALLEST\_DELAY", "PRIORITY\_BASED". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| active | It indicates the active access, see 3GPP TS 29.571 [61].  AllowedValues: "3GPP\_ACCESS", "NON\_3GPP\_ACCESS". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| standby | It indicates the Standby access, see 3GPP TS 29.571 [61].  AllowedValues: "3GPP\_ACCESS", "NON\_3GPP\_ACCESS". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| threeGLoad | It indicates the traffic load to steer to the 3GPP Access expressed in one percent.  AllowedValues: 0..100. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| prioAcc | It indicates the high priority access, see 3GPP TS 29.571 [61].  AllowedValues: "3GPP\_ACCESS", "NON\_3GPP\_ACCESS". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| condId | It uniquely identifies the condition data.  AllowedValues: N/A. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| activationTime | It indicates the time (in date-time format) when the decision data shall be activated, see 3GPP TS 29.512 [60] and TS 29.571 [61].  AllowedValues: N/A. | type: DateTime  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| deactivationTime | It indicates the time (in date-time format) when the decision data shall be deactivated, see 3GPP TS 29.512 [60] and TS 29.571 [61].  AllowedValues: N/A. | type: DateTime  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| accessType | It provides the condition of access type of the UE when the session AMBR shall be enforced, see 3GPP TS 29.512 [60].  AllowedValues: "3GPP\_ACCESS", "NON\_3GPP\_ACCESS". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ratType | It provides the condition of RAT type of the UE when the session AMBR shall be enforced, see 3GPP TS 29.512 [60] and TS 29.571 [61].  AllowedValues: "NR", "EUTRA", "WLAN", "VIRTUAL", "NBIOT", "WIRELINE", "WIRELINE\_CABLE", "WIRELINE\_BBF", "LTE-M", "NR\_U", "EUTRA\_U", "TRUSTED\_N3GA", "TRUSTED\_WLAN", "UTRA", "GERA". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| periodicity | It identifies the time period between the start of two bursts in reference to the TSN GM.  AllowedValues: see 3GPP TS 29.571 [61]. | type: integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| burstArrivalTime | Indicates the arrival time (in date-time format) of the data burst in reference to the TSN GM.  AllowedValues: see 3GPP TS 29.571 [61]. | type: DateTime  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |

## 5.5 Common notifications

### 5.5.1 Alarm notifications

This clause presents a list of notifications, defined in 3GPP TS 28.532 [35], that an MnS consumer may receive. The notification header attribute objectClass/objectInstance shall capture the DN of an instance of a class defined in the present document.

| Name | S | Notes |
| --- | --- | --- |
| notifyNewAlarm | M | -- |
| notifyClearedAlarm | M | -- |
| notifyAckStateChanged | M | -- |
| notifyAlarmListRebuilt | M | -- |
| notifyChangedAlarm | O | -- |
| notifyCorrelatedNotificationChanged | O | -- |
| notifyChangedAlarmGeneral | O | -- |
| notifyComments | O | -- |
| notifyPotentialFaultyAlarmList | O | -- |

### 5.5.2 Configuration notifications

This clause presents a list of notifications, defined in 3GPP TS 28.532 [35], that an MnS consumer may receive. The notification header attribute objectClass/objectInstance shall capture the DN of an instance of a class defined in the present document.

| Name | S | Notes |
| --- | --- | --- |
| notifyMOICreation | O | -- |
| notifyMOIDeletion | O | -- |
| notifyMOIAttributeValueChanges | O | -- |
| notifyEvent | O | -- |

### 5.5.3 Threshold Crossing notifications

This clause presents a list of notifications, defined in 3GPP TS 28.532 [35], that an MnS consumer may receive. The notification header attribute objectClass/objectInstance shall capture the DN of an instance of a class defined in the present document.

| Name | S | Notes | |
| --- | --- | --- | --- |
| notifyThresholdCrossing | M |  |

# 6 Information model definitions for network slice NRM

## 6.1 Imported information entities and local labels

|  |  |
| --- | --- |
| Label reference | Local label |
| 3GPP TS 28.622 [30], IOC, Top | Top |
| 3GPP TS 28.622 [30], IOC, SubNetwork | SubNetwork |
| 3GPP TS 28.622 [30], IOC, ManagedFunction | ManagedFunction |
| 3GPP TS 28.658 [19], dataType, PLMNId | PLMNId |
| 3GPP TS 28.622 [30], dataType, Tai | Tai |

## 6.2 Class diagram

### 6.2.1 Relationships



Figure 6.2.1-1: Network slice NRM fragment relationship

NOTE 1: The <<OpenModelClass>> NetworkService and <<OpenModelClass>> VNF are defined in [40].

NOTE 2: The target Network Service (NS) instance represents a group of VNFs and PNFs that are supporting the source network slice subnet instance.

NOTE 3: The instance tree of this NRM fragment would not contain the instances of NetworkService and VNF. However, the NetworkSliceSubNet instances would have an attribute holding the identifiers of NetworkService instances and the ManagedFunction instance would have an attribute holding identifiers of VNF instances.

NOTE 4: Any instance of the NetworkSliceSubnet IOC is associated to 0 to 1 instance of the NetworkSlice IOC:

- 1: applies to the top/root NetworkSliceSubnet IOC instance directly associated to a NetworkSlice IOC instance.

- 0: applies to all non-top/non-root NetworkSliceSubnet IOC instances, also known as constituent network slice subnets, not directly associated to a NetworkSlice IOC instance.

Any instance of the NetworkSlice IOC is associated to exactly one instance of NetworkSliceSubnet IOC (i.e. the top/root NetworkSliceSubnet IOC instance).



Figure 6.2.1-2: Transport EP NRM fragment relationship



Figure 6.2.1-3: containment relationship for network slice fragment

### 6.2.2 Inheritance



Figure 6.2.2-1: Network slice inheritance relationship

## 6.3 Class definitions

### 6.3.1 NetworkSlice

#### 6.3.1.1 Definition

This IOC represents the properties of a network slice in a 5G network. For more information about the network slice, see 3GPP TS 28.530 [69].

#### 6.3.1.2 Attributes

The NetworkSlice IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable | |
| operationalState | M | T | F | F | T | |
| administrativeState | M | T | T | F | T |
| serviceProfileList | M | T | T | F | T | |
| **Attribute related to role** |  |  |  |  |  | |
| networkSliceSubnetRef | M | T | F | F | T | |

#### 6.3.1.3 Attribute constraints

None.

#### 6.3.1.4 Notifications

The common notifications defined in subclause 6.5 are valid for this IOC, without exceptions or additions.

### 6.3.2 NetworkSliceSubnet

#### 6.3.2.1 Definition

This IOC represents the properties of a network slice subnet instance in a 5G network. For more information about the network slice subnet instance, see 3GPP TS 28.530 [69].

#### 6.3.2.2 Attributes

The NetworkSliceSubnet IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| operationalState | M | T | F | F | T |
| administrativeState | M | T | T | F | T |
| nsInfo | CM | T | F | F | T |
| sliceProfileList | M | T | T | F | T |
| priorityLabel | O | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| managedFunctionRef | M | T | F | F | T |
| networkSliceSubnetRef | M | T | F | F | T |
| epTransportRef | O | T | T | F | T |

#### 6.3.2.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| nsInfo S | Condition: It shall be supported if the NSS instance is realized in the virtualized environment. Otherwise this attribute shall be absent. |

#### 6.3.2.4 Notifications

The common notifications defined in subclause 6.5 are valid for this IOC, without exceptions or additions.

### 6.3.3 ServiceProfile <<dataType>>

#### 6.3.3.1 Definition

This data type represents the properties of the network slice related requirements that should be supported by a NetworkSlice instance in a 5G network. The network slice related requirements apply to a one-to-one relationship between a Network Slice Customer (NSC) and a Network Slice Provider (NSP). A network slice can be tailored based on the specific requirements adhered to an SLA agreed between NSC and NSP, see clause 2 of [50]. An NSP may add additional requirements not directly derived from SLA's, associated to the NSP internal [business] goals. The GST defined by GSMA (see [50]) and the service performance requirements defined in 3GPP TS 22.261 [28] and 3GPP TS 22.104 [51] are all considered as input for the network slice related requirements.

#### 6.3.3.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| serviceProfileId | M | T | F | T | T |
| pLMNInfoList | M | T | F | F | T |
| maxNumberofUEs | O | T | T | F | T |
| coverageArea | O | T | T | F | T |
| latency | O | T | T | F | T |
| uEMobilityLevel | O | T | T | F | T |
| networkSliceSharingIndicator | O | T | T | F | T |
| sST | M | T | T | F | T |
| availability | O | T | T | F | T |
| delayTolerance | O | T | T | F | T |
| deterministicComm | O | T | T | F | T |
| dLThptPerSlice | O | T | T | F | T |
| dLThptPerUE | O | T | T | F | T |
| uLThptPerSlice | O | T | T | F | T |
| uLThptPerUE | O | T | T | F | T |
| maxPktSize | O | T | T | F | T |
| maxNumberofConns | O | T | T | F | T |
| kPIMonitoring | O | T | T | F | T |
| userMgmtOpen | O | T | T | F | T |
| v2XCommMode | O | T | T | F | T |
| termDensity | O | T | T | F | T |
| activityFactor | O | T | T | F | T |
| uESpeed | O | T | T | F | T |
| jitter | O | T | T | F | T |
| survivalTime | O | T | T | F | T |
| reliability | O | T | T | F | T |

NOTE: The attributes in ServiceProfile represent mapped requirements from an NSC (e.g. an enterprise) to an NSP.

#### 6.3.3.3 Attribute constraints

None.

#### 6.3.3.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.4 SliceProfile <<dataType>>

#### 6.3.4.1 Definition

This data type represents the properties of network slice subnet related requirement that should be supported by the NetworkSliceSubnet instance in a 5G network.

#### 6.3.4.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| sliceProfileId | M | T | F | T | T |
| pLMNInfoList | M | T | T | F | T |
| perfReq | M | T | T | F | T |
| maxNumberofUEs | O | T | T | F | T |
| coverageAreaTAList | O | T | T | F | T |
| latency | O | T | T | F | T |
| uEMobilityLevel | O | T | T | F | T |
| resourceSharingLevel | O | T | T | F | T |

#### 6.3.4.3 Attribute constraints

None.

#### 6.3.4.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.5 NsInfo <<dataType>>

#### 6.3.5.1 Definition

This data type represents the properties of network service information (See clause 8.3.3.2.2 of ETSI GS NFV‑IFA 013 [29]) corresponding to the network slice subnet instance.

#### 6.3.5.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| nsInstanceId | M | T | F | F | T |
| nsName | O | T | F | F | T |
| description | O | T | F | F | T |

#### 6.3.5.3 Attribute constraints

None.

#### 6.3.5.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.6 ServAttrCom <<dataType>>

#### 6.3.6.1 Definition

This data type represents the common properties of service requirement related attributes (see GSMA NG.116 [50] corresponding to Attribute categories, tagging and exposure).

#### 6.3.6.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| category | M | T | F | T | T |
| tagging | CM | T | F | T | T |
| exposure | M | T | F | T | T |

#### 6.3.6.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| tagging S | Condition: It shall be supported if the category is character. Otherwise this attribute shall be absent. |

#### 6.3.6.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.7 DelayTolerance<<dataType>>

#### 6.3.7.1 Definition

This data type represents the delay tolerance (See Clause 3.4.3 of GSMA NG.116 [50]).

#### 6.3.7.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| servAttrCom | M | T | F | T | T |
| support | M | T | F | F | T |

#### 6.3.7.3 Attribute constraints

None.

#### 6.3.7.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.8 DeterministicComm <<dataType>>

#### 6.3.8.1 Definition

This data type represents the properties of the deterministic communication for periodic user traffic. Periodic traffic refers to the type of traffic with periodic transmissions.

#### 6.3.8.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| servAttrCom | M | T | F | T | T |
| availability | M | T | F | F | T |
| periodicityList | M | T | T | F | T |

#### 6.3.8.3 Attribute constraints

None.

#### 6.3.8.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.9 DLThpt<<dataType>>

#### 6.3.9.1 Definition

This data type represents the downlink throughput per slice or per UE (See Clause 3.4.5 and 3.4.6 of GSMA NG.116 [50]).

#### 6.3.9.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| servAttrCom | M | T | F | T | T |
| guaThpt | M | T | F | F | T |
| maxThpt | C | T | F | F | T |

#### 6.3.9.3 Attribute constraints

None.

#### 6.3.9.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.10 ULThpt<<dataType>>

#### 6.3.10.1 Definition

This data type represents the uplink throughput per slice or per UE (See clause 3.4.31 and 3.4.32 of GSMA NG.116 [50]).

#### 6.3.10.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| servAttrCom | M | T | F | F | T |
| guaThpt | O | T | F | F | T |
| maxThpt | O | T | F | F | T |

#### 6.3.10.3 Attribute constraints

None.

#### 6.3.10.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.11 MaxPktSize <<dataType>>

#### 6.3.11.1 Definition

This data type represents the maximum packet size (See Clause 3.4.11 of GSMA NG.116 [50]).

#### 6.3.11.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| servAttrCom | M | T | F | T | T |
| maxSize | M | T | F | F | T |

#### 6.3.11.3 Attribute constraints

None.

#### 6.3.11.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.12 MaxNumberofConns <<dataType>>

#### 6.3.12.1 Definition

This data type represents maximun number of connections (See Clause 3.4.15 of GSMA NG.116 [50]).

#### 6.3.12.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| servAttrCom | M | T | F | T | T |
| nOofConn | M | T | F | F | T |

#### 6.3.12.3 Attribute constraints

None.

#### 6.3.12.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.13 Void

### 6.3.14 KPIMonitoring <<dataType>>

#### 6.3.14.1 Definition

This data type represents performance monitoring (see clause 3.4.18 of GSMA NG.116 [50]).

#### 6.3.14.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| servAttrCom | M | T | F | T | T |
| kPIList | M | T | F | F | T |

#### 6.3.14.3 Attribute constraints

None.

#### 6.3.14.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.15 UserMgmtOpen<<dataType>>

#### 6.3.15.1 Definition

This data type represents User management openness (See Clause 3.4.33 of GSMA NG.116 [50]).

#### 6.3.15.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| servAttrCom | M | T | F | T | T |
| support | M | T | F | F | T |

#### 6.3.15.3 Attribute constraints

None.

#### 6.3.15.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.16 V2XCommMode<<dataType>>

#### 6.3.16.1 Definition

This data type represents V2X communication mode (See Clause 3.4.35 of GSMA NG.116 [50]).

#### 6.3.16.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| servAttrCom | M | T | F | T | T |
| v2XMode | M | T | F | F | T |

#### 6.3.16.3 Attribute constraints

None.

#### 6.3.16.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.17 TermDensity<<dataType>>

#### 6.3.17.1 Definition

This data type represents Terminal density (See Clause 3.4.30 of GSMA NG.116 [50]).

#### 6.3.17.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| servAttrCom | M | T | F | T | T |
| density | M | T | F | F | T |

#### 6.3.17.3 Attribute constraints

None.

#### 6.3.17.4 Notifications

The subclause 6.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

### 6.3.18 EP\_Transport

#### 6.3.18.1 Definition

This IOC represents the logical transport interface or endpoint which including transport level information, e.g. transport address, reachability information and QoS profiles, etc.

The IOC is inherited from Top IOC.

#### 6.3.18.2 Attributes

The EP\_Transport IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| ipAddress | M | T | F | F | T |
| logicInterfaceId | M | T | T | F | T |
| nextHopInfo | O | T | F | F | T |
| qosProfile | O | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| epApplicationRef | M | T | T | F | T |

#### 6.3.18.3 Attribute constraints

None.

#### 6.3.18.4 Notifications

The common notifications defined in subclause 6.5 are valid for this IOC, without exceptions or additions.

### 6.3.19 EP\_Application <<ProxyClass>>

#### 6.3.19.1 Definition

This represents <<IOC>>EP\_N3 or <<IOC>>EP\_NgU.

#### 6.3.19.2 Attributes

See that defined in <<IOC>>EP\_N3 or <<IOC>>EP\_NgU.

#### 6.3.19.3 Attribute constraints

See respective IOCs.

#### 6.3.19.4 Notifications

See respective IOCs.

## 6.4 Attribute definition

### 6.4.1 Attribute properties

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| availability | This parameter specifies the communication service availability requirement, expressed as a percentage. The communication service availability is defined in clause 3.1 of 3GPP TS 22.261 [28]. | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: True |
| serviceProfileId | A unique identifier of property of network slice related requirement should be supported by the network slice. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| sliceProfileId | A unique identifier of the property of network slice subnet related requirement should be supported by the network slice subnet. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| operationalState | It indicates the operational state of the network slice or the network slice subnet. It describes whether or not the resource is physically installed and working.  allowedValues: "ENABLED", "DISABLED".  The meaning of these values is as defined in 3GPP TS 28.625 [17] and Recommendation ITU-T X.731 [18]. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| administrativeState | It indicates the administrative state of the network slice or the network slice subnet. It describes the permission to use or prohibition against using the managed object instance, imposed through the OAM services.  allowedValues: "LOCKED", "UNLOCKED", SHUTTINGDOWN"  The meaning of these values is as defined in 3GPP TS 28.625 [17] and Recommendation ITU-T X.731 [18]. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: LOCKED  isNullable: False |
| nsInfo | This attribute contains the NsInfo of the NS instance corresponding to the network slice subnet instance. The NsInfo is described in clause 8.3.3.2.2 of ETSI GS NFV-IFA 013 [29]. | type: NsInfo  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No default value  isNullable: True |
| nsInstanceId | This attribute specifies the identifier of NS instance corresponding to the network slice subnet instance.  See clause 8.3.3.2.2 of ETSI GS NFV-IFA 013 [29]. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No default value  isNullable: True |
| nsName | This attribute specifies the name of NS instance corresponding to the network slice subnet instance.  See clause 8.3.3.2.2 of ETSI GS NFV-IFA 013 [29]. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No default value  isNullable: True |
| description | This attribute specifies the description of NS instance corresponding to the network slice subnet instance.  See clause 8.3.3.2.2 of ETSI GS NFV-IFA 013 [29]. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No default value  isNullable: True |
| category | This attribute specifies the category of a service requirement/attribute of GST (see GSMA NG.116 [50]).  allowedValues: CHARACTER, SCALABILITY | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| tagging | This attribute specifies the tagging of a service requirement/attribute of GST in character category (see GSMA NG.116 [50]).  allowedValues: PERFORMANCE, FUNCTION, OPERATION | type: ENUM  multiplicity: 1…3  isOrdered: False  isUnique: True  defaultValue: None  allowedValues: N/A  isNullable: False |
| exposure | This attribute specifies exposure mode of a service requirement/attribute of GST (see GSMA NG.116 [50]).  allowedValues: API, KPI | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| perfReq | This parameter specifies the requirements to the network slice subnet in terms of the scenarios defined in the 3GPP TS 22.261 [28] and 3GPP TS 22.104 [51], i.e. the "performance requirements for high data rate and traffic density scenarios" in 3GPP TS 22.261 [28], "periodic deterministic communication, aperiodic deterministic communication, non-deterministic communication, and mixed traffic" in 3GPP TS 22.104 [51].  It is a structure containing the following elements:  - list of perfReq  Depending on the sST value, the list of perfReq will be  - list of eMBBPerfReq  or  - list of uRLLCPerfReq  or  - list of mIoTPerfReq  NOTE 1: the list of mIoTPerfReq is not addressed in the present document.  allowedValues:  - list of eMBBPerfReq is a list of entries where an entry identifies the performance requirements to the network slice subnet in terms of the scenarios defined in the Table 7.1-1 of 3GPP TS 22.261 [28]. An entry has the following attributes: expDataRateDL (Integer), expDataRateUL (Integer), areaTrafficCapDL (Integer), areaTrafficCapUL (Integer), overallUserDensity (Integer), activityFactor (Integer), (see table 7.1-1 of 3GPP TS 22.261 [28]).  - list of uRLLCPerfReq is a list of entries where an entry identifies the performance requirements to the network slice subnet in terms of the scenarios defined in clauses 5.2 through 5.5 of 3GPP TS 22.104 [51]. An entry has the following attributes: cSAvailabilityTarget (Float), cSReliabilityMeanTime (String), , expDataRate (Integer), msgSizeByte (String), transferIntervalTarget (String), survivalTime (String), (see table 5.2-1, table 5.3-1, table 5.4-1 and table 5.5-1 of 3GPP TS 22.104 [51]).  NOTE 2: Limitation on attribute values in SliceProfile is not addressed in the present document.  NOTE 3: The attributes inside perfReq here need further breaking down to define requirements for each subnetwork under different SST values. | type: PerfReq  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| maxNumberofUEs | An attribute specifies the maximum number of UEs may simultaneously access the network slice. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| coverageAreaTAList | An attribute specifies a list of Tracking Areas for the network slice. TAI uniquely identifies a Tracking Area. TAI is defined in clause 9.3.3.11 of TS 38.413 [5].  allowedValues: N/A | type: Tai  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  allowedValues: N/A  isNullable: False |
| latency | An attribute specifies the packet transmission latency (millisecond) through the RAN, CN, and TN part of 5G network and is used to evaluate utilization performance of the end-to-end network slice. See clause 6.3.1 of TS 28.554 [27]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| uEMobilityLevel | An attribute specifies the mobility level of UE accessing the network slice. See 6.2.1 of TS 22.261 [28].  allowedValues: STATIONARY, NOMADIC, RESTRICTED\_MOBILITY, FULL\_MOBILITY. | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: True |
| serviceProfile. networkSliceSharingIndicator | The attribute specifies whether a service, defined by the ServiceProfile, can share a NetworkSlice instance with other services or not. If "non-shared" the service needs a dedicated NetworkSlice instance. If "shared" the service may share a NetworkSlice instance with other service(s).  allowedValues: SHARED, NON\_SHARED. | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| serviceProfile.pLMNInfoList | It defines which PLMN and S-NSSAI combinations that are assigned for the service to satisfy service requirements represented by the ServiceProfile in case of network slicing feature is supported.  allowedValues: Not applicable. | type: PLMNInfo  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| sliceProfile.pLMNInfoList | It defines which PLMN and S-NSSAI combinations that are served by the SliceProfile in case of network slicing feature is supported.  allowedValues: Not applicable. | type: PLMNInfo  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| sliceProfile.resourceSharingLevel | An attribute specifies whether the resources to be allocated to the network slice subnet may be shared with another network slice subnet(s).  allowedValues: SHARED, NON\_SHARED. | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: Yes  isNullable: True |
| serviceProfileList | An attribute specifies a list of ServiceProfile (see clause 6.3.3) supported by the network slice | type: ServiceProfile  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  allowedValues: N/A  isNullable: False |
| sliceProfileList | An attribute specifies a list of SliceProfile (see clause 6.3.4) supported by the network slice subnet | type: SliceProfile  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  allowedValues: N/A  isNullable: False |
| sST | This parameter specifies the slice/service type in a ServiceProfile to be supported by a 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 |
| delayTolerance | An attribute specifies the properties of service delivery flexibility, especially for the vertical services that are not chasing a high system performance. See clause 4.3 of 3GPP TS 22.104 [51]. | type: DelayTolerance  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| DelayTolerance.support | An attribute specifies whether or not the network slice supports service delivery flexibility, especially for the vertical services that are not chasing a high system performance.  allowedValues:  "NOT\_SUPPORTED", "SUPPORTED". | type: <<enumeration>>  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| deterministicComm | An attribute specifies the properties of the deterministic communication for periodic user traffic, see clause 4.3 of 3GPP TS 22.104 [51]. | type: DeterministicComm  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| DeterministicComm.availability | An attribute specifies whether or not the network slice supports deterministic communication for period user traffic.  allowedValues:  "NOT\_SUPPORTED", "SUPPORTED". | type: <<enumeration>>  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| DeterministicComm.periodicityList | An attribute specifies a list of periodicities supported by the network slice for deterministic communication. Each instance of periodicity is expressed in seconds, refer to NG.116 [50]. | type: Integer  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: False  isNullable: False |
| dLThptPerSlice | This attribute defines achievable data rate of the network slice in downlink that is available ubiquitously across the coverage area of the slice, refer NG.116 [50]. | type: DLThpt  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| dLThptPerUE | This attribute defines data rate supported by the network slice per UE, refer NG.116 [50]. | type: DLThpt  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| guaThpt | This attribute describes the guaranteed data rate. | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| maxThpt | This attribute describes the maximum data rate. | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| uLThptPerSlice | This attribute defines achievable data rate of the network slice in uplink that is available ubiquitously across the coverage area of the slice, refer NG.116 [50]. | type: ULThpt  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| uLThptPerUE | This attribute defines data rate supported by the network slice per UE, refer NG.116 [50]. | type: ULThpt  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| maxPktSize | This parameter specifies the maximum packet size supported by the network slice, refer NG.116 [50]. | type: MaxPktSize  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| MaxPktSize.maxsize | This parameter specifies the maximum packet size supported by the network slice, refer NG.116 [50]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| maxNumberofConns | This parameter defines the maximum number of concurrent sessions supported by the network slice, refer NG.116 [50]. | type: MaxNumberofConns  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| MaxNumberofConns.nOofConn | This parameter defines the maximum number of concurrent sessions supported by the network slice, refer NG.116 [50]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| kPIMonitoring | An attribute specifies the name list of KQIs and KPIs available for performance monitoring. | type: KPIMonitoring  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| KPIMonitoring. kPIList | An attribute specifies the name list of KQIs and KPIs available for performance monitoring. | type: String  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: False  isNullable: True |
| userMgmtOpen | An attribute specifies whether or not the network slice supports the capability for the NSC to manage their users or groups of users' network services and corresponding requirements. | type: UserMgmtOpen  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| UserMgmtOpen.support | An attribute specifies whether or not the network slice supports the capability for the NSC to manage their users or groups of users' network services and corresponding requirements.  allowedValues:  "NOT\_SUPPORTED", "SUPPORTED". | type: <<enumeration>>  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| v2XCommMode | An attribute specifies whether or not the V2X communication mode is supported by the network slice and how it is supported. | type: V2XCommMode  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| V2XCommMode.v2XMode | An attribute specifies whether or not the V2X communication mode is supported by the network slice and how it is supported.  allowedValues:  "NOT\_SUPPORTED", "SUPPORTED\_BY\_NR". | type: <<enumeration>>  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| coverageArea | An attribute specifies the coverage area of the network slice, i.e. the geographic region where a 3GPP communication service is accessible, see Table 7.1-1 of 3GPP TS 22.261 [28]) and NG.116 [50]. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| termDensity | An attribute specifies the overall user density over the coverage area of the network slice. See Table 7.1-1 of 3GPP TS 22.261 [28]). | type: TermDensity  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| TermDensity.density | An attribute specifies the overall user density over the coverage area of the network slice. See Table 7.1-1 of 3GPP TS 22.261 [28]). | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| activityFactor | An attribute specifies the percentage value of the amount of simultaneous active UEs to the total number of UEs where active means the UEs are exchanging data with the network. See Table 7.1-1 of 3GPP TS 22.261 [28]). | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| uESpeed | An attribute specifies the maximum speed (in km/hour) supported by the network slice at which a defined QoS can be achieved. See Table 7.1-1 of 3GPP TS 22.261 [28]). | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| jitter | An attribute specifies the deviation from the desired value to the actual value when assessing time parameters. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| survivalTime | An attribute specifies the time that an application consuming a communication service may continue without an anticipated message. See clause 5 of 3GPP TS 22.104 [51]). | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| reliability | An attribute specifies in the context of network layer packet transmissions, percentage value of the amount of sent network layer packets successfully delivered to a given system entity within the time constraint required by the targeted service, divided by the total number of sent network layer packets, see 3GPP TS 22.261 [28] and 3GPP TS 22.104 [51]. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| NetworkSlice.networkSliceSubnetRef | This holds a DN of NetworkSliceSubnet relating to the NetworkSlice instance. | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| NetworkSliceSubnet.networkSliceSubnetRef | This holds a list of DN of constituent NetworkSliceSubnet supporting NetworkSliceSubnet instance | type: DN  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| managedFunctionRef | This holds a list of DN of ManagedFunction instances supporting the NetworkSliceSubnet instance. | type: DN  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  allowedValues: N/A  isNullable: False |
| ipAddress | This parameter specifies the IP address assigned to a logical transport interface/endpoint.  It can be an IPv4 address (See RFC 791 [37]) or an IPv6 address (See RFC 2373 [38]).  See note 1 | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| logicInterfaceId | This parameter specifies the identify of a logical transport interface. It could be VLAN ID (See IEEE 802.1Q [39]), MPLS Tag or Segment ID. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| nextHopInfoList | This parameter is used to identify ingress transport node. Each node can be identified by any of combination of IP address of next-hop router of transport network, system name, port name, IP management address of transport nodes. | type: String  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: True |
| qosProfileRefList | This parameter specifies reference to QoS Profile for a logical transport interface. A QoS profile includes a set of parameters which are locally provisioned on both sides of a logical transport interface. | type: String  multiplicity: \*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: True |
| epApplicationRef | This parameter specifies a list of application level EPs associated with the logical transport interface.  See note 2. | type: DN  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| epTransportRef | This parameter specifies a list of transport level EPs associated with the application level EP (i.e. EP\_N3 or EP\_NgU) or network slice subnet. | type: DN  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: True |
| priorityLabel | An attribute specifies a label that consumer would assign a value on an instance of network slice subnet. The management system takes the value of this attribute into account. The effect of this attribute value to the subject managed entity is not standardized  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| NOTE 1: There is no direct relationship between localAddress/remoteAddress in EP\_RP and ipAddress in EP\_transport. While the localAddress/remoteAddress in EP\_RP could be exchanged as part of signalling between GTP-u tunnel end points, ipAddress in EP\_transport is used for transport routing.  NOTE 2: Application level EP represents EP\_RP defined in 3GPP TS 28.622 [30]. E.g. including EP\_NgC, EP\_N3, etc. | | |

## 6.5 Common notifications

### 6.5.1 Alarm notifications

This clause presents a list of notifications, defined in 3GPP TS 28.532 [35], that an MnS consumer may receive. The notification header attribute objectClass/objectInstance shall capture the DN of an instance of a class defined in the present document.

| Name | S | Notes |
| --- | --- | --- |
| notifyNewAlarm | M | -- |
| notifyClearedAlarm | M | -- |
| notifyAckStateChanged | M | -- |
| notifyAlarmListRebuilt | M | -- |
| notifyChangedAlarm | O | -- |
| notifyCorrelatedNotificationChanged | O | -- |
| notifyChangedAlarmGeneral | O | -- |
| notifyComments | O | -- |
| notifyPotentialFaultyAlarmList | O | -- |

### 6.5.2 Configuration notifications

This clause presents a list of notifications, defined in 3GPP TS 28.532 [35], that an MnS consumer may receive. The notification header attribute objectClass/objectInstance shall capture the DN of an instance of a class defined in the present document.

| Name | S | Notes |
| --- | --- | --- |
| notifyMOICreation | O | -- |
| notifyMOIDeletion | O | -- |
| notifyMOIAttributeValueChanges | O | -- |
| notifyEvent | O | -- |

### 6.5.3 Threshold Crossing notifications

This clause presents a list of notifications, defined in 3GPP TS 28.532 [35], that an MnS consumer may receive. The notification header attribute objectClass/objectInstance shall capture the DN of an instance of a class defined in the present document.

| Name | S | Notes | |
| --- | --- | --- | --- |
| notifyThresholdCrossing | M |  |

# 7 Solution Set (SS)

The present document defines the following NRM Solution Set definitions for NR and NG-RAN:

- XML based 3GPP NR and NG-RAN NRM Solution Set (Annex C).

- YAML based 3GPP NR and NG-RAN NRM Solution Set (Annex D).

- YANG based 3GPP NR and NG-RAN NRM Solution Set (Annex E).

The present document defines the following NRM Solution Set definitions for 5GC:

- XML based 3GPP 5GC NRM Solution Set (Annex F).

- YAML based 3GPP 5GC NRM Solution Set (Annex G).

- YANG based 3GPP 5GC NRM Solution Set (Annex H).

The present document defines the following NRM Solution Set definitions for network slice and network slice subnet:

- XML based 3GPP Network Slice NRM Solution Set (Annex I).

- YAML based 3GPP Network Slice NRM Solution Set (Annex J).