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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00   Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
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Foreword

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In the present document, modal verbs have the following meanings:

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should   indicates a recommendation to do something

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may   indicates permission to do something

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can   indicates that something is possible

cannot   indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

will   indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

will not   indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

might   indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

| **might not** | indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document |

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Introduction

The present document is part of a TS-family covering the 3rd Generation Partnership Project Technical Specification Group Services and System Aspects Management and orchestration of networks, as identified below:

TS 28.540: Management and orchestration of 5G networks; Network Resource Model (NRM); Stage 1.

TS 28.541: Management and orchestration of 5G networks; Network Resource Model (NRM); Stage 2 and stage 3.

1 Scope

The present document specifies the Information Model and Solution Set for the Network Resource Model (NRM) definitions of NR, NG-RAN, 5G Core Network (5GC) and network slice, to fulfil the requirements identified in TS 28.540 [10].

The Information Model defines the semantics and behaviour of information object class attributes and relations visible on the management interfaces in a protocol and technology neutral way. And Solution Set defines one or more solution set(s) with specific protocol(s) according to the Information Model definitions.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1]   3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2]   3GPP TS 23.501: "System Architecture for the 5G System".

[3]   3GPP TS 38.300: "NR; Overall description; Stage-2".

[4]   3GPP TS 38.401: "NG-RAN; Architecture description".

[5]   3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".

[6]   3GPP TS 38.420: "NG-RAN; Xn general aspects and principles".

[7]   3GPP TS 38.470: "NG-RAN; F1 general aspects and principles".

[8]   3GPP TS 38.473: "NG-RAN; F1 application protocol (F1AP)".

[9]   3GPP TS 37.340: "NR; Multi-connectivity; Overall description; Stage 2".

[10]   3GPP TS 28.540: "Management and orchestration; 5G Network Resource Model (NRM);Stage 1".

[11]   3GPP TS 28.662: "Telecommunication management; Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS) ".

[12]   3GPP TS 38.104: "NR; Base Station (BS) radio transmission and reception".

[13]   3GPP TS 23.003: "Numbering, Addressing and Identification".

[14]   3GPP TS 36.410: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 general aspects and principles".

[15]   3GPP TS 36.423: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 application protocol".

[16]   3GPP TS 36.425: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 interface user plane protocol".

[17]   3GPP TS 28.625: "State Management Data Definition Integration Reference Point (IRP); Information Service (IS)".

[18]   ITU-T Recommendation X.731: "Information technology - Open Systems Interconnection - Systems Management: State management function".

[19]   3GPP TS 28.658: "Telecommunications management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[20]   3GPP TS 28.702: "Core Network (CN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[21]   3GPP TS 28.708: "Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[22]   3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".

[23]   3GPP TS 29.510: "5G system; Network Function Repository Services; Stage 3".

[24]   3GPP TS 29.531: "5G System; Network Slice Selection Services Stage 3".

[25]   Void.

[26]   3GPP TS 28.531: "Management and orchestration; Provisioning".

[27]   3GPP TS 28.554: "Management and orchestration; 5G End to end Key Performance Indicators (KPI)".

[28]   3GPP TS 22.261: "Service requirements for next generation new services and markets".

[29]   ETSI GS NFV-IFA 013 V2.4.1 (2018-02) "Network Function Virtualisation (NFV); Management and Orchestration; Os-Ma-nfvo Reference Point - Interface and Information Model Specification".

[30]   3GPP TS 28.622: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[31]   Void.

[32]   3GPP TS 38.211: "NR; Physical channels and modulation".

[33]   3GPP TS 32.616: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP); Solution Set (SS) definitions".

[34]   Void

[35]   3GPP TS 28.532: "Management and orchestration; Management services".

[36]   Void.

[37]   IETF RFC 791: "Internet Protocol".

[38]   IETF RFC 2373: "IP Version 6 Addressing Architecture".

[39]   IEEE 802.1Q: "Media Access Control Bridges and Virtual Bridged Local Area Networks".

[40]   ETSI GR NFV-IFA 015 (V2.4.1): "Network Function Virtualisation (NFV) Release 2; Management and Orchestration; Report on NFV Information Model".

[41]   3GPP TS 38.213: "NR; Physical layer procedures for control".

[42]   3GPP TS 38.101-1: "NR; User Equipment (UE) radio transmission and reception; Part 1: Range 1 Standalone".

[43]   3GPP TS 32.156: "Telecommunication management; Fixed Mobile Convergence (FMC) model repertoire".

[44]   IETF RFC 4122: "A Universally Unique IDentifier (UUID) URN Namespace".

[45]   IETF RFC 8528: "YANG Schema Mount".

[46]   Void

[47]   3GPP TS 32.160: "Management and orchestration; Management Service Template".

[48]   3GPP TS 38.463: "NG-RAN; E1 application protocol (E1AP)".

[49]   3GPP TS 38.304: "NR; User Equipment (UE) procedures in Idle mode and RRC Inactive state".

[50]   GSMA NG.116 - Generic Network Slice Template Version 9.0 (2023-04-27).

[51]   3GPP TS 22.104: "Service requirements for cyber-physical control applications in vertical domains; Stage 1".

[52]   3GPP TS 33.501: "Security architecture and procedures for the 5G System".

[53]   3GPP TS 38.901: "Study on channel model for frequencies from 0.5 to 100 GHz ".

[54]   3GPP TS 38.331: "NR; Radio Resource Control (RRC) protocol specification".

[55]   3GPP TS 38.215: "NR; Physical layer measurements".

[56]   3GPP TS 29.244: "Technical Specification Group Core Network and Terminals; Interface between the Control Plane and the User Plane Nodes; Stage 3".

[57]   3GPP TS 28.313: "Self-Organizing Networks (SON) for 5G networks".

[58]   3GPP TS 38.423: "NR; Xn application protocol (XnAP)".

[59]   3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".

[60]   3GPP TS 29.512: "5G System; Session Management Policy Control Service; Stage 3".

[61]   3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[62]   3GPP TS 29.214: "Policy and Charging Control over Rx reference point".

[63]   IETF RFC 7042: "IANA Considerations and IETF Protocol and Documentation Usage for IEEE 802 Parameters".

[64]   IEEE 802.3-2015: "IEEE Standard for Ethernet".

[65]   IEEE 802.1Q-2014: "Bridges and Bridged Networks".

[66]   IETF RFC 4301: "Security Architecture for the Internet Protocol".

[67]   3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

[68]   3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".

[69]   3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

[70]   3GPP TS 28.530: "Management and orchestration; Concepts, use cases and requirements".

[71]   3GPP TS 28.310: "Management and orchestration; Energy efficiency of 5G".

[72]   3GPP TS 28.705: "Telecommunication management; IP Multimedia Subsystem (IMS) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[73]   3GPP TS 23.304: " Proximity based Services (ProSe) in the 5G System".

[74]   IETF RFC 8436: " Update to IANA Registration Procedures for Pool 3 Values in the Differentiated Services Field Codepoints (DSCP) Registry".

[75]   ECMA-262: "ECMAScript® Language Specification", https://www.ecma-international.org/ecma-262/5.1/.

[76]   3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[77] IANA: "SMI Network Management Private Enterprise Codes", http://www.iana.org/assignments/enterprise-numbers.

[78] 3GPP TS 23.548:" 5G System Enhancements for Edge Computing; Stage 2".

[79] 3GPP TS 28.538: "Edge Computing Management".

[80] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".

[81] 3GPP TS 23.558: "Architecture for enabling Edge Applications".

[82] IETF RFC 5952: "A recommendation for IPv6 address text representation".

[83] Void

[84] Void

[85] 3GPP TS 29.520: "5G System; Network Data Analytics Services; Stage 3".

[86] 3GPP TS 29.572: "5G System; Location Management Services; Stage 3".

[87] 3GPP TS 29.517: "5G System; Application Function Event Exposure Service; Stage 3".

[88] 3GPP TS 32.240: "Telecommunication management; Charging management; Charging architecture and principles".

[89] IETF RFC 8345: "A YANG Data Model for Network Topologies".

[90] YANG Data Models for 'Attachment Circuits'-as-a-Service (ACaaS) https://datatracker.ietf.org/doc/draft-boro-opsawg-teas-attachment-circuit/.

[91] 3GPP TS 33.535: "Authentication and Key Management for Applications (AKMA) based on 3GPP credentials in the 5G System (5GS)".

[92] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".

[93] 3GPP TS 23.273: "5G System (5GS) Location Services (LCS);Stage 2".

[94] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".

[95] NIMA TR 8350.2, Third Edition, Amendment 1, 3 January 2000: "DEPARTMENT OF DEFENSE WORLD GEODETIC SYSTEM 1984".

[96] 3GPP TS 23.247: "Architectural enhancements for 5G multicast-broadcast services".

[97] 3GPP TS 29.503: "Unified Data Management Services".

[98] 3GPP TS 23.247: "Architectural enhancements for 5G multicast-broadcast services".

[99] Void.

[100] 3GPP TS 23.540: "5G System: Technical realization of Service Based Short Message Service; Stage 2".

[101] 3GPP TS 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".

[102] IETF RFC 3393: "IP Packet Delay Variation Metric for IP Performance Metrics (IPPM)".

[103] IETF RFC 5481: "Packet Delay Variation Applicability Statement".

[104] 3GPP TS 28.405: "Telecommunication management; Quality of Experience (QoE) measurement collection; Control and configuration"

[105] 3GPP TS 28.105: " Artificial Intelligence / Machine Learning (AI/ML) management ".

[106] 3GPP TS 28.623: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions".

[107]   3GPP TS 38.305: "NG Radio Access Network (NG-RAN); Stage 2 functional specification of User Equipment (UE) positioning in NG-RAN".

[108]   3GPP TS 38.455: "NG-RAN; NR Positioning Protocol A (NRPPa)".

[109]   3GPP TS 28.111: " Management and orchestration; Fault Management (FM)".

3 Definitions of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in TR 21.905 [1], TS 28.540 [10] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1] and TS 28.540 [10].

3.2 Symbols

void.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1], TS 23.501 [2], TS 38.401 [4], TS 28.540 [10] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1] , TS 23.501 [2], TS 38.401 [4] and TS 28.540 [10].

BWP	Bandwidth part
CHO	Conditional Handover
CM	Configuration Management
DAPS	Dual Active Protocol Stack
DN	Distinguished Name
IOC	Information Object Class
JSON	JavaScript Object Notation
NFV	Network Functions Virtualisation
NRM	Network Resource Model
NS	Network Service
NSI	Network Slice Instance
NSSAI	Network Slice Selection Assistance Information
NSSI	Network Slice Subnet Instance
PNF	Physical Network Function
POP	Participating Operator
RIM	Remote interference management
RIM-RS	Remote interference management reference signal
SBA	Service Based Architecture
SS	Solution Set
TN	Transport Network
VNF	Virtualised Network Function

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
TS 28.622 [30], IOC, `ManagedFunction`	`ManagedFunction`
TS 28.622 [30], IOC, `EP_RP`	`EP_RP`
TS 28.662 [11], IOC, `SectorEquipmentFunction`	`SectorEquipmentFunction`
TS 28.658 [19], IOC, `ExternalENBFunction`	`ExternalENBFunction`
TS 28.708 [21], IOC, `ServingGWFunction`	`ServingGWFunction`
TS 28.658 [19], IOC, `EUtranCellFDD`	`EUtranCellFDD`
TS 28.658 [19], IOC, `EUtranCellTDD`	`EUtranCellTDD`
TS 28.658 [19], dataType, `PLMNId`	`PLMNId`
TS 28.658 [19], IOC, `ENBFunction`	`ENBFunction`
TS 28.708 [21], IOC, `ExternalServingGWFunction`	`ExternalServingGWFunction`
TS 28.658 [19], IOC, `ExternalEUtranCellFDD`	`ExternalEUtranCellFDD`
TS 28.658 [19], IOC, `ExternalEUtranCellTDD`	`ExternalEUtranCellTDD`
TS 28.658 [19], IOC, `AdjacentCell`	`AdjacentEUtranCell`
TS 28.658 [19], IOC, `EUtranFrequency`	`EUtranFrequency`
TS 28.658 [19], IOC, `EUtranFreqRelation`	`EUtranFreqRelation`
TS 28.658 [19], IOC, `EUtranRelation`	`EUtranCellRelation`
TS 28.622 [30], dataType, Tai	`Tai`
TS 28.622 [30], choice, `NpnId`	`NpnId`

4.1.2 Associated information entities and local labels

Label reference	Local label
TS 28.622 [30], IOC, `ManagedElement`	`ManagedElement`
TS 28.622 [30], IOC, `SubNetwork`	`SubNetwork`
TS 28.105 [105], IOC, MLModel	`MLModel`
TS 28.105 [105], IOC, AIMLInferenceFunction	`AIMLInferenceFunction`

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 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 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 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.
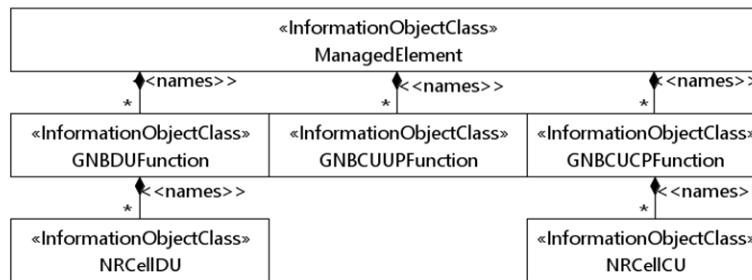
Figure 4.2.1.1-1: NRM for all deployment scenarios
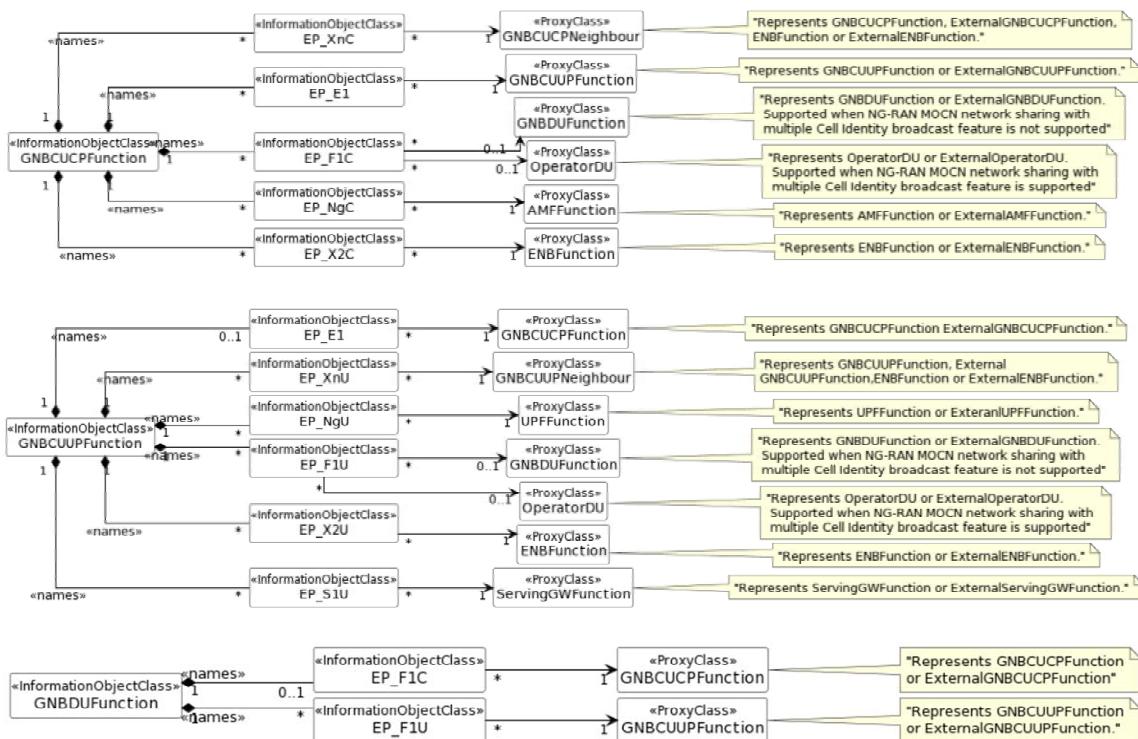
Figure 4.2.1.1-2: NRM for EPs for all deployment scenarios
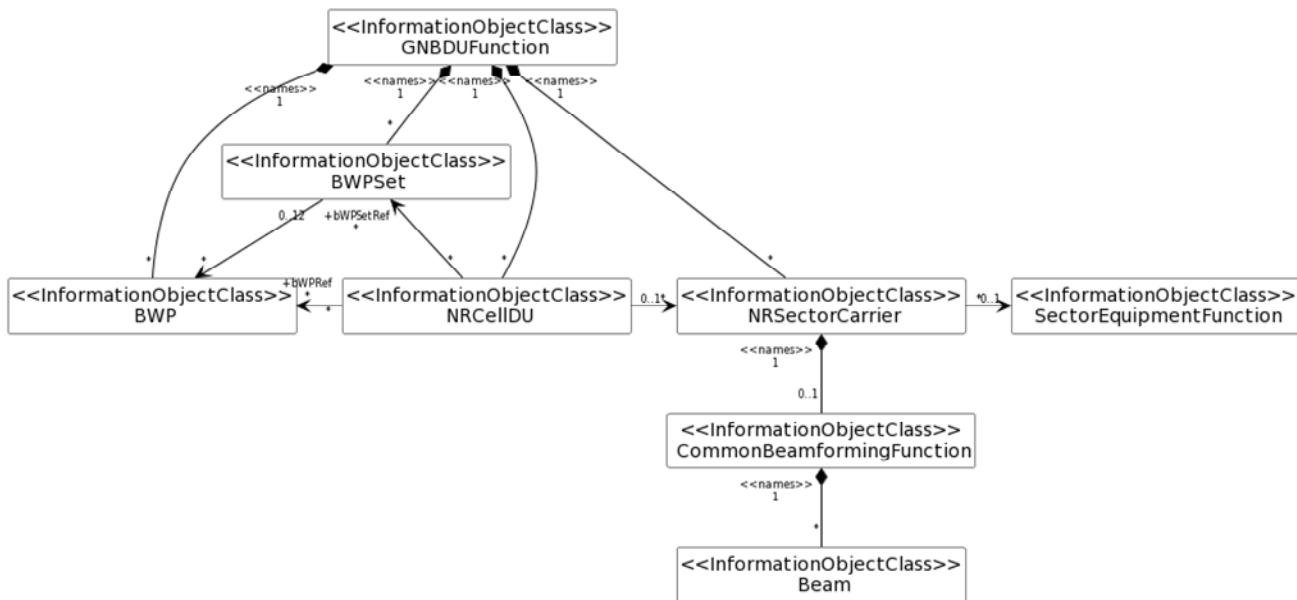
Figure 4.2.1.1-3: NRM for <<IOC>>`NRSectorCarrier`,<<IOC>>`BWP`, and <<IOC>> `BWPSet` for all deployment scenarios
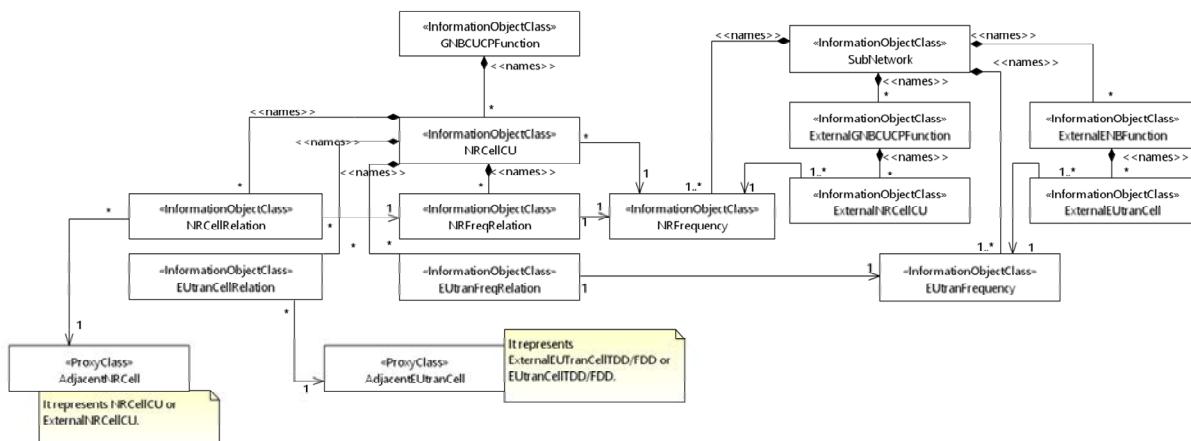
Figure 4.2.1.1-4: Cell Relation view for all deployment scenarios

NOTE 1: The above NRM fragment uses `SubNetwork` to hold both NR and LTE external entities and frequencies.
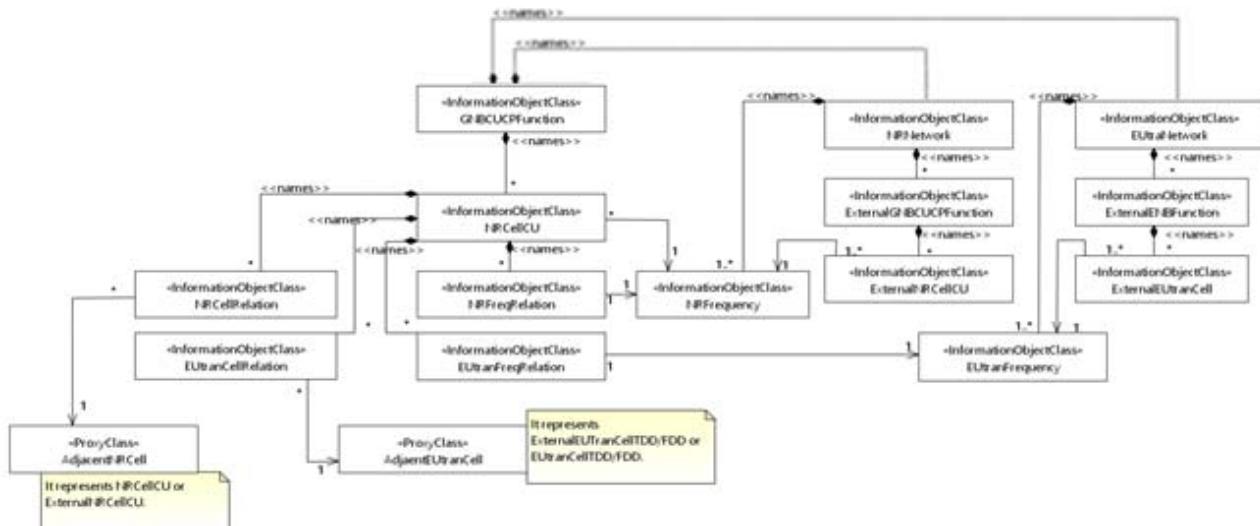
Figure 4.2.1.1-5: Cell Relation view for all deployment scenarios

NOTE 2: The above NRM fragment uses `ExternalNRNetwork` to hold NR external entities and frequency and using `ExternalEUtraNetwork` to hold LTE external entities and frequency.
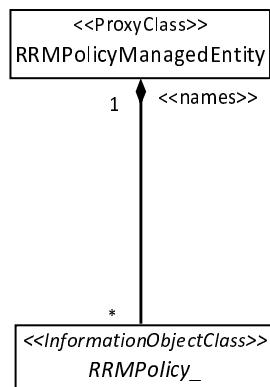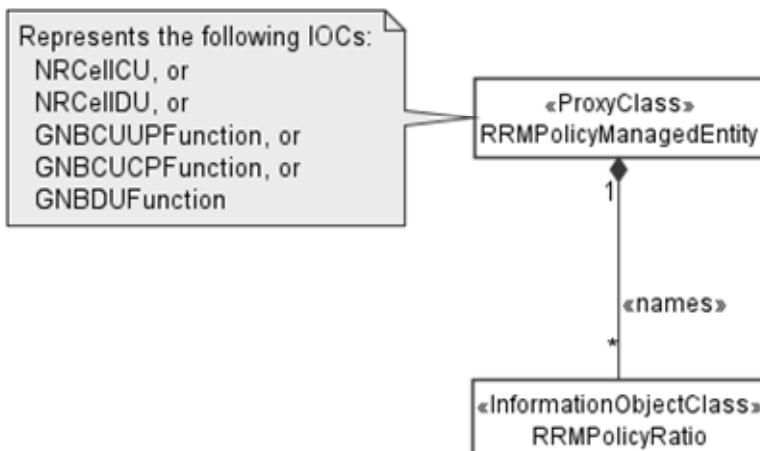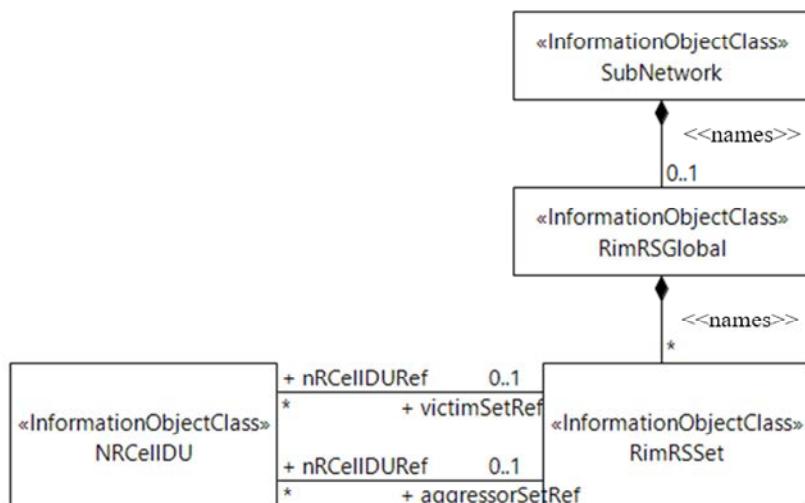
Figure 4.2.1.1-6: NRM fragment for abstract RRM Policies

Represents the following IOCs:
  NRCellCU, or
  NRCellDU, or
  GNBCUUPFunction, or
  GNBCUCPFunction, or
  GNBDUFunction

«ProxyClass»
RRMPolicyManagedEntity

1

«names»

*

«InformationObjectClass»
RRMPolicyRatio

Figure 4.2.1.1-6a: NRM fragment for RRMPolicyRatio

«InformationObjectClass»
SubNetwork

<<names>>
0..1

«InformationObjectClass»
RimRSGlobal

<<names>>
*

«InformationObjectClass»
NRCellDU

+ nRCellDURef   0..1
*   + victimSetRef

+ nRCellDURef   0..1
*   + aggressorSetRef

«InformationObjectClass»
RimRSSet

Figure 4.2.1.1-7: NRM fragment to support RIM
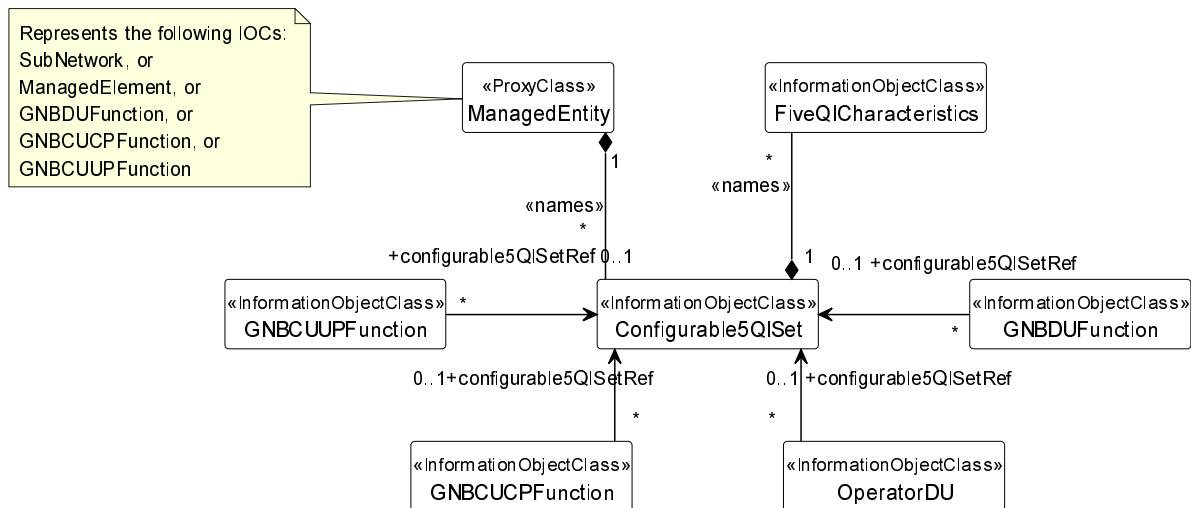
Figure 4.2.1.1-8: NRM fragment for pre-configured 5QIs in NG-RAN

NOTE 3: Void
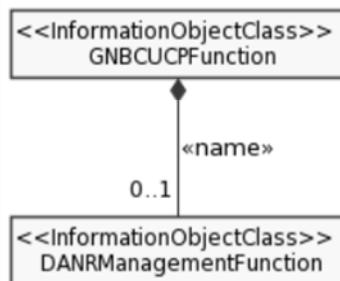
Figure 4.2.1.1-9: NRM fragment for DANR Management
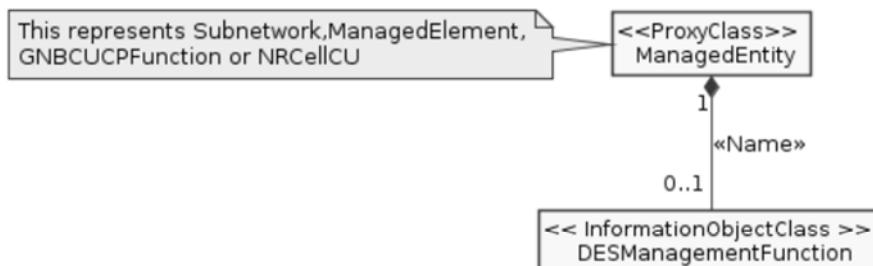
Figure 4.2.1.1-10: NRM fragment for DES Management
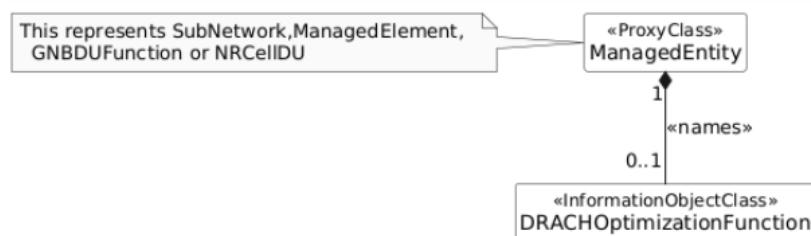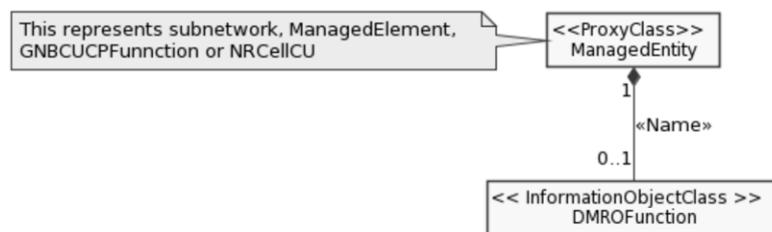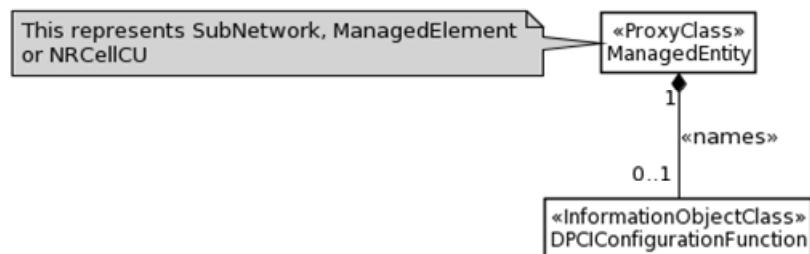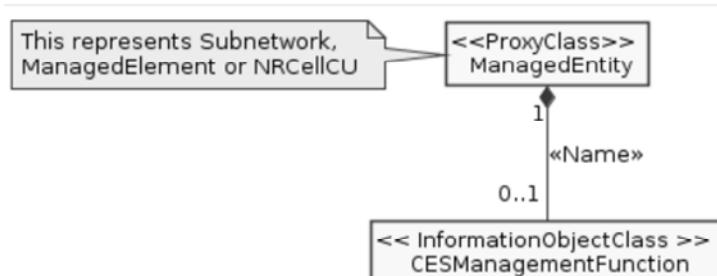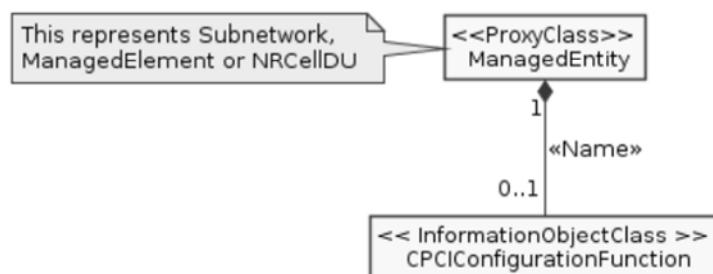
Figure 4.2.1.1-11: NRM fragment for DRACH Management

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

Represents the following IOCs:
SubNetwork, or
ManagedElement, or
GNBDUFunction, or
GNBCUCPFunction, or
GNBCUUPFunction

«ProxyClass»
ManagedEntity

«names»

+dynamic5QISetRef 0..1   0..1 +dynamic5QISetRef

«InformationObjectClass»
GNBCUUPFunction

«InformationObjectClass»
Dynamic5QISet

«InformationObjectClass»
GNBDUFunction

0..1+dynamic5QISetRef   0..1 +dynamic5QISetRef

«InformationObjectClass»
GNBCUCPFunction

«InformationObjectClass»
OperatorDU

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

«InformationObjectClass»
ManagedElement

«names»   «names»   «names»

«InformationObjectClass»
GNBDUFunction

«InformationObjectClass»
GNBCUUPFunction

«InformationObjectClass»
GNBCUCPFunction

«names»

«names»   «names»

«InformationObjectClass»
OperatorDU

«InformationObjectClass»
NRCellDU

«InformationObjectClass»
NRCellCU

«names»

«InformationObjectClass»
NROperatorCellDU

Figure 4.2.1.1-17: NRM fragment for NG-RAN MOCN network sharing with multiple cell identity broadcast feature

«InformationObjectClass»
OperatorDU

«InformationObjectClass»
EP_F1C

«ProxyClass»
GNBCUCPFunction

Represents GNBCUCPFunction
or ExternalGNBCUCPFunction

«InformationObjectClass»
EP_F1U

«ProxyClass»
GNBCUUPFunction

Represents GNBCUUPFunction
or ExternalGNBCUUPFunction.

«names»

«names»
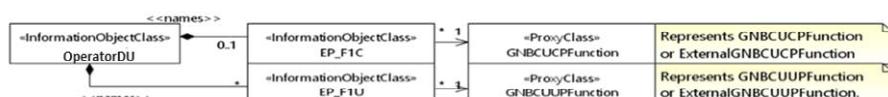
Figure 4.2.1.1-18: NRM fragment for F1 related EPs to support individual F1 interface for NG-RAN MOCN network sharing with multiple cell identity broadcast feature
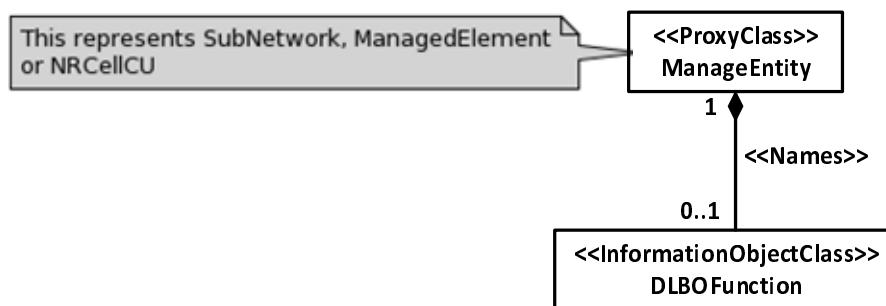
Figure 4.2.1.1-19: NRM fragment for DLBO Management
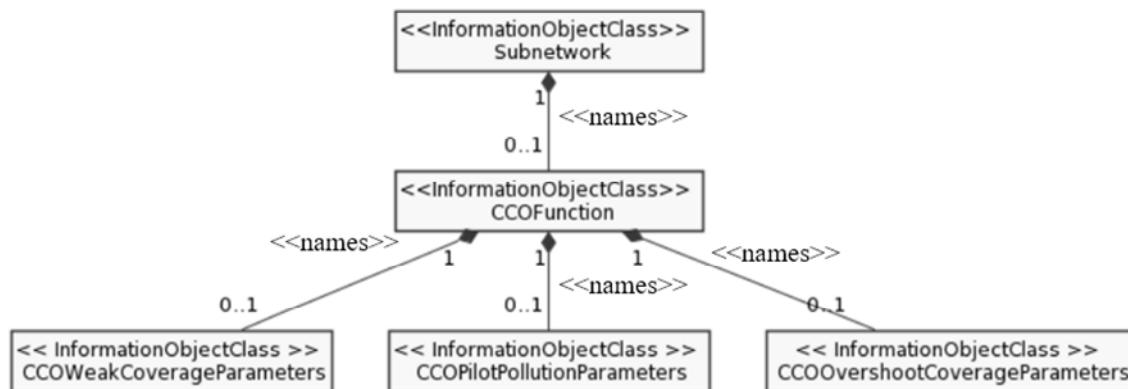
Figure 4.2.1.1-20: NRM fragment for CCO Management
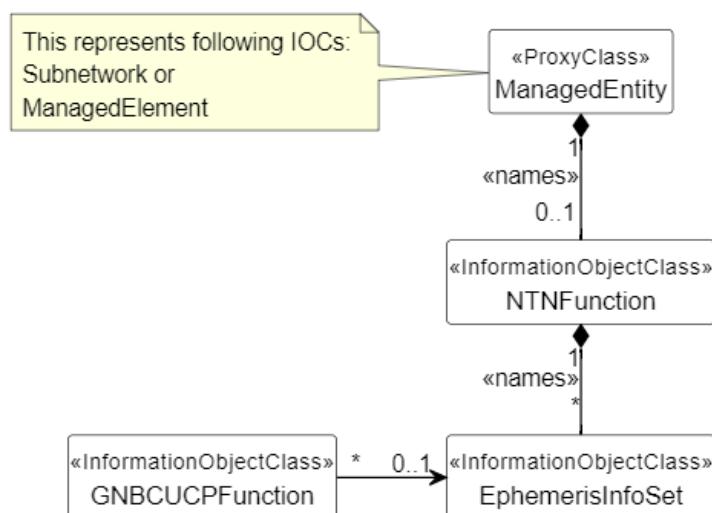
Figure 4.2.1.1-21: NRM fragment to support NTN management
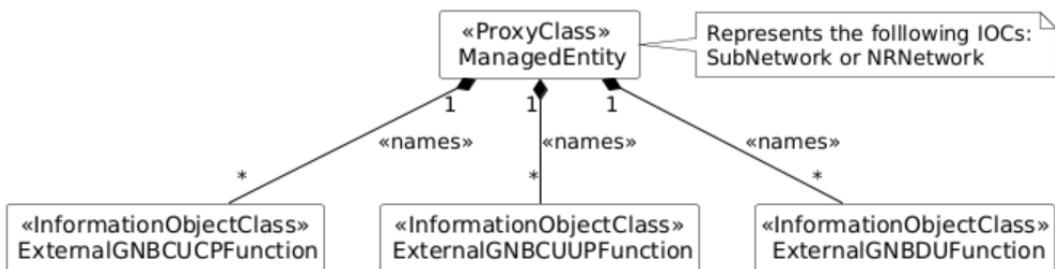
Figure 4.2.1.1-22: NRM fragment for ExternalGNBCUCPFunction, ExternalGNBCUUPFunction and ExternalGNBDUFunction
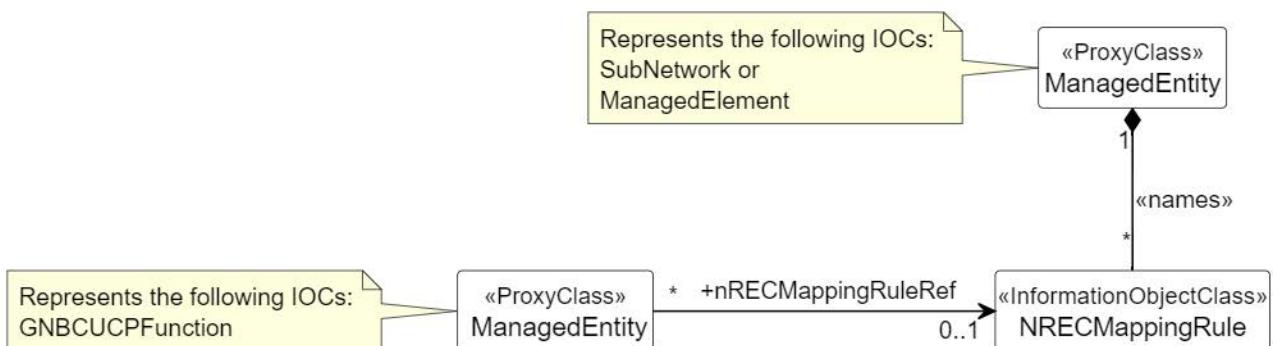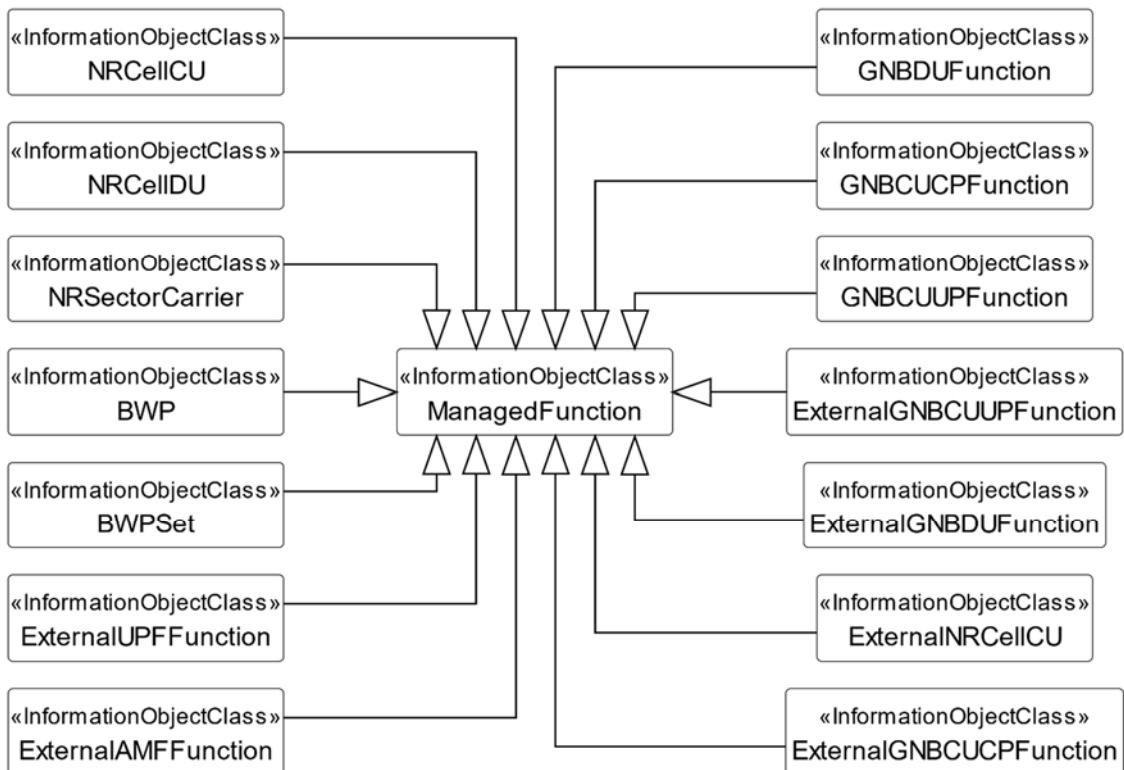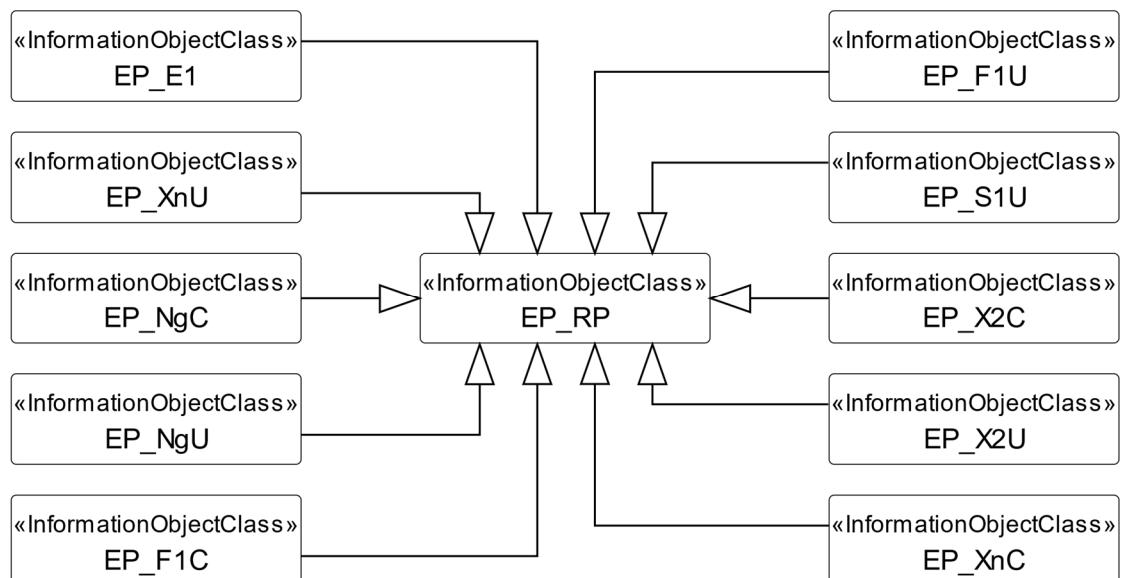
Figure 4.2.1.1-23: NRM fragment for energy cost mapping rule

4.2.1.2 Inheritance

This clause depicts the inheritance relationships.

Figure 4.2.1.2-1: NR NRM fragment in all deployment scenarios

Figure 4.2.1.2-2: NRM fragment for EPs in all deployment scenarios
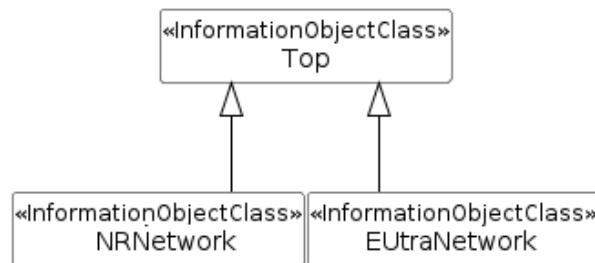
Figure 4.2.1.2-3: NRM fragment for NRNetwork and EUtraNetwork
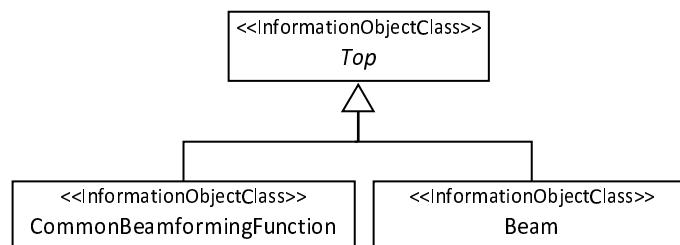
Figure 4.2.1.2-4: NRM fragment for Beam, CommonBeamformingFunction
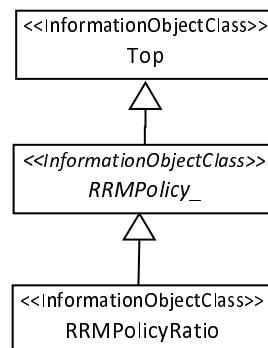
Figure 4.2.1.2-5: NRM fragment for RRM Policies
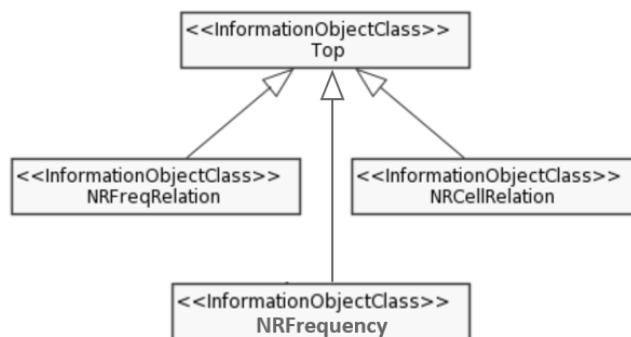
Figure 4.2.1.2-6: NRM fragment for NRFreqRelation, NRFrequency and NRCellRelation
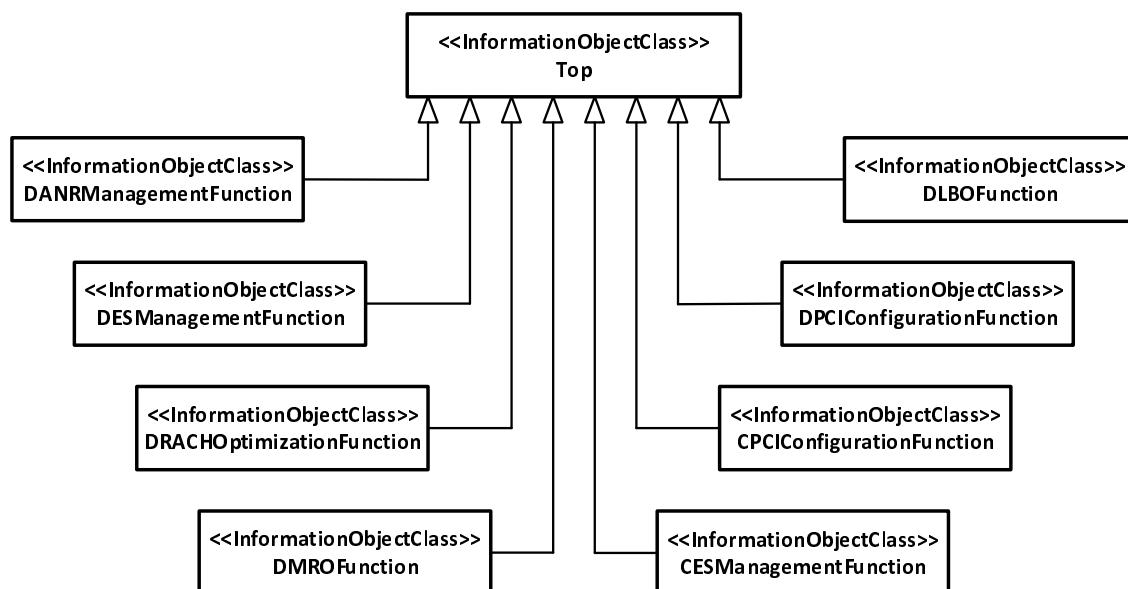
Figure 4.2.1.2-7: NRM fragment for C-SON, D-SON
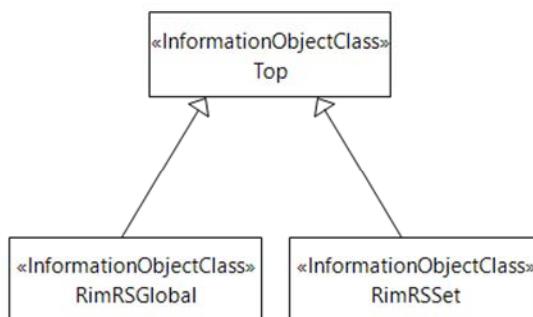
Figure 4.2.1.2-8: NRM fragment to support RIM
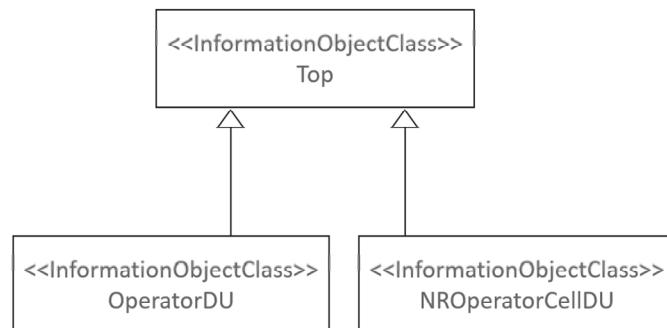
Figure 4.2.1.2-9:   NRM fragment for OperatorDU and NROperatorCellDU
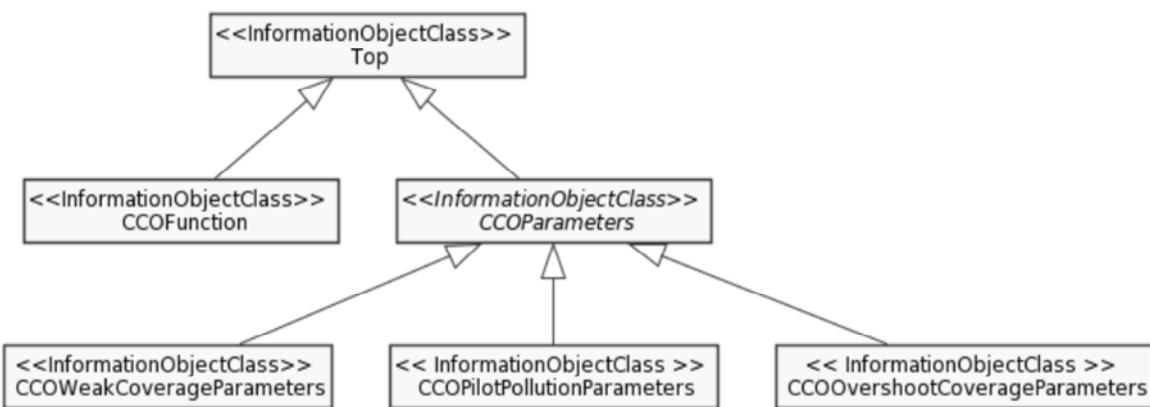
Figure 4.2.1.2-10: NRM fragment for CCO Management
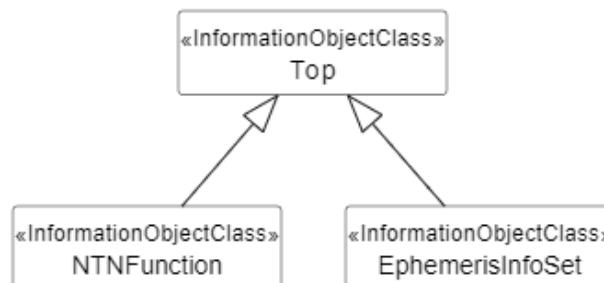
Figure 4.2.1.2-11: NRM fragment for NTN management
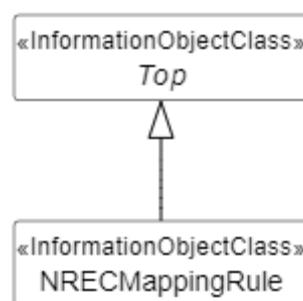
Figure 4.2.1.2-12: NRM fragment for energy cost mapping rule

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 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`	CM	T	T	F	T
`gNBIdLength`	CM	T	T	F	T
`rimRSReportConf`	O	T	F	T	T
Attribute related to role					
`configurable5QISetRef`	CO	T	T	F	T
`dynamic5QISetRef`	CO	T	F	F	T

4.3.1.3   Attribute constraints

Name	Definition
`gNBId` S	Condition: NG-RAN MOCN network sharing with multiple Cell Identity broadcast feature is not supported
`gNBIdLength` S	Condition: NG-RAN MOCN network sharing with multiple Cell Identity broadcast feature is not supported

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.

Role	Req	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 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
x2BlockList	CM	T	T	F	T
x2AllowList	CM	T	T	F	T
xnBlockList	M	T	T	F	T
xnAllowList	M	T	T	F	T
x2HOBlockList	CM	T	T	F	T
xnHOBlockList	M	T	T	F	T
mappingSetIDBackhaulAddressList	CM	T	T	F	T
tceIDMappingInfoList	CM	T	T	F	T
dDAPSHOControl	CM	T	T	F	T
dCHOControl	CM	T	T	F	T
qceIdMappingInfoList	CM	T	T	F	T
mdtUserConsentReqList	CM	T	T	F	T
mappedCellIdInfoList	CO	T	T	F	T
Attribute related to role					
configurable5QISetRef	CO	T	T	F	T
dynamic5QISetRef	CO	T	F	F	T
ephemerisInfoSetRef	CO	T	F	F	T
nRECMappingRuleRef	CM	T	T	F	T

4.3.2.3   Attribute constraints

Name	Definition
`x2BlockList`	Condition: Multi-Radio Dual Connectivity with the EPC (see TS 37.340 [9] clause 4.1.2) is supported.
`x2AllowList`	Condition: Multi-Radio Dual Connectivity with the EPC (see TS 37.340 [9] clause 4.1.2) is supported.
`x2HOBlockList`	Condition: Multi-Radio Dual Connectivity with the EPC (see TS 37.340 [9] clause 4.1.2) is supported.
`mappingSetIDBackhaulAddressList`	Condition: Remote Interference Management function is supported.
`tceIDMappingInfolist`	Condition: MDT Function is supported.
`dDAPSHOControl`	Condition: DAPS is supported.
`dCHOControl`	Condition: CHO is supported.
`mappedCellIdInfoList`	Condition: NTN is supported.
`configurable5QISetRef` S	Condition: Configurable5QISet is name contained by SubNetwork or ManagedElement
`dynamic5QISetRef` S	Condition: Dynamic5QISet is name contained by SubNetwork or ManagedElement
`ephemerisInfoSetRef` S	Condition: EphemerisInfoSetRef is name contained by NTNFunction
`qceIdMappingInfoList`	Condition: QMC Function is supported.
`mdtUserConsentReqList`	Condition: MDT Function is supported.
`nRECMappingRuleRef`	Condition: Energy cost reporting 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 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	CO	T	T	F	T
dynamic5QISetRef	CO	T	F	F	T

4.3.3.3 Attribute constraints

Name	Definition
configurable5QISetRef S	Condition: Configurable5QISet is name contained by SubNetwork or ManagedElement
dynamic5QISetRef S	Condition: Dynamic5QISet is name contained by SubNetwork or ManagedElement

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 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 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 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 TS 38.104 [12] 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.

BWPs are configured individually (bWPRef) or via sets (bWPSetRef).

NOTE: Void

4.3.5.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
cellLocalId	CM	T	T	F	T
operationalState	M	T	F	F	T
administrativeState	M	T	T	F	T
cellState	M	T	F	F	T
pLMNInfoList	CM	T	T	F	T
nPNIdentityList	CM	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
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
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
Attribute related to role					
nRSectorCarrierRef	M	T	T	F	T
nRFrequencyRef	CO	T	T	F	T
choice					
> bWPRef	CM	T	T	F	T
> bWPSetRef	CM	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
cellLocalId S	Condition: NG-RAN MOCN network sharing with multiple Cell Identity broadcast feature is not supported
pLMNInfoList S	Condition: NG-RAN MOCN network sharing with multiple Cell Identity broadcast feature is not supported
nRTAC S	Condition: NG-RAN MOCN network sharing with multiple Cell Identity broadcast feature is not supported
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
bWPRef S	Condition: BWP sets are not supported.
bWPSetRef S	Condition: BWP sets are 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 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 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 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 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 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 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 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 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

4.3.13.3 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 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 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 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 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 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 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 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 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 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 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
isMLBAllowed	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 TS 37.340 [9] clause 4.1.2) is supported.
isMLBAllowed	Condition: MLB function is supported in the source cell.

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 TS 28.622[30]) and the following attributes:

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
offsetMO	O	T	T	F	F
blockListEntry	O	T	T	F	F
blockListEntryIdleMode	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 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`).
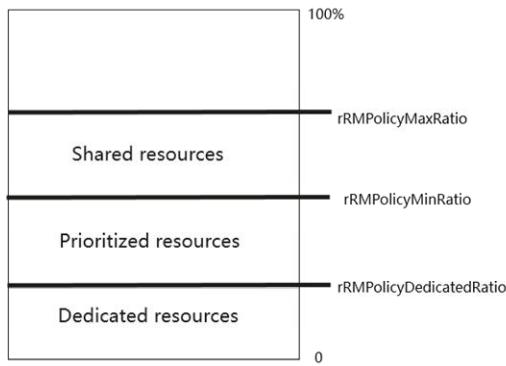
Figure 4.3.36-1 Structure of RRMPolicyRatio

- 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. For the same resource type, 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. For the same resource type, 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. For the same resource type, 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].

- **Prioritized 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].

NOTE: The resources shown in Figure 4.3.36-1 could be reserved or allocated for user and bearer related requests, e.g. a user connection, a PDU session, etc., if the user is entitled to use the allocated resources according the ratios defined above.

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 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 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 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, TS 38.215 [55] to beam measurements, and TS 38.331 [54] to reporting of those measurements and associated beam failure Information Elements, clauses 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 (ie: Phi φ-axis) and vertical/tilt (ie: 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

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

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

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

4.3.40.4 Notifications

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

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

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, PRB in uplink, PRB in downlink,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 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 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).

NOTE:

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

RS-2 is equivalent to RIM-RS type 2 (see 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 TS 38.211 [32]).

4.3.56.2 Attributes

The `RimRSSet` IOC includes attributes inherited from Top IOC (defined in 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 TS 28.313 [57]).

4.3.57.2 Attributes

The DANRManagementFunction IOC includes attributes inherited from Top IOC (defined in 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 Energy Saving (ES) functions. This is provided for Energy Saving purposes.

This Function can be implemented as SON (See clause 6.2.3.0 in TS 28.310 [71]) and/or AI/ML feature (See TS 28.105 [105]) .Attribute `mLModelRefList` indicates that AI/ML is supported for this function. Attribute `aIMLInferenceFunctionRefList` indicates that AI/ML Inference Function is supported for this function.

> NOTE: in the case where multiple DESManagementFunction MOIs exist at different levels of the containment tree, the DESManagementFunction MOI at the lower level overrides the DESManagementFunction 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 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
Attribute related to role					
mLModelRefList	CM	T	F	F	T
aIMLInferenceFunctionRefList	CM	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".
mLModelRefList	The condition is "`MLModel` is supported for this function".
aIMLInferenceFunctionRefList	The condition is "`AIMLInferenceFunction` is supported for this function ".

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 TS 28.313 [57]).

> NOTE: in the case where multiple `DRACHOptimizationFunction` MOIs exist at different levels of the containment tree, the `DRACHOptimizationFunction` MOI at the lower level overrides the `DRACHOptimizationFunction` 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 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 Distributed MRO function.

This Function can be implemented as SON (See clause 7.1.2 in TS 28.313 [57]) and/or AI/ML feature (See TS 28.105 [105]) .Attribute `mLModelRefList` indicates that AI/ML is supported for this function. Attribute `aIMLInferenceFunctionRefList` indicates that AI/ML Inference Function is supported for this function.

> 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 TS 28.622[30]) and the following attributes:

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dmroControl	M	T	T	F	T
maximumDeviationHoTriggerLow	M	T	T	F	T
maximumDeviationHoTriggerHigh	M	T	T	F	T
minimumTimeBetweenHoTriggerChange	M	T	T	F	T
tstoreUEcntxt	M	T	T	F	T
Attribute related to role					
mLModelRefList	CM	T	F	F	T
aIMLInferenceFunctionRef	CM	T	F	F	T

4.3.60.3　　Attribute constraints

Name	Definition
mLModelRefList	The condition is "MLModel is supported for this function".
aIMLInferenceFunctionRef	The condition is "AIMLInferenceFunction is supported for this function ".

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 TS 28.313 [57]).

> NOTE: in the case where multiple DPCIConfigurationFunction MOIs exist at different levels of the containment tree, the DPCIConfigurationFunction MOI at the lower level overrides the DPCIConfigurationFunction 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 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 TS 28.313 [57]).

> NOTE: In the case where multiple CPCIConfigurationFunction MOIs exist at different levels of the containment tree, the CPCIConfigurationFunction MOI at the lower level overrides the CPCIConfigurationFunction 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 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 TS 28.310 [71]) This is provided for Energy Saving purposes.

> NOTE: in the case where multiple CESManagementFunction MOIs exist at different levels of the containment tree, the CESManagementFunction MOI at the lower level overrides the CESManagementFunction 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 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 clause 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.

4.3.66 Void

4.3.67 OperatorDU

4.3.67.1 Definition

This IOC contains attributes to support operator specific gNB-DU level information to support the NG-RAN Multi-Operator Core Network (NG-RAN MOCN) network sharing with multiple Cell Identity broadcast feature. An instance of OperatorDU <<IOC>> should be created and configured for each POP. When configured the attributes override those in parent GNBDUFunction instance.

The OperatorDU <<IOC>> is only used to support NG-RAN MOCN with multiple cell identity broadcast feature. If NG-RAN MOCN with multiple cell identity broadcast feature is not supported, is not used.

The attributes `configurable5QISetRef` and `dynamic5QISetRef` are used to refer to 5QI set for each POP.

The following table identifies the necessary end points required for the representation of shared gNB and shared 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
Shared gNB	<<IOC>>EP_F1C, <<IOC>>EP_F1U	<<IOC>>EP_F1C, <<IOC>>EP_F1U	None.
Shared en-gNB	<<IOC>>EP_F1C, <<IOC>>EP_F1U	<<IOC>>EP_F1C, <<IOC>>EP_F1U	None.

For scenarios with an F1 interface supporting multiple PLMN broadcast, the values of the EP_F1C and EP_F1U attributes contained by different OperatorDU of the same GNBDUFunction should be same.

4.3.67.2 Attributes

The `OperatorDU` IOC includes attributes inherited from Top IOC (defined in 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
Attribute related to role					
configurable5QISetRef	CO	T	T	F	T
dynamic5QISetRef	CO	T	F	F	T

4.3.67.3 Attribute Constraints

Name	Definition
configurable5QISetRef	Condition: NG-RAN Multi-Operator Core Network (NG-RAN MOCN) network sharing with operator specific 5QI is supported.
dynamic5QISetRef	Condition: NG-RAN Multi-Operator Core Network (NG-RAN MOCN) network sharing with operator specific 5QI is supported.

4.3.67.4 Notifications

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

4.3.68 NROperatorCellDU

4.3.68.1 Definition

The NROperatorCellDU <<IOC>> contains attributes to support operator specific cell level information (including cellLocalId, pLMNInfoList, nRTAC) to support NG-RAN Multi-Operator Core Network (NG-RAN MOCN) network sharing with multiple Cell Identity broadcast feature. An instance of NROperatorCellDU <<IOC>> should be created and configured for each POP. When configured the attributes override those in the associated NRCellDU instance.

The NROperatorCellDU <<IOC>> is only used to support NG-RAN MOCN with multiple cell identity broadcast feature. If the NG-RAN MOCN with multiple cell identity broadcast feature is not supported, this IOC is not used.

4.3.68.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
cellLocalId	M	T	T	F	T
administrativeState	M	T	T	F	T
pLMNInfoList	M	T	T	F	T
nRTAC	CM	T	T	F	T
Attribute related to role					
nRCellDURef	M	T	T	F	T

4.3.68.3 Attribute Constraints

Name	Definition

nRTAC S	Condition: 5G SA (Stand Alone) is supported.

4.3.68.4   Notifications

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

4.3.69   DLBOFunction

4.3.69.1   Definition

This IOC contains attributes to support the Distributed function of LBO.

This Function can be implemented as SON (See TS 28.313 [57]) and/or AI/ML feature (See TS 28.105 [105]) .Attribute mLModelRefList indicates that AI/ML is supported for this function. Attribute aIMLInferenceFunctionRefList indicates that AI/ML Inference Function is supported for this function.

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

4.3.69.2   Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dlboControl	M	T	T	F	T
maximumDeviationHoTriggerLow	M	T	T	F	T
maximumDeviationHoTriggerHigh	M	T	T	F	T
minimumTimeBetweenHoTriggerChange	M	T	T	F	T
Attribute related to role					
mLModelRefList	CM	T	F	F	T
aIMLInferenceFunctionRefList	CM	T	F	F	T

4.3.69.3   Attribute constraints

Name	Definition
mLModelRefList	The condition is "MLModel is supported for this function".
aIMLInferenceFunctionRefList	The condition is "AIMLInferenceFunction is supported for this function ".

4.3.69.4   Notifications

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

4.3.70   `CCOFunction`

4.3.70.1   Definition

This IOC contains attributes to support the C-SON function of Capacity and Coverage optimization (See clause 7.2.3 in TS 28.313 [57]).

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

4.3.70.2   Attributes

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

Attribute Name	S	isReadable	isWritable	isInvariant	isNotifyable
`cCOControl`	M	T	T	F	T

4.3.70.3   Attribute constraints

None.

4.3.70.4   Notifications

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

4.3.71   `CCOWeakCoverageParameters`

4.3.71.1   Definition

This IOC represents the properties of `CCOWeakCoverageParameters`. `CCOWeakCoverageParameters` is one realization of abstract *`CCOParameters IOC`*.

4.3.71.2   Attributes

The IOC includes attributes inherited from *`CCOParameters`* IOC

4.3.71.3   Attribute constraints

None.

4.3.71.4   Notifications

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

4.3.72   `CCOPilotPollutionParameters`

4.3.72.1   Definition

This IOC represents the properties of `CCOPilotPollutionParameters`. `CCOPilotPollutionParameters` is one realization of abstract *`CCOParameters IOC`*.

4.3.72.2 Attributes

The IOC includes attributes inherited from *CCOParameters* IOC.

4.3.72.3 Attribute constraints

None.

4.3.72.4 Notifications

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

4.3.73 `CCOOvershootCoverageParameters`

4.3.73.1 Definition

This IOC represents the properties of `CCOOvershootCoverageParameters`. `CCOOvershootCoverageParameters` is one realization of abstract *CCOParameters IOC*.

4.3.73.2 Attributes

The CCOFunction IOC includes attributes inherited from *CCOParameters* IOC .

4.3.73.3 Attribute constraints

None.

4.3.73.4 Notifications

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

4.3.74 *CCOParameters*

4.3.74.1 Definition

This IOC represents the properties of an abstract `CCOParameters`. The *CCOParameters* IOC needs to be subclassed to be instantiated.

The `CCOWeakCoverageParameters` IOC, `CCOPilotPollutionParameters` IOC, `CCOOvershootCoverageParameters` IOC is the realization of a *CCOParameters* IOC, see the inheritance in Figure 4.2.1.2-10.

4.3.74.2 Attributes

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

Attribute Name	S	isReadable	isWritable	isInvariant	isNotifyable
downlinkTransmitPowerRange	O	T	T	F	T
antennaTiltRange	O	T	T	F	T
antennaAzimuthRange	O	T	T	F	T
digitalTiltRange	O	T	T	F	T
digitalAzimuthRange	O	T	T	F	T
coverageShapeList	O	T	T	F	T

4.3.74.3   Attribute constraints

None.

4.3.74.4   Notifications

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

4.3.75   ParameterRange <<dataType>>

4.3.75.1   Definition

This data type represents the adjustment range for parameters.

4.3.75.2   Attributes

The data type includes the following attributes:

Attribute Name	S	isReadable	isWritable	isInvariant	isNotifyable
maxValue	M	T	T	F	T
minValue	M	T	T	F	T

4.3.75.3   Attribute constraints

None.

4.3.75.4   Notifications

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

4.3.76   BWPSet

4.3.76.1   Definition

This IOC represents a set of bandwidth part (BWP) set.

The set contains references to all BWPs that can be used by one UE.

There are assumed to be up to 4 DL, 4 UL and 4 SUL BWP for a total of 12 BWP per set.

4.3.76.2   Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
bWPList	M	T	T	F	T

4.3.76.3   Attribute constraints

None.

4.3.76.4   Notifications

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

4.3.77 NTNFunction

4.3.77.1 Definition

This IOC contains attributes to support the non-terrestrial NR access.

4.3.77.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
nTNpLMNInfoList	O	T	T	F	T
nTNTAClist	O	T	T	F	T

> Editor's note: The attributes of NTNFunction needs further work.

4.3.77.3 Attribute constraints

None.

4.3.77.4 Notifications

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

4.3.78 EphemerisInfoSet

4.3.78.1 Definition

This IOC represents the satellite ephemeris information describing the orbital trajectory information or coordinates for the NTN vehicles.

4.3.78.2 Attributes

The EphemerisInfoSet IOC includes attributes inherited from Top IOC (defined in TS 28.622[30]).

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
ephemerisInfos	M	T	T	F	T

4.3.78.3 Attribute constraints

None.

4.3.78.4 Notifications

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

4.3.79 Ephemeris<<dataType>>

4.3.79.1 Definition

This data type represents the satellite ephemeris related information. The ephemeris data format may be expressed either in format of position and velocity state vector or in format of orbital parameters.

4.3.79.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
satelliteId	M	T	F	F	T
epochTime	M	T	F	F	T
CHOICE_1 positionVelocity	CM	T	F	F	T
CHOICE_2 orbital	CM	T	F	F	T

NOTE: It is an ASN.1 CHOICE for an ephemeris be expressed either in format of position and velocity state vector or in format of orbital parameters, see TS 38.331 [54].

4.3.79.3   Attribute constraints

positionVelocity S	Condition: Ephemeris is in format of position and velocity.
orbital S	Condition: Ephemeris is in format of orbital.

4.3.79.4   Notifications

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

4.3.80   PositionVelocity <<dataType>>

4.3.80.1   Definition

This data type defines configuration parameters to support satellite position and velocity state.

4.3.80.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
positionX	M	T	F	F	T
positionY	M	T	F	F	T
positionZ	M	T	F	F	T
velocityVX	M	T	F	F	T
velocityVY	M	T	F	F	T
velocityVZ	M	T	F	F	T

4.3.80.3   Attribute constraints

None.

4.3.80.4   Notifications

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

4.3.81   Orbital <<dataType>>

4.3.81.1   Definition

This data type defines configuration parameters of orbital trajectory information to support satellite access.

4.3.81.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
semiMajorAxis	M	T	F	F	T
eccentricity	M	T	F	F	T
periapsis	M	T	F	F	T

longitude	M	T	F	F	T
inclination	M	T	F	F	T
meanAnomaly	M	T	F	F	T

4.3.81.3   Attribute constraints

None.

4.3.81.4   Notifications

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

4.3.82   QceIdMappingInfo <<dataType>>

4.3.82.1   Definition

This data type represents the properties describing the mapping relationship between the unique identity of QoE collection entity, PLMN where QoE collection entity resides, and the IP address of the QoE collection entity.

4.3.82.2   Attributes

Attribute Name	S	isReadable	isWritable	isInvariant	isNotifyable
qoECollectionEntityAddress	M	T	T	F	T
qoECollectionEntityIdentity	M	T	T	F	T
pLMNTarget	M	T	T	F	T

4.3.82.3   Attribute constraints

None.

4.3.82.4   Notifications

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

4.3.83   MappedCellIdInfo <<dataType>>

4.3.83.1   Definition

This data type represents the mapping relationship between Mapped Cell IDs and geographical areas (see clause 16.14.5 of TS 38.300 [3]).

4.3.83.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
ntnGeoArea	M	T	T	F	T
mappedCellId	M	T	T	F	T

4.3.83.3 Attribute constraints

None.

4.3.83.4 Notifications

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

4.3.84 LoadTimeThreshold <<dataType>>

4.3.84.1 Definition

This data type represents the traffic load threshold and the time duration.

4.3.84.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
threshold	O	T	T	F	T
timeDuration	O	T	T	F	T

4.3.84.3 Attribute constraints

None

4.3.84.4 Notifications

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

4.3.85 EsNotAllowedTimePeriod <<dataType>>

4.3.85.1 Definition

This data type represents a time period during which inter-RAT energy saving is not allowed. Time period is valid on the specified day and time of every week.

4.3.85.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
startTime	O	T	T	F	T
endTime	O	T	T	F	T
daysOfWeek	O	T	T	F	T

4.3.85.3 Attribute constraints

None

4.3.85.4 Notifications

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

4.3.86 `UeAccDelayProbability <<dataType>>`

4.3.86.1 Definition

This data type represents the target Access Delay probability (AD_P) for the RACH optimization function.

4.3.86.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
targetProbability	O	T	T	F	T
accessDelay	O	T	T	F	T

4.3.86.3 Attribute constraints

None

4.3.86.4 Notifications

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

4.3.87 `UeAccProbability <<dataType>>`

4.3.87.1 Definition

This data type represents the target Access Probability (AP_n) for the RACH optimization function.

4.3.87.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
targetProbability	O	T	T	F	T
numberOfPreamblesSent	O	T	T	F	T

4.3.87.3 Attribute constraints

None

4.3.87.4 Notifications

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

4.3.88 `NRNetwork`

4.3.88.1 Definition

This IOC represents a set of NR frequencies and external NR entities (e.g. ExternalGNBCUCPFunction). This is used to differentiate these entities and frequencies from those in EUTRAN.

4.3.88.2 Attributes

The `NRNetwork` IOC includes the attributes inherited from `Top` IOC (defined in TS 28.622 [30]). It contains no additional attributes.

4.3.88.3 Attribute constraints

None.

4.3.88.4 Notifications

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

4.3.89 EUtraNetwork

4.3.89.1 Definition

This IOC represents a set of EUTRAN frequencies and external EUTRAN entities (e.g. ExternalENBFunction). This is used to differentiate these entities and frequencies from those in NR.

4.3.89.2 Attributes

The `EUtraNetwork` includes the attributes inherited from `Top` IOC (defined in TS 28.622 [30]). It contains no additional attributes.

4.3.89.3 Attribute constraints

None.

4.3.89.4 Notifications

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

4.3.90 NRECMappingRule

4.3.90.1 Definition

This <<IOC>> represents the unified mapping rule, applicable for the group of gNBs (within a certain area), for the calculation of the energy cost (see TS 34.423[58]).

NRECMappingRule can be name-contained by SubNetwork or ManagedElement. It applies to all ManagedEntity contained by the parent.

4.3.90.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
ecMRInputMinimumValue	M	T	T	F	T
ecMRInputMaximumValue	M	T	T	F	T
ecTimeInterval	M	T	T	F	T

4.3.90.3 Attribute Constraints

None.

4.3.90.4 Notifications

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

4.4 Attribute definitions

4.4.1 Attribute properties

Attribute Name	Documentation and Allowed Values	Properties
NRCellDU.admin istrativeState	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
operationalSta te	It indicates the operational state of the NRCellDU instance. It describes whether the resource is installed and partially or fully operable (Enabled) or the resource is not installed or not operable (Disabled). allowedValues: ENABLED, DISABLED.	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
cellState	It indicates the usage state of the NRCellDU instance. It describes whether the cell is not currently in use (Idle), or currently in use but not configured to carry traffic (Inactive) or is currently in use and is configured to carry traffic (Active). The Inactive and Active definitions are in accordance with TS 38.401 [4]: "Inactive: the cell is known by both the gNB-DU and the gNB-CU. The cell shall not serve UEs; Active: the cell is known by both the gNB-DU and the gNB-CU. The cell should be able to serve UEs." allowedValues: IDLE, INACTIVE, ACTIVE.	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
arfcnDL	NR Absolute Radio Frequency Channel Number (NR-ARFCN) for downlink allowedValues: See TS 38.104 [12] subclause 5.4.2. Note that allowed values of NR-ARFCN are specified for each band in subclause 5.4.2.3.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
arfcnUL	NR Absolute Radio Frequency Channel Number (NR-ARFCN) for uplink allowedValues: See TS 38.104 [12] subclause 5.4.2. Note that allowed values of NR-ARFCN are specified for each band in subclause 5.4.2.3.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
arfcnSUL	NR Absolute Radio Frequency Channel Number (NR-ARFCN) for supplementary uplink allowedValues: See TS 38.104 [12] subclause 5.4.2. Note that allowed values of NR-ARFCN are specified for each band in subclause 5.4.2.3.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
beamAzimuth	The azimuth of a beam transmission, which means the horizontal beamforming pointing angle (beam peak direction) in the (Phi) φ-axis in $1/10^{th}$ degree resolution. See subclauses 3.2 in TS 38.104 [12] and 7.3 in TS 38.901 [53] as well as TS 28.662 [11]. The pointing angle is the direction equal to the geometric centre of the half-power contour of the beam relative to the reference plane. Zero degree implies explicit antenna bearing (boresight). Positive angle implies clockwise from the antenna bearing. allowedValues: [-1800 ..1800] 0.1 degree	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

beamHorizWidth	The Horizontal beamWidth of a beam transmission, which means the horizontal beamforming half-power (3dB down) beamwidth in the (Phi) φ-axis in 1/10th degree resolution. See subclauses 3.2 in TS 38.104 [12] and 7.3 in TS 38.901 [53]. allowedValues: [0..3599] 0.1 degree	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
beamIndex	Index of the beam. For example, please see subclause 6.3.2 of TS 38.331 [54] where the ssb-Index in the rsIndexResults element of MeasResultNR is defined.	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
beamTilt	The tilt of a beam transmission, which means the vertical beamforming pointing angle (beam peak direction) in the (Theta) θ-axis in 1/10th degree resolution. See subclauses 3.2 in TS 38.104 [12] and 7.3 in TS 38.901 [53] as well as TS 28.662 [11]. The pointing angle is the direction equal to the geometric centre of the half-power contour of the beam relative to the reference plane. Positive value implies downtilt. allowedValues: [-900..900] 0.1 degree	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
beamType	The type of the beam. allowedValues: "SSB-BEAM"	type: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
beamVertWidth	The Vertical beamWidth of a beam transmission, which means the vertical beamforming half-power (3dB down) beamwidth in the (Theta) θ-axis in 1/10th degree resolution. See subclauses 3.2 in TS 38.104 [12] and 7.3 in TS 38.901 [53]. allowedValues: [0...1800] 0.1 degree	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
bSChannelBwDL	BS Channel BW in MHz. for downlink allowedValues: See BS Channel BW in TS 38.104 [12], subclause 5.3.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
bSChannelBwUL	BS Channel BW in MHz.for uplink allowedValues: See BS Channel BW in TS 38.104 [12], subclause 5.3.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
bSChannelBwSUL	BS Channel BW in MHz.for supplementary uplink allowedValues: See BS Channel BW in TS 38.104 [12], subclause 5.3.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
configuredMaxTxPower	This is the maximum 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

configuredMaxT xEIRP	This is the maximum emitted isotropic 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 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
AddressWithVla n.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
AddressWithVla n. 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 TS 38.300 [3]. See "Global gNB ID" in subclause 9.3.1.6 of TS 38.413 [5]. allowedValues: 0..4294967295	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
gNBIdLength	This indicates the number of bits for encoding the gNB ID. See "Global gNB ID" in subclause 9.3.1.6 of TS 38.413 [5]. allowedValues: 22 .. 32.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
gNBDUId	It uniquely identifies the DU at least within a gNB-CU. See 'gNB-DU ID' in subclause 9.3.1.9 of 3GPP TS 38.473 [8]. allowedValues: 0..2^{36}-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..2^{36}-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 OperatorDU (for MOCN network sharing scenario) or ExternalCUCPFunction), identifies a NR cell within a PLMN. This is the NR Cell Identity (NCI). See subclause 8.2 of TS 38.300 [3]. The NCI can be constructed by encoding the gNB Identifier using gNBId (of the parent GNBCUCPFunction or GNBDUFunction or OperatorDU (for MOCN network sharing scenario) or ExternalCUCPFunction) and cellLocalId where the gNB Identifier field is of length specified by gNBIdLength (of the parent GNBCUCPFunction or GNBDUFunction or ExternalCUCPFunction). See "Global gNB ID" in subclause 9.3.1.6 of TS 38.413 [5]. The NR Cell Global identifier (NCGI) is constructed from the PLMN identity the cell belongs to and the NR Cell Identifier (NCI) of the cell. See relation between NCI and NCGI subclause 8.2 of TS 38.300 [3]. allowedValues: Not applicable	type: Integer multiplicity: 1 isOrdered: N/A isUnique: 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 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: 0..1
		isOrdered: N/A
		isUnique: N/A
		defaultValue: None
		isNullable: False

GNBCUCPFunctio n.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
GNBCUUPFunctio n.pLMNIdList	This is a list of PLMN identifiers. It defines from which set of PLMNs an UE must have as its serving PLMN to be allowed to use the GNB-CU-UP. allowedValues: Not applicable.	type: PLMNId multiplicity: 1..12 isOrdered: False isUnique: True defaultValue: None isNullable: False
NRCellCU.pLMNI nfoList	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.pLMNI nfoList	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
nPNIdentityLis t	It defines which NPNs that can be served by the NR cell, and which CAG IDs or NIDs can be supported by the NR cell for corresponding PNI-NPN or SNPN in case of the cell is NPN-only cell. (NPN-Identity referring to TS 38.331 [54]) allowedValues: Not applicable.	type: NpnId multiplicity: 1..* isOrdered: True isUnique: True defaultValue: None isNullable: False
ExternalNRCell CU.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

rRMPolicyMembe rList	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, PRB_UL, PRB_DL (for NRCellDU, GNBDUFunction) RRC_CONNECTED_USERS (for NRCellCU, GNBCUCPFunction) DRB (for GNBCUUPFunction) See NOTE 2and NOTE 4	type: ENUM 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 isNullable: False
sST	This attribute specifies the Slice/Service type (SST) of the network slice. allowedValues: See clause 5.15.2 of 3GPP TS 23.501 [2].	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None 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. Pattern: '^[A-Fa-f0-9]{6}$' See clause 5.15.2 of 3GPP TS 23.501 [2]. allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
rRMPolicyMaxRa tio	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. For the same resource type, 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

rRMPolicyMinRa tio	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. For the same resource type, 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
rRMPolicyDedic atedRatio	This attribute specifies the percentage of radio resource that dedicatedly used by the associated rRMPolicyMemberList. For the same resource type, the sum of the 'rRMPolicyDedicatedRatio' values assigned to all RRMPolicyRatio(s) name-contained by same ManagedEntity 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
subCarrierSpac ing	Subcarrier spacing configuration for a BWP. See subclause 5 in TS 38.104 [12]. allowedValues: [15, 30, 60, 120] depending on the frequency range FR1 or FR2.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
txDirection	Indicates if the transmission direction is downlink (DL), uplink (UL) or both downlink and uplink (DL and UL). allowedValues: DL, UL, DL_AND_UL	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
bwpContext	It identifies whether the object is used for downlink, uplink or supplementary uplink. allowedValues: DL, UL, SUL	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
isInitialBwp	It identifies whether the object is used for initial or other BWP. allowedValues: INITIAL, OTHER	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
startRB	Offset in common resource blocks to common resource block 0 for the applicable subcarrier spacing for a BWP. This corresponds to N_BWP_start, see subclause 4.4.5 in TS 38.211 [32]. allowedValues: 0 to N_grid_size – 1, where N_grid_size equals the number of resource blocks for the BS channel bandwidth, given the subcarrier spacing of the BWP.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

numberOfRBs	Number of physical resource blocks for a BWP. This corresponds to N_BWP_size, see subclause 4.4.5 in TS 38.211 [32]. allowedValues: 1 to N_grid_size – startRB of the BWP. Se startRB for definition of N_grid_size.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
nRTCI	This is the Target NR Cell Identifier. It consists of NR Cell Identifier (NCI) and Physical Cell Identifier of the target NR cell (nRPCI). The NRRelation.nRTCI identifies the target cell from the perspective of the NRCell, the name-containing instance of the subject NRCellCU instance. allowedValues: Not applicable.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
adjacentNRCell Ref	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 must be positioned on the NR global frequency raster, as defined in 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
nRrFreqRelati onRef	This attribute contains the DN of the referenced NRFreqRelation. allowedValues: Not applicable.	type: DN multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
nRSectorCarrie rRef	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 `SectorEquipmentFunction`. 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 TS 38.331 [54]. The list is ordered as rsrpOffsetSSB, rsrqOffsetSSB, sinrOffsetSSB, rsrpOffsetCSI-RS, rsrqOffsetCSI-RS and sinrOffsetCSI-RS. This is a list of integer 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, 20, 22, 24 }	type: Integer multiplicity: 6 isOrdered: True isUnique: False defaultValue: 0 isNullable: False
`cellIndividualOffset`	It is a list of offset values for the neighbour cell. Used when UE is in connected mode. The unit is 1dB. It is defined for rsrpOffsetSSB, rsrqOffsetSSB, sinrOffsetSSB, rsrpOffsetCSI-RS, rsrqOffsetCSI-RS and sinrOffsetCSI-RS. See TS 38.331 [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, 20, 22, 24 }	type: Integer multiplicity: 6 isOrdered: True isUnique: False defaultValue: 0 isNullable: False
`blockListEntry`	It specifies a list of PCI (physical cell identity) that are exclude-listed in EUTRAN measurements as described in 3GPP TS 38.331 [54]. allowedValues: { 0…503 }	type: Integer multiplicity: 0..16 isOrdered: False isUnique: True defaultValue: None isNullable: False
`blockListEntryIdleMode`	It specifies a list of PCI (physical cell identity) that are exclude-listed in SIB4 and SIB5 as described in TS 38.331 [54]. allowedValues: { 0…1007 }	type: Integer multiplicity: 0..16 isOrdered: False isUnique: True defaultValue: None isNullable: False
`cellReselectionPriority`	It is the absolute priority of the carrier frequency used by the cell reselection procedure. See *CellReselectionPriority* IE in TS 38.331 [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 must not already used by other RAT, i.e. equal priorities between RATs are not supported. allowedValues: N/A	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False

cellReselectionSubPriority	It indicates a fractional value to be added to the value of cellReselectionPriority to obtain the absolute priority of the concerned carrier frequency for E-UTRA and NR. See *CellReselectionSubPriority* IE in TS 38.331 [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 TS 38.331 [54]. 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
qQualMin	It indicates the minimum required quality level in the cell (dB). See qQualMin in TS 38.304 [49]. Unit is 1 dB. Value 0 means that it is not sent and UE applies in such case the (default) value of negative infinity for Qqualmin. Sent in SIB3 or SIB5. allowedValues: { -34..-3, 0 }	type: 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 $Thresh_{X, HighP}$ in 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 $Thresh_{X, HighQ}$ in TS 38.304 [49]. Its unit is 1 dB. allowedValues: { 0..31 }	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
threshXLowP	This specifies the Srxlev threshold (in dB) used by the UE when reselecting towards a lower priority RAT/ frequency than the current serving frequency. Each frequency of NR might have a specific threshold. It corresponds to $Thresh_{X, LowP}$ in 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 $\text{Thresh}_{X,\,LowQ}$ in TS 38.304 [49]. Its unit is 1 dB. allowedValues: {0..31}.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
tReselectionNr	It is the cell reselection timer and corresponds to parameter TreselectionRAT for NR defined in 38.331 [54]. Its unit is in seconds. allowedValues: {0..7}.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
tReselectionNR SfHigh	The attribute t-ReselectionNr (a parameter Treselection_{NR} in TS 38.304 [49]) is multiplied with this factor if the UE is in high mobility state. It corresponds to the parameter Speed dependent ScalingFactor for TreselectionNr for medium high state in 3GPP TS 38.304 [49]. The unit is one %. Value mapping: 25 = 0.25 50 = 0.5 75 = 0.75 100 = 1.0 allowedValues: {25, 50, 75, 100}.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
tReselectionNR SfMedium	The attribute t-ReselectionNR (a parameter "Treselection_{NR} in TS 38.304 [49]") is multiplied with this factor if the UE is in medium mobility state. It corresponds to the parameter Speed dependent ScalingFactor for TreselectionNr for medium mobility state in 3GPP TS 38.304 [49]. Its unit is one %. Value mapping: 25 = 0.25 50 = 0.5 75 = 0.75 100 = 1.0 allowedValues: {25, 50, 75, 100}.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
absoluteFreque ncySSB	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
ssbSubCarrierS pacing	This SSB is used for for synchronization. See subclause 5 in TS 38.104 [12]. Its units are in kHz. allowedValues: {15, 30, 120, 240}. Note that the allowed values of SSB used for representing data, by e.g. a BWP, are: 15, 30, 60 and 120 in units of kHz.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
multiFrequency BandListNR	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], clause 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 time when the gNB attempts to start RIM-RS monitoring. allowedValues: Not applicable.	type: DateTime multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
rimRSMonitoringStopTime	This field configures the time when the gNB stops RIM-RS monitoring. allowedValues: Not applicable.	type: DateTime 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 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 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
intrasystemANR ManagementSwitch	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 must 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
intersystemANR ManagementSwitch	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 must 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: TO_BE_ENERGY_SAVING, TO_BE_NOT_ENERGY_SAVING	type: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

energySaveState	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: IS_NOT_ENERGY_SAVING, IS_ENERGY_SAVING.	type: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
intraRatEsActivationOriginalCellLoadParameters	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 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: loadThreshold: Integer 0..100 (Percentage of PRB usage, see 3GPP TS 36.314 [13]) timeDuration: Integer (in unit of seconds)	type: LoadTimeThreshold multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
intraRatEsActivationCandidateCellsLoadParameters	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 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: loadThreshold: Integer 0..100 (Percentage of PRB usage (see 3GPP TS 36.314 [13])) timeDuration: Integer (in unit of seconds)	type: LoadTimeThreshold multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
intraRatEsDeactivationCandidateCellsLoadParameters	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 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: loadThreshold: Integer 0..100 (Percentage of PRB usage (see 3GPP TS 36.314 [13])) timeDuration: Integer (in unit of seconds)	type: LoadTimeThreshold multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
LoadTimeThreshold.threshold	This attribute indicates a traffic load threshold. allowedValues: Integer	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
LoadTimeThreshold.timeDuration	This attribute indicates a duration in unit of seconds. allowedValues: Integer	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

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: N/A	type: EsNotAllowedTimePeriod multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
EsNotAllowedTimePeriod.startTime	This attribute indicates a time of day as a start time for a period. Time of day is in HH:MM or H:MM 24-hour format per UTC time zone. Examples, 20:15:00, 20:15:00-08:00 (for 8 hours behind UTC). allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
EsNotAllowedTimePeriod.endTime	This attribute indicates a valid time of day as an end time for a period. The endTime should be later than startTime. Time of day is in HH:MM or H:MM 24-hour format per UTC time zone. Examples, 20:15:00, 20:15:00-08:00 (for 8 hours behind UTC). allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
EsNotAllowedTimePeriod.daysOfWeek	This attribute indicates a day in a week. allowedValues: MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY, SATURDAY, SUNDAY	type: <<enumeration>> multiplicity: 0..1 isOrdered: N/A isUnique: N/A 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: LoadTimeThreshold multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

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: LoadTimeThreshold multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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: LoadTimeThreshold multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
dmroControl	This attribute determines whether the MRO function is enabled or disabled. allowedValues: TRUE,FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
dDAPSHOControl	This attribute determines whether the DAPS handover function is enabled or disabled. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
dCHOControl	This attribute determines whether the CHO handover function is enabled or disabled. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

dlboControl	This attribute determines whether the D-LBO 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 TS 28.313, ref [57] subclause 7.1.3. allowedValues: See TS 38.211 [32] subclause 7.4.2.1 for legal values of pci. The number of pci in the list is 0 to 1007.	type: Integer multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
ueAccProbabilityDist	This is a list of target Access Probability (AP_n) for the RACH optimization function. Each instance AP_n 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, **AP_n,** 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: UeAccProbability multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
ueAccDelayProbabilityDist	This is a list of target Access Delay probability (AD_P) for the RACH optimization function. Each instance AD_P 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 accessDelay, over an unspecified sampling period. This target is suitable for RACH optimization. allowedValues: Each element of the list, **AD_p,** 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 p and d is vendor-specific.	type: UeAccDelayProbability multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
targetProbability	This attribute indicates a probability (in %). allowedValues: 0..100	type: Integer multiplicity:0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

numberOfPreamblesSent	This attribute indicates the number of preambles sent used to configure a wanted distribution of RACH preambles in a vendor implemented DRACH optimisation function. allowedValues: 1..200 Note: The DRACH optimization function may configure `preambleTransMax` as defined in TS 38.331 [54]. The allowed values for `preambleTransMax` are 3, 4, 5, 6, 7, 8, 10, 20, 50, 100, 200 (see 38.331 [54], subclause 6.3.2).	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
accessDelay	This attribute indicates the access delay in unit of milliseconds. allowedValues: 10..560	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A 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 TS 28.313 [57]. allowedValues: See 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
maximumDeviationHoTriggerLow	This parameter defines the maximum allowed lower deviation of the Handover Trigger, from the default point of operation (see clause 15.5.2.5 in TS 38.300 [3] and clause 9.2.2.61 in TS 38.423 [58].) allowedValues: -20..20 Unit: 0.5 dB	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
maximumDeviationHoTriggerHigh	This parameter defines the maximum allowed upper deviation of the Handover Trigger, from the default point of operation (see clause 15.5.2.5 in TS 38.300 [3]. and clause 9.2.2.61 in TS 38.423 [58].) allowedValues: -20..20 Unit: 0.5 dB	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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 TS 38.300 [3]). allowedValues: 0..604800 Unit: Seconds	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`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 TS 38.300 [3]. This attribute is used for Mobility Robustness Optimization. allowedValues: 0..1023 Unit: 100 milliseconds	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`configurable5Q ISetRef`	This is the DN of `Configurable5QISet`. The detailed definition for `Configurable5QISet` see clause 5.3.75. allowedValues: DN of the `Configurable5QISet MOI`.	type: DN multiplicity: 0..1 isOrdered: False isUnique: True defaultValue: None isNullable: False
`dynamic5QISetR ef`	This is the DN of `Dynamic5QISet`. The detailed definition for `Dynamic5QISet` see clause 5.3.94. allowedValues: DN of the `Dynamic5QISet MOI`.	type: DN multiplicity: 0..1 isOrdered: False isUnique: True defaultValue: None isNullable: False
`frequencyDomai nPara`	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
`sequenceDomain Para`	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
`rimRSSubcarrie rSpacing`	It is the subcarrier spacing configuration (μ) for the RIM-RS. Subcarrier spacing $\Delta f = 2^{\mu} \cdot 15 \; kHz.$ (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 attributer 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 attribute 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

`nrOfGlobalRIMR SFrequencyCand idates`	It is the number of candidate frequency resources in the whole network ($N_{\mathrm{f}}^{\mathrm{RIM}}$) (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
`rimRSCommonCar rierReferenceP oint`	This attribute is used to configure the common reference point for RIM RS. Where represents the frequency-location of point A expressed as in ARFCN. See 3GPP TS 38.211 [32] subclause 4.4.4.2 allowedValues: 0..3279165	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`rimRSStartingF requencyOffset IdList`	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
`nrofRIMRSSeque nceCandidateso fRS1`	It is the number of candidate sequences assigned for RIM RS-1 ($N_{\mathrm{s}}^{\mathrm{RIM},1}$) (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
`rimRSScrambleI dListofRS1`	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
`nrofRIMRSSeque nceCandidateso fRS2`	It is the number of candidate sequences assigned for RIM RS-2 ($N_{\mathrm{s}}^{\mathrm{RIM},2}$) (see 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
`rimRSScrambleI dListofRS2`	It is a list of configured scrambling identities for RIM RS-2 (see 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 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 $\bar{c}(i)$ (see 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 $\bar{c}(i)$ (see 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

| dlULSwitchingP eriod1 | 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 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 $T_{\mathrm{per,1}}^{\mathrm{RIM}}$ (see 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 |
| symbolOffsetOf ReferencePoint 1 | 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 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 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 $T_{\mathrm{per},2}^{\mathrm{RIM}}$ (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 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 ($N_{\mathrm{setID}}^{\mathrm{RIM},1}$) (see 38.211 [32], subclause 7.4.1.6). allowedValues: 0,1...2^22-1	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
totalnrofSetIdofRS2	It is the total number of set IDs for RIM RS-2 ($N_{\mathrm{setID}}^{\mathrm{RIM},2}$) (see 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 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 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

`consecutiveRIM RS1List`	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 ($N_{\mathrm{symb,ref}}^{\mathrm{RIM,\ 1}}$) before the reference point. The size of the list is `nrofConsecutiveRIMRS1` (see 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
`consecutiveRIM RS2List`	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 ($N_{\mathrm{symb,ref}}^{\mathrm{RIM,\ 2}}$) before the reference point. The size of the list is `nrofConsecutiveRIMRS2` (see 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
`enablenearfarI ndicationRS1`	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
`enablenearfarI ndicationRS2`	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
`rimRSReportCon f`	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: None isNullable: False
`reportIndicato r`	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: None 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, RS1_FOR_ENOUGH_MITIGATION, RS1_FOR_NOT_ENOUGH_MITIGATION};
	    If the indication of `enableEnoughNotEnoughIndication` is "disable", valid values are {RS1, RS2}.
	
	RS1_FOR_ENOUGH_MITIGATION means RIM-RS type 1 is used to indicate 'enough mitigation' functionality.
	RS1_FOR_NOT_ENOUGH_MITIGATION means RIM-RS type 1 is used to indicate 'Not enough mitigation' functionality.
	
	allowedValues: RS1, RS2, RS1_FOR_ENOUGH_MITIGATION, RS1_FOR_NOT_ENOUGH_MITIGATION
		type: ENUM
		multiplicity: 1
		isOrdered: N/A
		isUnique: N/A
		defaultValue: None
		isNullable: False

`rimRSMonitorin gWindowDuratio n`	This attribute configures a duration of the monitoring window in which gNB monitors the RIM-RS, in unit of P_t, where P_t is the RIM-RS transmission periodicity in units of uplink-downlink switching period (see 38.211 [32], subclause 7.4.1.6).	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
	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 $M * P_t$, where M 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 N_T consecutive detection durations in each RIM-RS transmission periodicity (P_t) 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 $P1 * R1$ (if only $P1$ is configured) or $(P1 + P2)/2 * R1$ (if both $P1$ and $P2$ are configured), where,	
	$R1$ is the number of consecutive uplink-downlinkswitching periods for RS-1 (configured by `nrofConsecutiveRIMRS1`),	
	$P1$ is the first uplink-downlinkswitching period (configured by `dlULSwitchingPeriod1`),	
	$P2$ is the second uplink-downlink switching period (configured by `dlULSwitchingPeriod2`), and	
	$$N_T = \begin{cases} \left\lceil \dfrac{N_{\text{setID}}^{\text{RIM},1}}{N_{\text{f}}^{\text{RIM}} N_{\text{s}}^{\text{RIM},1}} \right\rceil & \text{if enableEnoughNotEnoughIndication is "disable"} \\[2em] \left\lceil \dfrac{2N_{\text{setID}}^{\text{RIM},1}}{N_{\text{f}}^{\text{RIM}} N_{\text{s}}^{\text{RIM},1}} \right\rceil & \text{if enableEnoughNotEnoughIndication is "enable"} \end{cases}$$ $N_{\text{setID}}^{\text{RIM},1}$ is the total number of set IDs for RIM RS-1 (configured by `totalnrofSetIdofRS1`), $N_{\text{f}}^{\text{RIM}}$ is the number of candidate frequency resources in the whole network (configured by `nrofGlobalRIMRSFrequencyCandidates`), and $N_{\text{s}}^{\text{RIM},1}$ is the number of candidate sequences assigned for RIM RS-1 (configured by `nrofRIMRSSequenceCandidatesofRS1`).	
	allowedValues: 1,2,..2^14	
`rimRSMonitorin gWindowPeriodi city`	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
`rimRSMonitorin gWindowStartin gOffset`	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 N_T, where N_T is given in above attribute `rimRSMonitoringWindowDuration`. allowedValues: $1,2..N_T-1$.	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 (S_M), in unit of consecutive detection duration. gNB starts monitoring potential interference from the S_M-th consecutive detection duration in the first complete RIM-RS transmission periodicity (P_t) 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`)	type: 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

`x2BlockList`	This is a list of GeNBIds. If the target node GeNBId is a member of the source node's `NRCellCU.x2BlockList`, 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.x2AllowList`. In such case, the GeNBId in `x2AllowList` shall be treated as if it is absent. allowedValues: See NOTE 5.	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`xnBlockList`	This is a list of GgNBIds. If the target node GgNBId is a member of the source node's `NRCellCU.xnBlockList`, 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.xnAllowList`. In such case, the GgNBId in `xnAllowList` shall be treated as if it is absent. allowedValues: See NOTE 5.	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`x2AllowList`	This is a list of GeNBIds. If the target node GeNBId is a member of the source node's `NRCellCU.x2AllowList`, 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.x2BlockList`. 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
`xnAllowList`	This is a list of GgNBIds. If the target node GgNBId is a member of the source node's `NRCellCU.xnAllowList`, 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.xnBlockList`. 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

xnHOBlockList	This is a list of GgNBIds. For all the entries in `NRCellCU.xnHOBlockList`, 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
x2HOBlockList	This is a list of GeNBIds. For all the entries in `NRCellCU.x2HOBlockList`, 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
tceIDMappingIn foList	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 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 TS 32.422[68])	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
pLMNTarget	In `TceIDMappingInfo` datatype, this attribute indicates the PLMN where TCE resides. (See subclauses 4.1.1.9.2 and 4.9.2 in TS 32.422 [68]) In `QceIdMappingInfo` datatype, this attribute indicates the PLMN where QoE collection entity resides. allowedValues: N/A	Type: PLMNId multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
isMLBAllowed	This indicates if mobility load balancing is allowed or prohibited from source cell to target cell. If TRUE, load balancing is allowed from source cell to target cell. The source cell is identified by the name-containing NRCellCU of the NRCellRelation that contains the isMLBAllowed. The target cell is referenced by the NRCellRelation that contains this isLBAllowed. In case of isHOAllowed is FALSE, mobility load balancing is prohibited by handover from source cell to target cell. If FALSE, load balancing shall be prohibited from source cell to target cell. allowedValues: TRUE,FALSE	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
NROperatorCell DU.nRCellDURef	This attribute contains the DN of the referenced `NRCellDU`. allowedValues: N/A	type: DN multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

downlinkTransmitPowerRange	It indicates adjustment range (including maximum value, minimum value) of downlinkTransmitPower to optimize radio coverage. allowedValues: minValue: [0..100] maxValue: [0..100]	type: ParameterRange multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
antennaTiltRange	It indicates adjustment range (including maximum value, minimum value) of antennaTilt to optimize radio coverage. allowedValues: minValue: [-900..900] in unit 0.1 degree maxValue: [-900..900] in unit 0.1 degree	type: ParameterRange multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
antennaAzimuthRange	It indicates adjustment range (including maximum value, minimum value) of antennaAzimuth to optimize radio coverage. allowedValues: minValue: [-1800..1800] in unit 0.1 degree maxValue: [-1800..1800] in unit 0.1 degree	type: ParameterRange multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
digitalTiltRange	It indicates adjustment range (including maximum value, minimum value) of digitalTilt to optimize radio coverage. allowedValues: minValue: [-900..900] in unit 0.1 degree maxValue: [-900..900] in unit 0.1 degree	type: ParameterRange multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
digitalAzimuthRange	It indicates adjustment range (including maximum value, minimum value) of digitalAzimuth to optimize radio coverage. allowedValues: minValue: [-1800..1800] in unit 0.1 degree maxValue: [-1800..1800] in unit 0.1 degree	type: ParameterRange multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
coverageShapeList	It indicates the coverage shape of specific sites which can be selected to optimize radio coverage. allowedValues: 0 .. 65535	type: Integer multiplicity: 0..* isOrdered: True isUnique: True defaultValue: None isNullable: False
cCOControl	This attribute determines whether the centralized SON CCO Function is enabled or disabled. allowedValues: TRUE,FALSE	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
maxValue	It indicates the maximum value of the parameter. allowedValues: N/A	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
minValue	It indicates the minimum value of the parameter. allowedValues: N/A	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`NROperatorCell DU.administrat iveState`	It indicates the administrative state of the `NROperatorCellDU`. It describes the permission to use or prohibition against using the cell, imposed through the OAM services. The value of this attribute is effective only when the value of the attribute `NRCellDU.administrativeState` = UNLOCKED, if the value of the attribute `NRCellDU.administrativeState` is LOCKED or SHUTTING DOWN, the value of this attribute shall be treated same as the value of `NRCellDU.administrativeState`. allowedValues: LOCKED, SHUTTING DOWN, UNLOCKED. The meaning of these values is as defined in ITU-T Recommendation X.731 [18].	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: LOCKED isNullable: False
`bWPSetRef`	Contains the DN of a BWP set (`BWPSet`). allowedValues: Not applicable	type: DN multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`bWPList`	Defines the list of DN of BWPs associated to the BWPSet. allowedValues: Not applicable	type: DN multiplicity: 0..12 isOrdered: False isUnique: True defaultValue: None isNullable: False
`ephemerisInfoS etRef`	This is the DN of `EphemerisInfoSet`. allowedValues: DN of the `EphemerisInfoSet MOI.`	type: DN multiplicity: 0..1 isOrdered: False isUnique: True defaultValue: None isNullable: False
`ephemerisInfos`	This is the list of Ephemeris related information. allowedValues: N/A	type: Ephemeris multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`NTNFunction.nT NpLMNInfoList`	It defines which PLMNs that can be served by the NR NTN cell, and which S-NSSAIs can be supported by the NR NTN 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
`NTNFunction.nT NTACList`	It is the list of Tracking Area Codes (either legacy TAC or extended TAC) for NR NTN. allowedValues: Legacy TAC and Extended TAC are defined in clause 9.3.3.10 of TS 38.413 [5].	type: NrTac multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`satelliteId`	This attribute indicates satellite Id.number. It shall be formatted as a fixed 5-digit string, padding with leading digits "0" to complete a 5-digit length. allowedValues: N/A Pattern: '^[0-9]{5}$'	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`epochTime`	It defines the ephemeris reference time., allowedValues: N/A	type: DateTime multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

positionVelocity	It indicates ephemeris is in format of NTN payload position and velocity state vectors. allowedValues: N/A	type: PositionVelocity multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
orbital	It indicates ephemeris is in orbital parameter ephemeris format, as specified in NIMA TR 8350.2 [95]. allowedValues: N/A	type: Orbital multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
positionX	X, Y, Z coordinate of satellite position state vector in ECEF. Unit is meter. Step of 1.3 m. Actual value = field value * 1.3. allowedValues: 0..604800 Unit: meter	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
positionY	X, Y, Z coordinate of satellite position state vector in ECEF. Unit is meter. Step of 1.3 m. Actual value = field value * 1.3. allowedValues: 0..604800 Unit: meter	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
positionZ	X, Y, Z coordinate of satellite position state vector in ECEF. Unit is meter. Step of 1.3 m. Actual value = field value * 1.3. allowedValues: 0..604800 Unit: meter	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
velocityVX	X, Y, Z coordinate of satellite velocity state vector in ECEF. Step of 0.06 m/s. Actual value = field value * 0.06. allowedValues: -131072..131071 Unit: meter/second	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
velocityVY	X, Y, Z coordinate of satellite velocity state vector in ECEF. Step of 0.06 m/s. Actual value = field value * 0.06. allowedValues: -131072..131071 Unit: meter/second	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
velocityVZ	X, Y, Z coordinate of satellite velocity state vector in ECEF. Step of 0.06 m/s. Actual value = field value * 0.06. allowedValues: -131072..131071 Unit: meter/second	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
semiMajorAxis	Satellite orbital parameter: semi major axis α, see NIMA TR 8350.2 [95]. Step of $4.249 * 10^{-3}$ m. Actual value = 6500000 + field value * $(4.249 * 10^{-3})$. allowedValues: 0..8589934591 Unit: meter	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
eccentricity	Satellite orbital parameter: eccentricity e, see NIMA TR 8350.2 [95]. Step $1.431 * 10^{-8}$. Actual value = field value * $(1.431 * 10^{-8})$. allowedValues: -524288..524287	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
periapsis	Satellite orbital parameter: argument of periapsis ω, see NIMA TR 8350.2 [95]. Step of $2.341 * 10^{-8}$ rad. Actual value = field value * $(2.341 * 10^{-8})$. allowedValues: 0..16777215 Unit: radian	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False

longitude	Satellite orbital parameter: longitude of ascending node Ω, see NIMA TR 8350.2 [95]. Step of $2.341 * 10^{-8}$ rad. Actual value = field value * $(2.341 * 10^{-8})$. allowedValues: 0..2097151 Unit: radian	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
inclination	Satellite orbital parameter: inclination i, see NIMA TR 8350.2 [95]. Step of $2.341 * 10^{-8}$ rad. Actual value = field value * $(2.341 * 10^{-8})$. allowedValues: -524288..524287 Unit: radian	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
meanAnomaly	Satellite orbital parameter: Mean anomaly M at epoch time, see NIMA TR 8350.2 [95]. Step of $2.341 * 10^{-8}$ rad. Actual value = field value * $(2.341 * 10^{-8})$. allowedValues: 0..16777215 Unit: radian	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
qoECollectionE ntityAddress	Specifies the IP address to which the QMC reports shall be transferred. IP address can be an IPv4 address (See RFC 791 [37]) or an IPv6 address (See RFC 2373 [38]). allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
qoECollectionE ntityIdentity	Specifies a unique identity of the QoE collection entity to which the QMC reports shall be transferred. (For details, please see subclause 5 of TS 28.405[104]) allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
qceIdMappingIn foList	It identifies a list of relationship between the identity of the QoE collection entity, PLMN where QoE collection entity resides, and the IP address of the QoE collection entity. allowedValues: N/A	type: QceIdMappingInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
mdtUserConsent ReqList	It represents a list of MDT measurement names that are subject to user consent at MDT activation. Any MDT measurement, whose name is not specified in this list, is not subject to user consent at MDT activation. allowedValues: M1, M2, M3, M4, M5, M6, M7, M8, M9, MDT_UE_LOCATION.	type: ENUM multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
mappedCellIdIn foList	This attribute provides the list of mapping between geographical location and Mapped Cell ID. allowedValues: Not applicable	type: MappedCellIdInfo multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
ntnGeoArea	This attribute indicates a specific geographical location mapped to Mapped Cell ID(s). allowedValues: N/A	type: GeoArea multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
mappedCellId	This attribute is in format of NCGI to indicate a fixed geographical area (See subclause 16.14.5 in TS 38.300[3]). allowedValues: N/A	type: Ncgi multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
mLModelRefList	This attribute holds a DN list of MLModel (See TS 28.105 [105]).	type: DN multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False

`aIMLInferenceF` `unctionRefList`	This attribute holds a DN list of `AIMLInferenceFunction` (See TS 28.105 [105]) .	type: DN multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`nRECMappingRul` `eRef`	This is the DN of `NRECMappingRule`. An empty value indicates the NRECMappingRule contained by parent, e.g. SubNetwok or ManagedElement, applies. allowedValues: Not applicable	type: DN multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`ecTimeInterval`	This attribute specifies the time interval (in seconds) used by the gNB for averaging the measured energy consumption values for computing the energy cost. allowedValues: N/A	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`ecMRInputMinim` `umValue`	This attribute specifies the energy consumption value mapping to the minimum energy cost value. It is based on the minimum energy consumption values among all gNBs within the group for the corresponding energy cost mapping rule. allowedValues: N/A	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`ecMRInputMaxim` `umValue`	This attribute specifies the energy consumption value mapping to the maximum energy cost value. It is based on the maximum energy consumption values among all gNBs within the group for the corresponding energy cost mapping rule. allowedValues: N/A	type: Integer 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, PRB UL, PRB DL, DRB). Different RRM Policy maybe applied for different types of radio resource. E.g. `RRMPolicyRatio` is used for PRB resource. When the resource type is PRB the policy applies for both uplink and downlink, and 'PRB UL' and 'PRB DL' are not used.
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 2^n-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 2^m-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 38.211 [32], clause 7.4.1.6)

   RIM RS-2, RIM-RS2，RIM RS2 is equivalent to RIM-RS type 2 (see 38.211 [32], clause 7.4.1.6).

4.5 Common notifications

4.5.1 Alarm notifications

This clause presents a list of notifications, defined in TS 28.111 [109], 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`	O	--
`notifyAlarmListRebuilt`	M	--
`notifyChangedAlarm`	O	--
`notifyCorrelatedNotificationChanged`	O	--
`notifyChangedAlarmGeneral`	O	--
`notifyComments`	O	--
`notifyPotentialFaultyAlarmList`	O	--

Note: `notifyChangedAlarm` is deprecated in TS 28.111 [109].

4.5.2 Configuration notifications

This clause presents a list of notifications, defined in 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	--
`notifyMOIChanges`	O	--
`notifyEvent`	O	--

4.5.3 Threshold Crossing notifications

This clause presents a list of notifications, defined in 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 28.658 [19], dataType, `PLMNId`	`PLMNId`
TS 25.538 [79], IOC, EASFunction	EASFunction
TS 25.538 [79], IOC, EESFunction	EESFunction
TS 25.538 [79], IOC, ECSFunction	ECSFunction
TS 28.538 [79], `datatype`, `ServingLocation`	`ServingLocation`
TS 28.622 [30], datatype, TimeWindow	`TimeWindow`

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.

The Figure 5.2.1.1-1 shows the 5GC NF NRM containment/naming relationship.
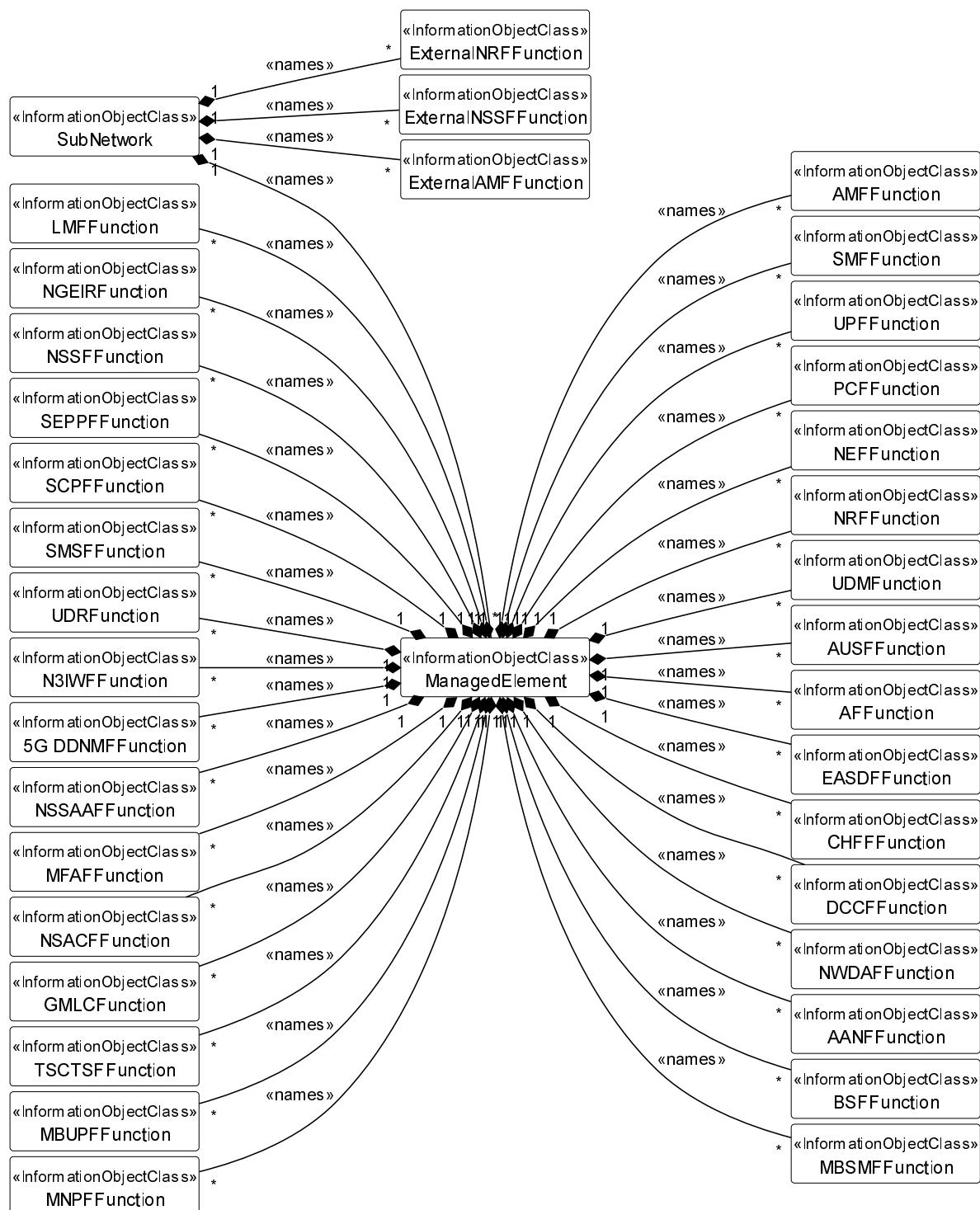
Figure 5.2.1.1-1: 5GC NRM containment/naming relationship
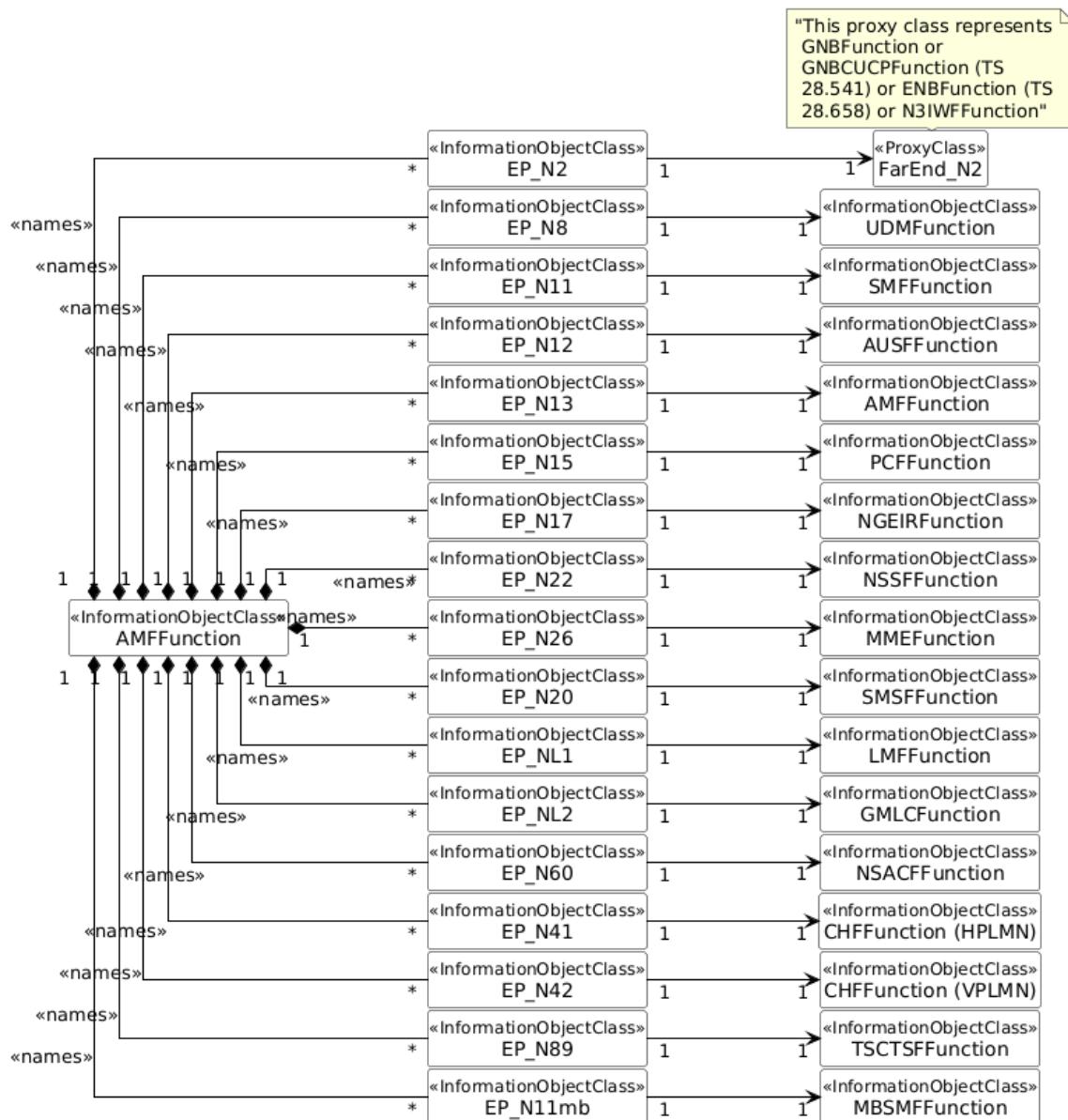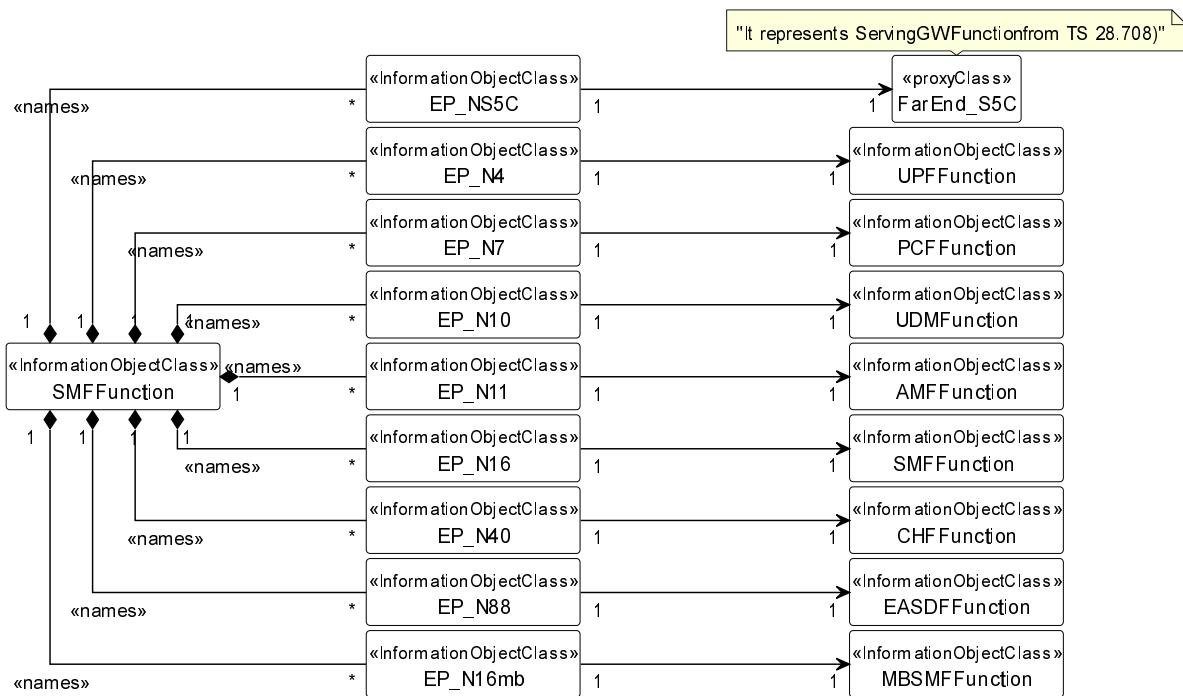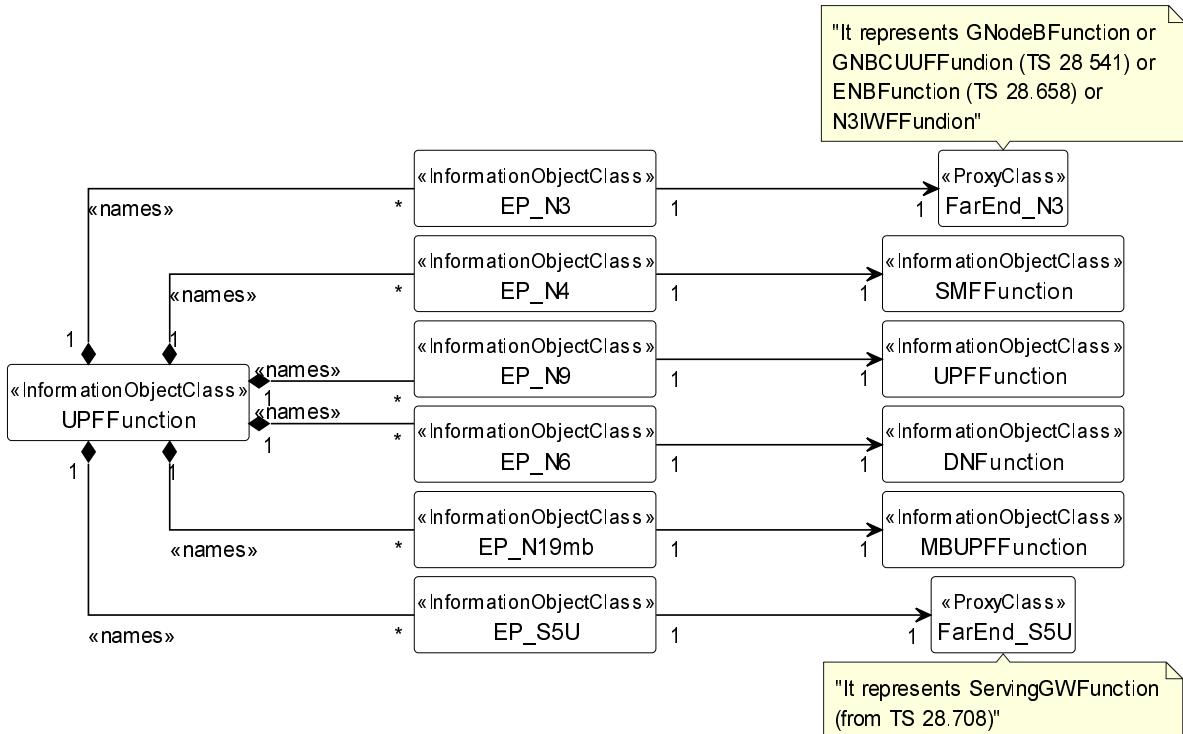
Figure 5.2.1.1-2: Transport view of AMF NRM

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

Figure 5.2.1.1-3: Transport view of SMF NRM

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

Figure 5.2.1.1-4: Transport view of UPF NRM

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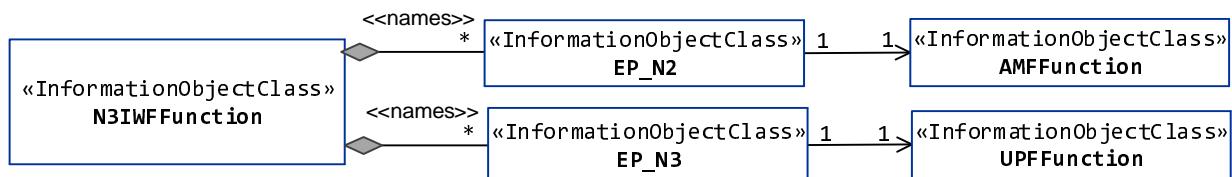
Figure 5.2.1.1-5: Transport view of N3IWF NRM

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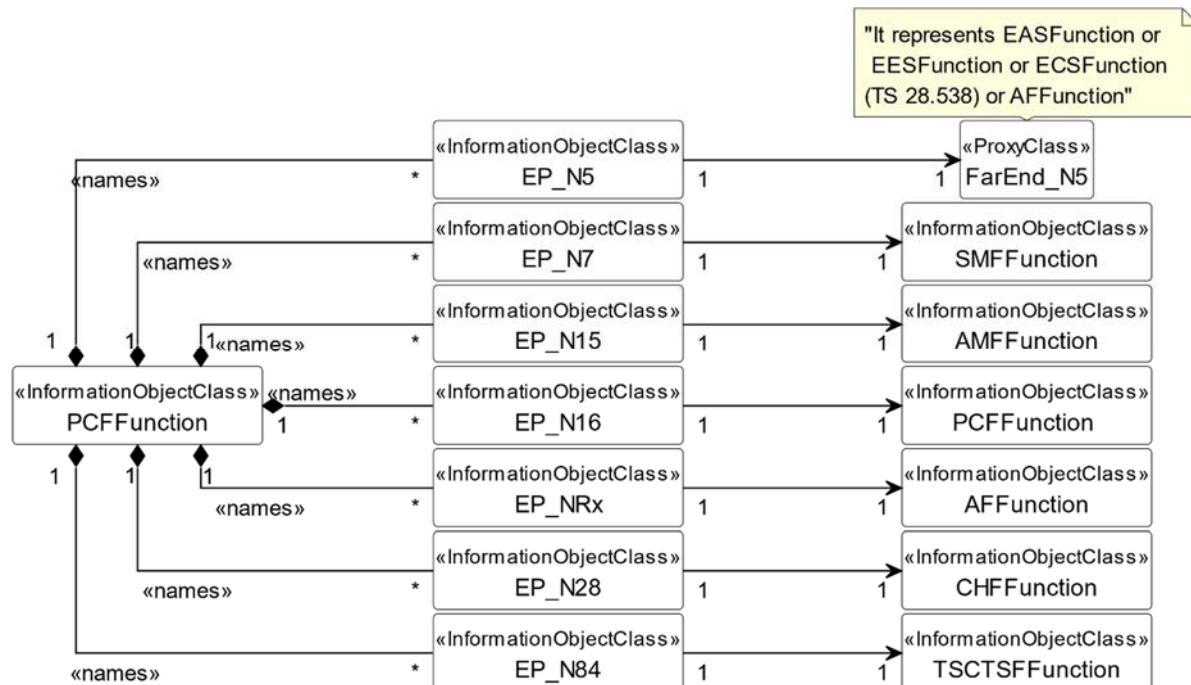
Figure 5.2.1.1-6: Transport view of PCF NRM

The Figure 5.2.1.1-7 shows the transport view of AUSF NRM.
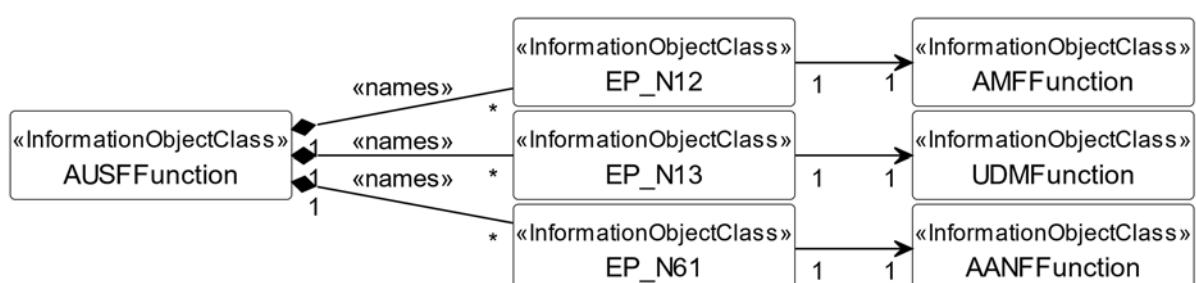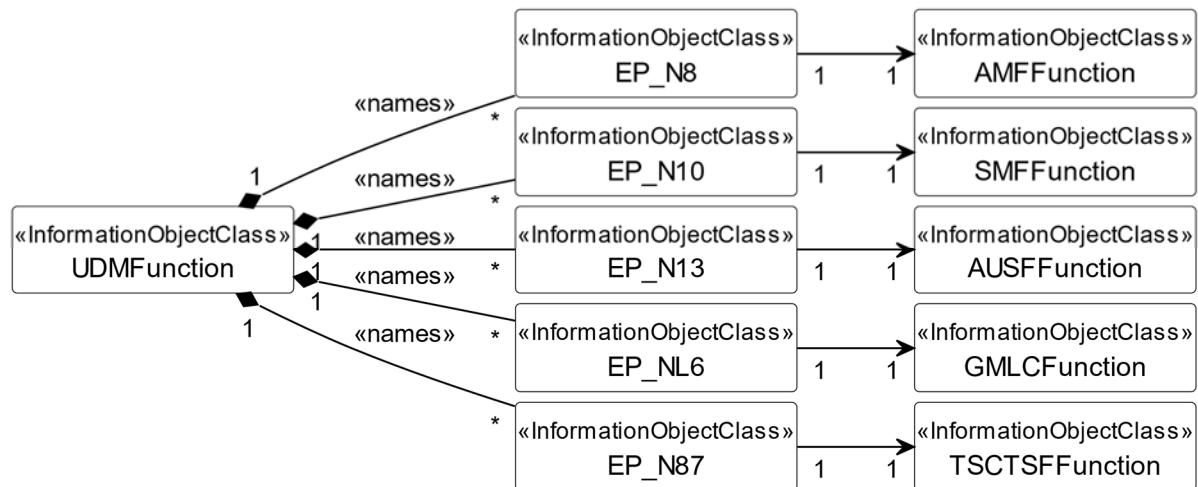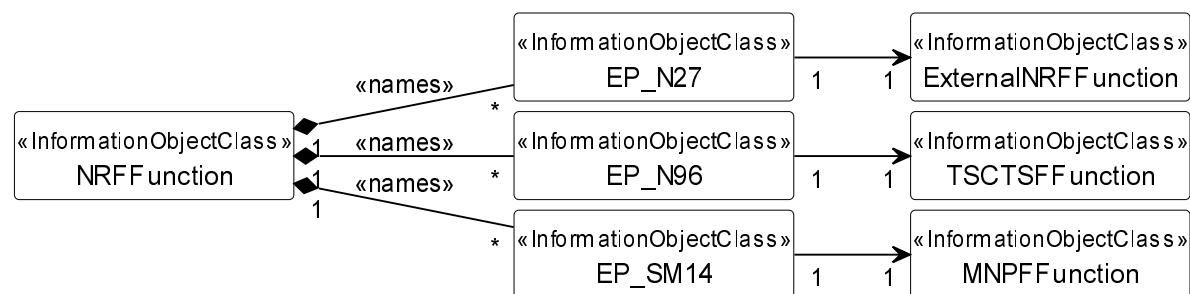
Figure 5.2.1.1-7: Transport view of AUSF NRM
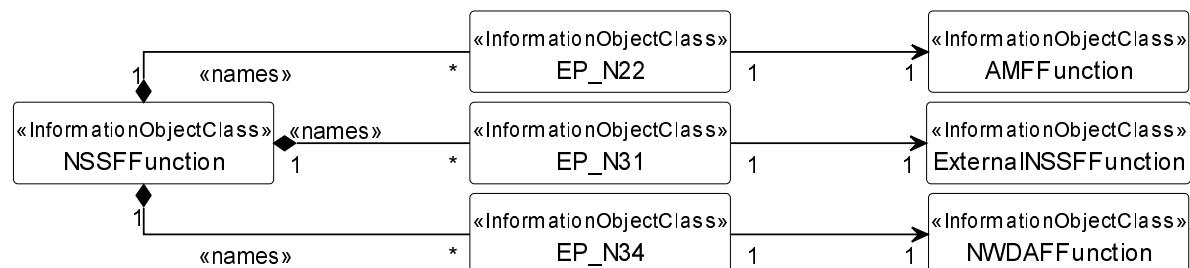
The Figure 5.2.1.1-8 shows the transport view of UDM NRM.

Figure 5.2.1.1-8: Transport view of UDM NRM

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

Figure 5.2.1.1-9: Transport view of NRF NRM

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

Figure 5.2.1.1-10: Transport view of NSSF NRM

The Figure 5.2.1.1-11 shows the transport view of SMSF NRM.
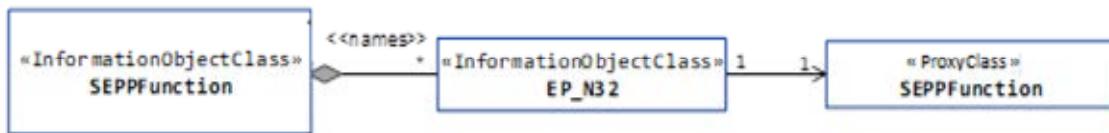
The Figure 5.2.1.1-12 shows the transport view of 5G location service related NRM.

Figure 5.2.1.1-12: Transport view of LMF NRM
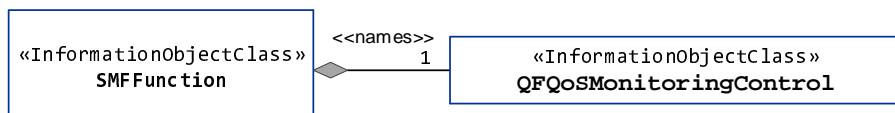
The Figure 5.2.1.1-13 shows the transport view of 5G-EIR NRM.

Figure 5.2.1.1-13: Transport view of 5G-EIR NRM
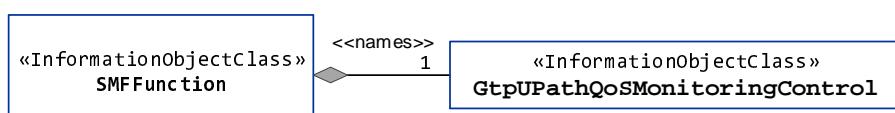
The Figure 5.2.1.1-14 shows the transport view of SEPP NRM.

Figure 5.2.1.1-14: Transport view of SEPP NRM

The Figure 5.2.1.1-15 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

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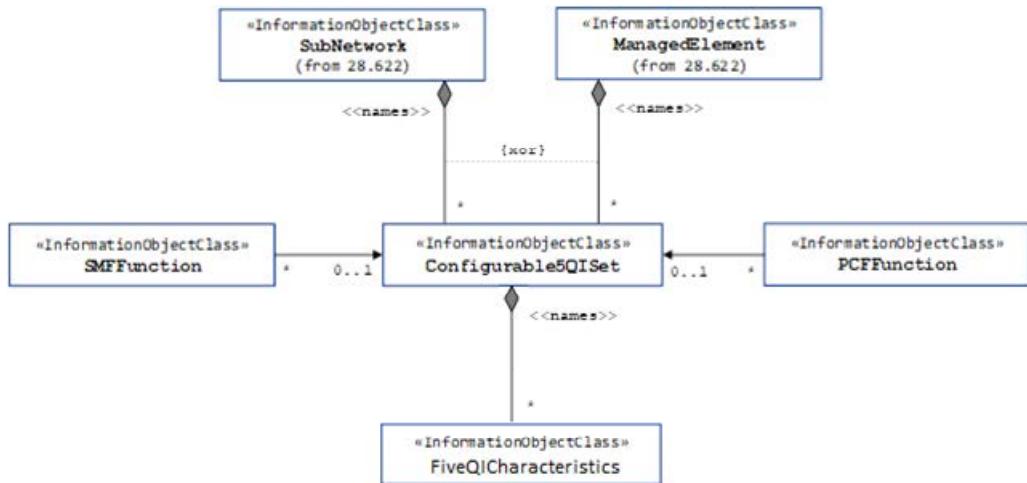
Figure 5.2.1.1-17: NRM fragment for pre-configured 5QIs in 5GC

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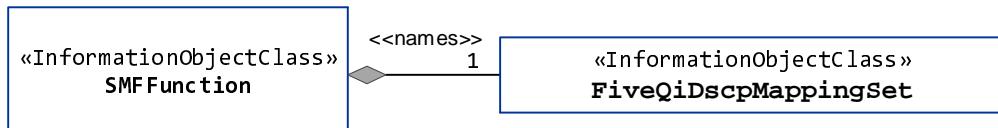
Figure 5.2.1.1-18: NRM fragment for 5QI and DSCP mapping.

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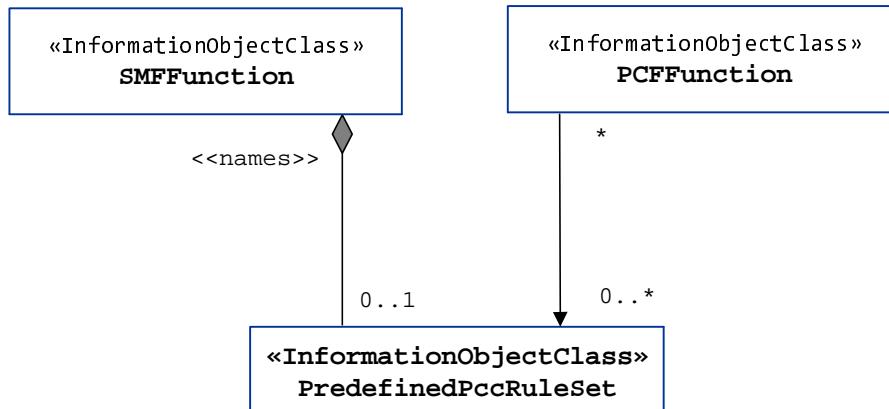
Figure 5.2.1.1-19: NRM fragment for predefined PCC rule

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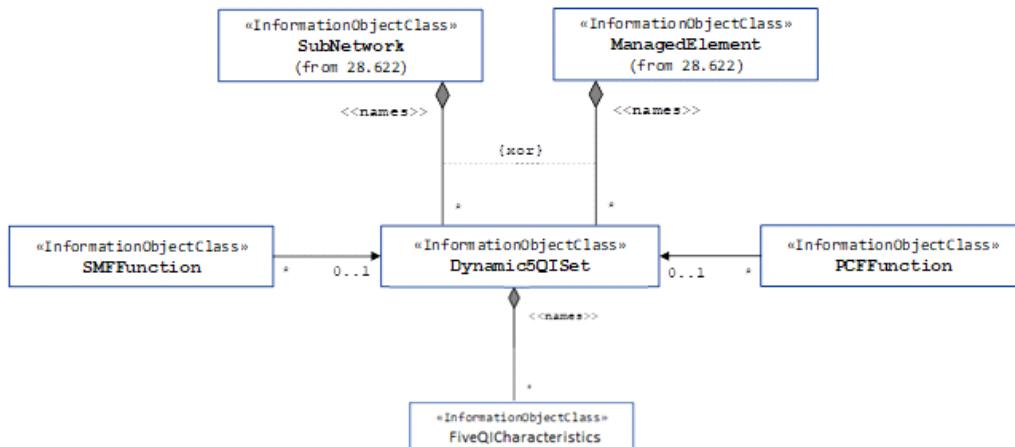
Figure 5.2.1.1-20: NRM fragment for dynamically assigned 5QIs in 5GC

The Figure 5.2.1.1-21 shows the transport view of NSACF NRM.
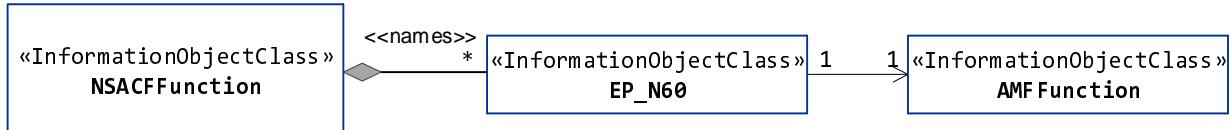
Figure 5.2.1.1-21: Transport view of NSACF NRM
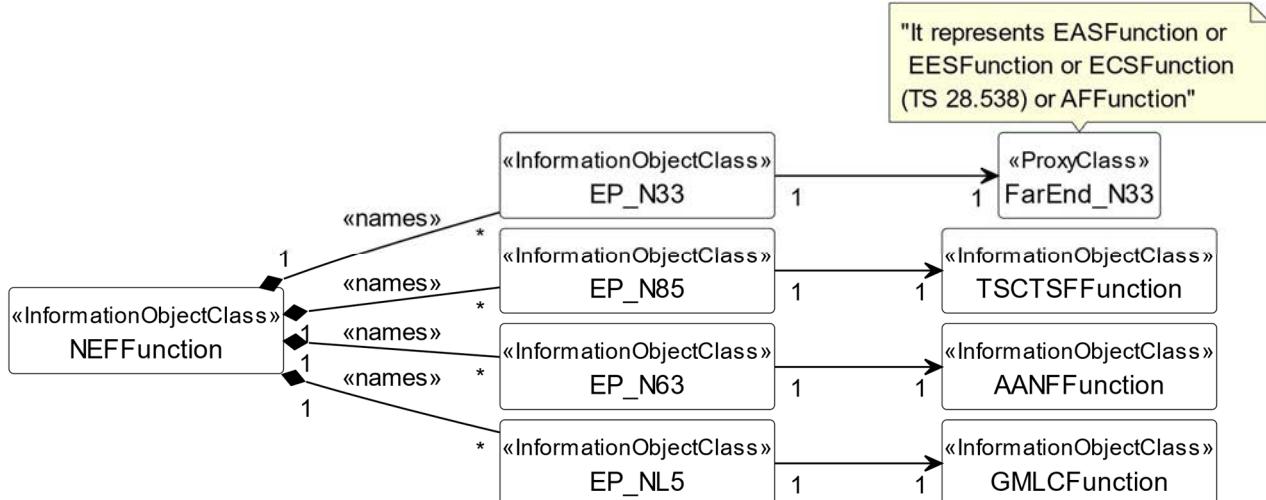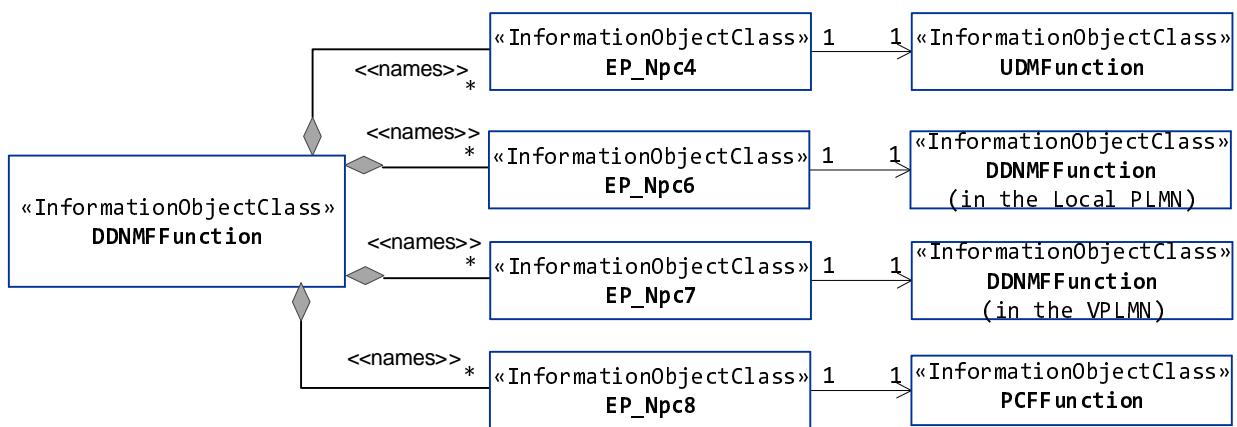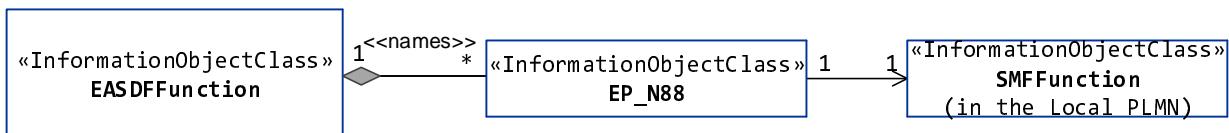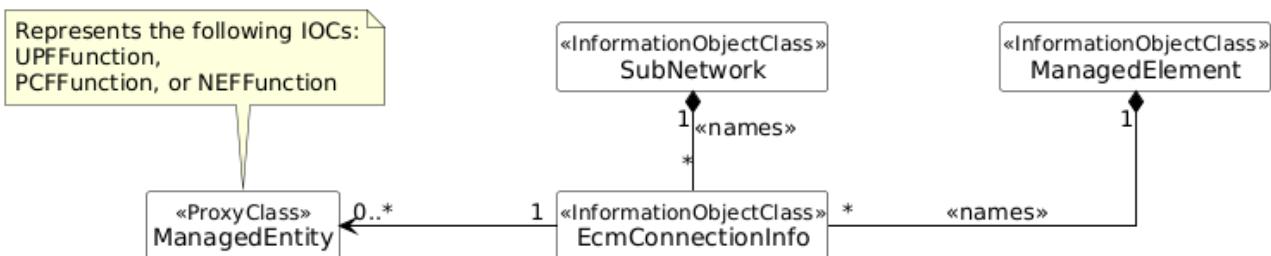
Figure 5.2.1.1-22: Transport view of NEF NRM

The Figure 5.2.1.1-23 shows the transport view of 5G DDNMF NRM.

Figure 5.2.1.1-23: Transport view of 5G DDNMF NRM

The Figure 5.2.1.1-24 shows the transport view of 5G EASDF NRM.

Figure 5.2.1.1-24: Transport view of 5G EASDF NRM

Figure 5.2.1.1-25: EcmConnectionInfo NRM
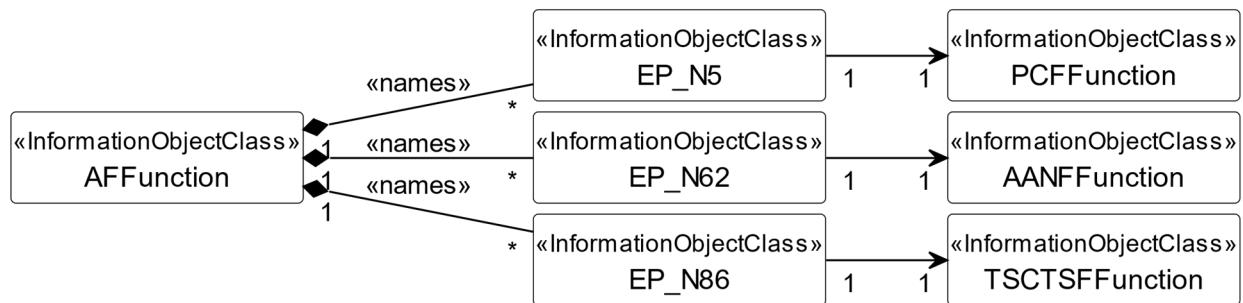
Figure 5.2.1.1-26: AFFunction NRM
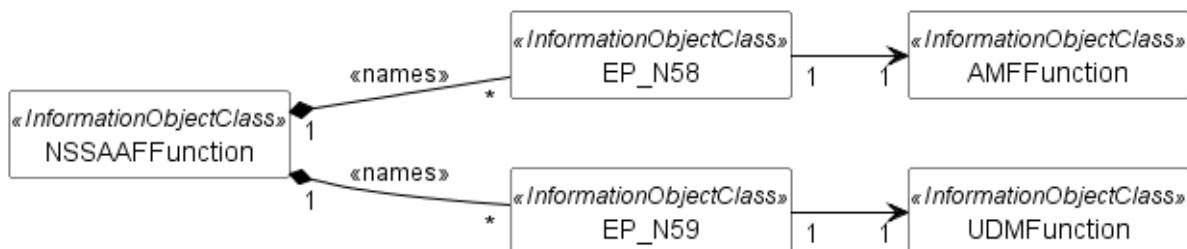
Figure 5.2.1.1-27: NSSAAFFunction NRM

The Figure 5.2.1.1-28 shows the transport view of CHFFunction NRM:
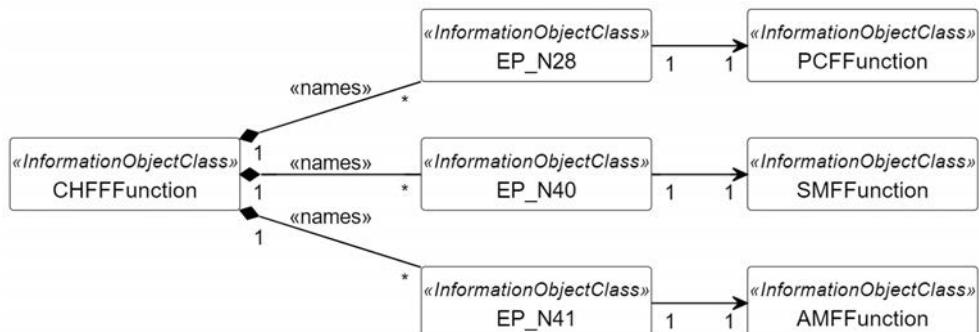
Figure 5.2.1.1-28: Transport view of CHFFunction NRM

The Figure 5.2.1.1-29 shows the transport view of AANFFunction NRM:
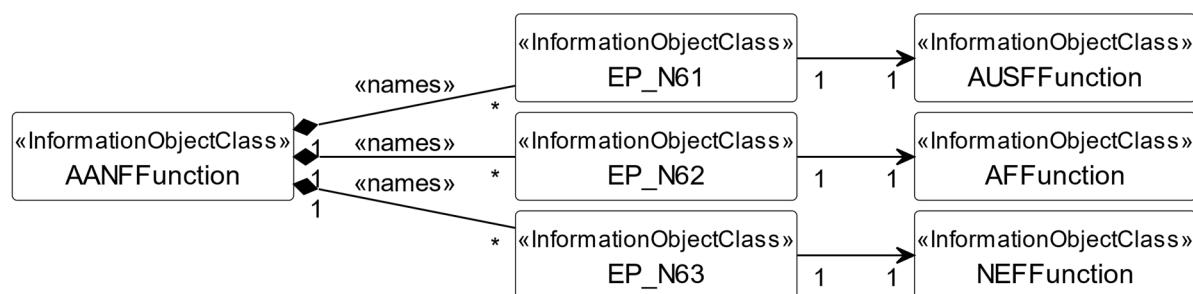
Figure 5.2.1.1-29: Transport view of AANFFunction NRM fragment

The Figure 5.2.1.1-30 shows the transport view of GMLCFunction NRM:
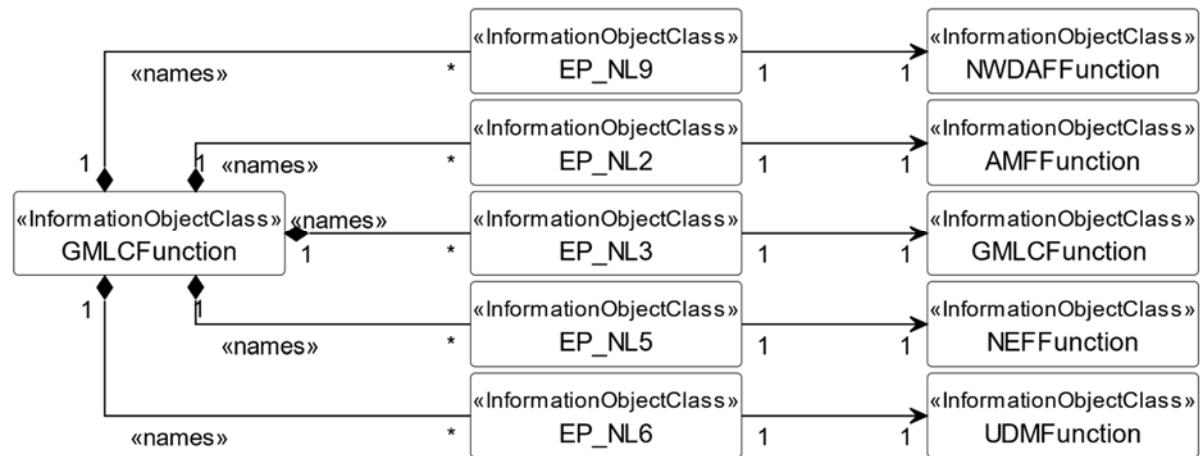
Figure 5.2.1.1-30: Transport view of GMLCFunction NRM fragment

The Figure 5.2.1.1-31 shows the transport view of NWDAFFunction NRM:
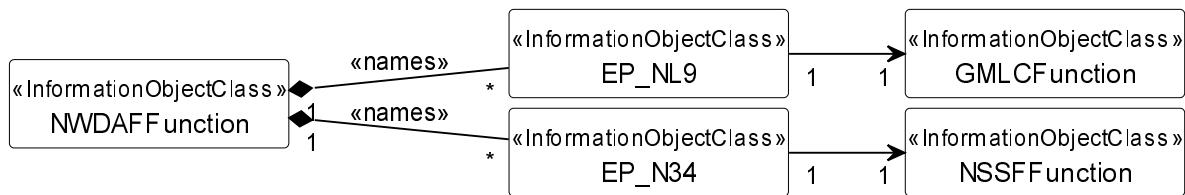
Figure 5.2.1.1-31: Transport view of NWDAFFunction NRM fragment

The Figure 5.2.1.1-32 shows the transport view of TSCTSFFunction NRM:
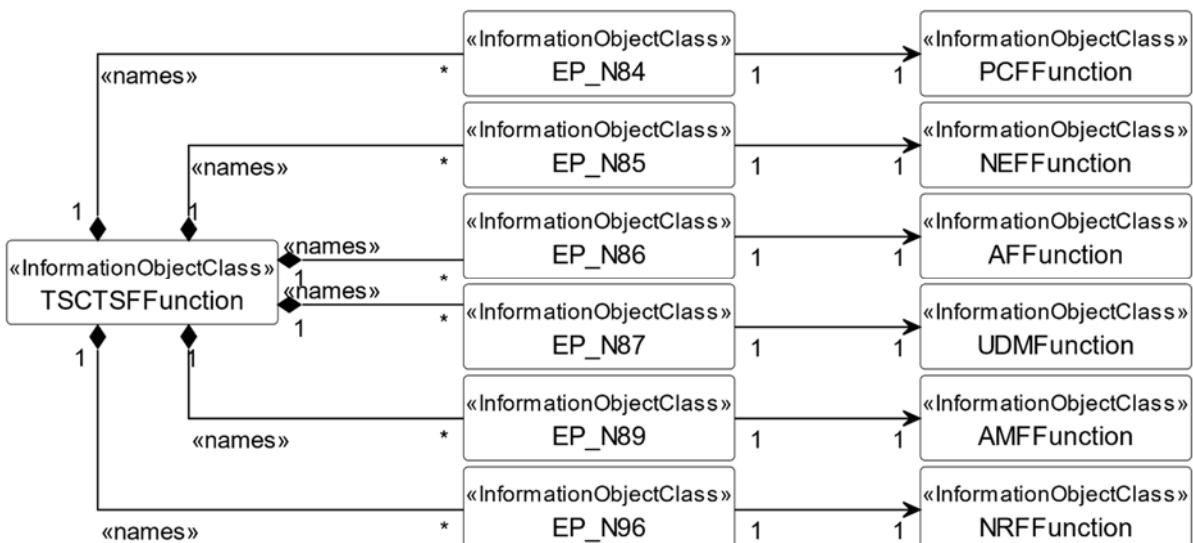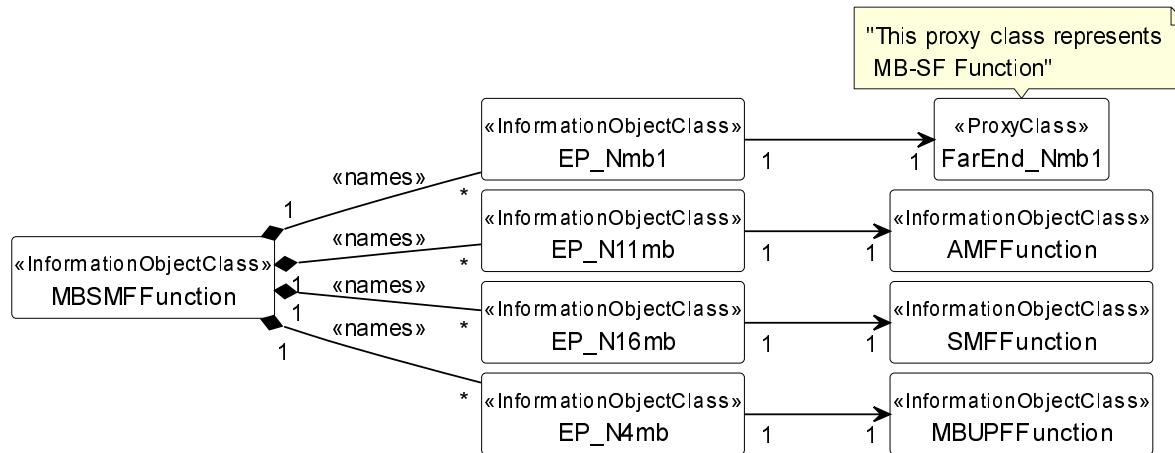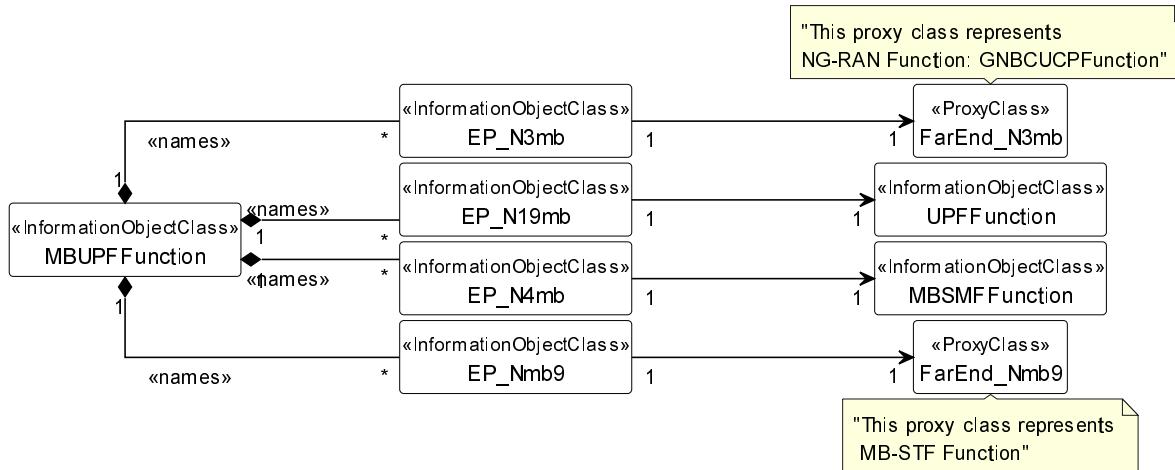
Figure 5.2.1.1-32: Transport view of TSCTSFFunction NRM fragment
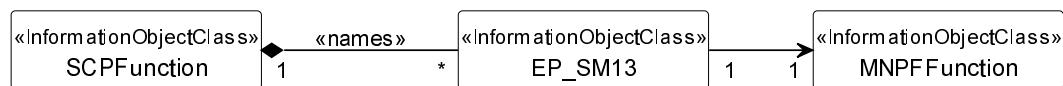
The Figure 5.2.1.1-33 shows the transport view of MBSMFFunction NRM:

Figure 5.2.1.1-33: Transport view of MB-SMF Function NRM fragment

The Figure 5.2.1.1-34 shows the transport view of MBUPFFunction NRM:

Figure 5.2.1.1-34: Transport view of MB-UPF Function NRM fragment

The Figure 5.2.1.1-35 shows the transport view of SCPFunction NRM:

Figure 5.2.1.1-35: Transport view of SCPFunction NRM fragment
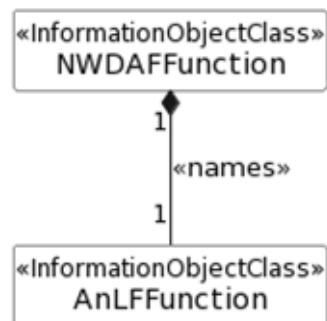
Figure 5.2.1.1-36: Functional view of NWDAF NRM fragment

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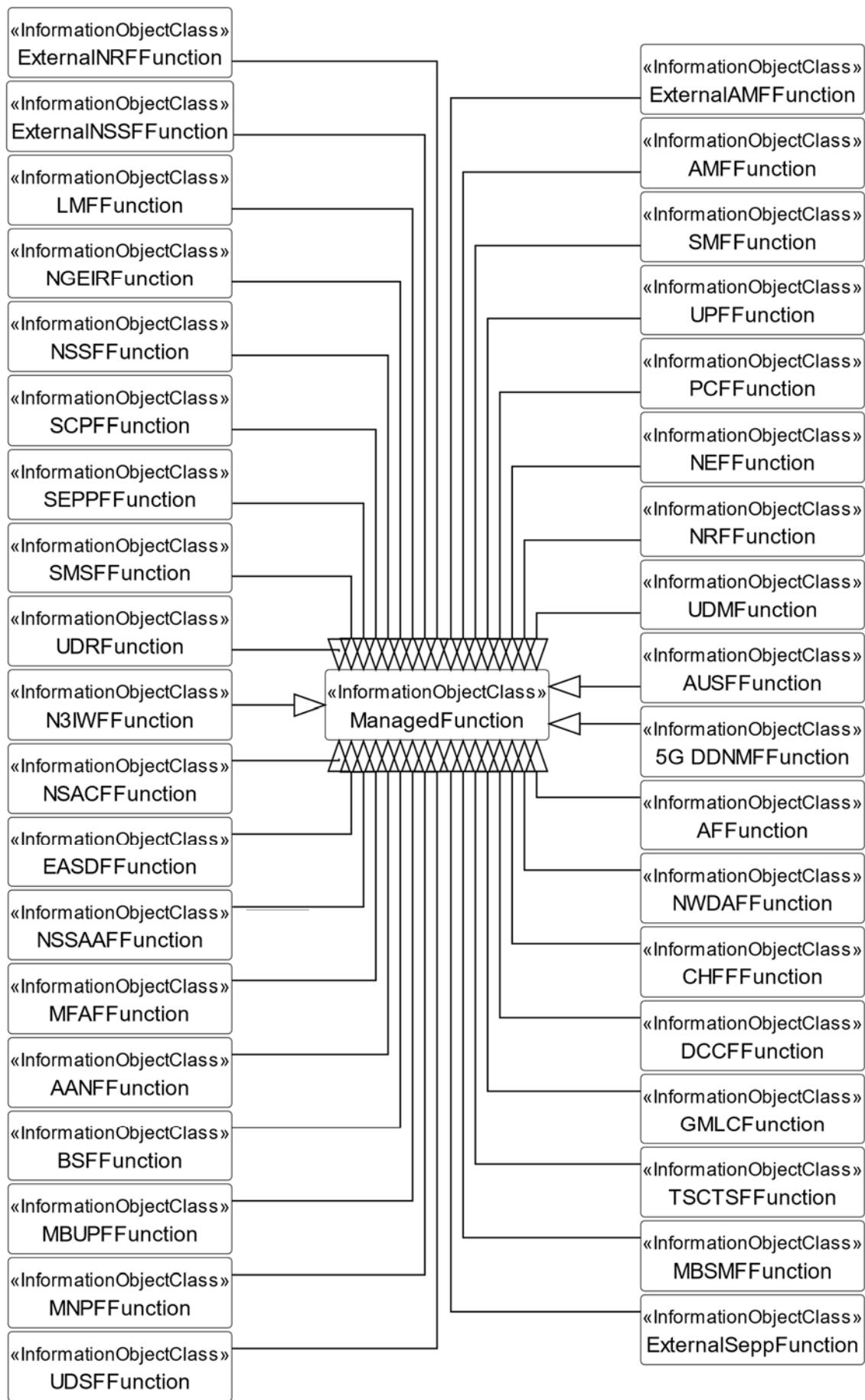
Figure 5.2.1.2-1: Inheritance hierarchy from IOC ManagedFunction related to the 5GC NF NRM

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 shows the inheritance hierarchy from IOC EP_RP related to 5GC NF NRM.
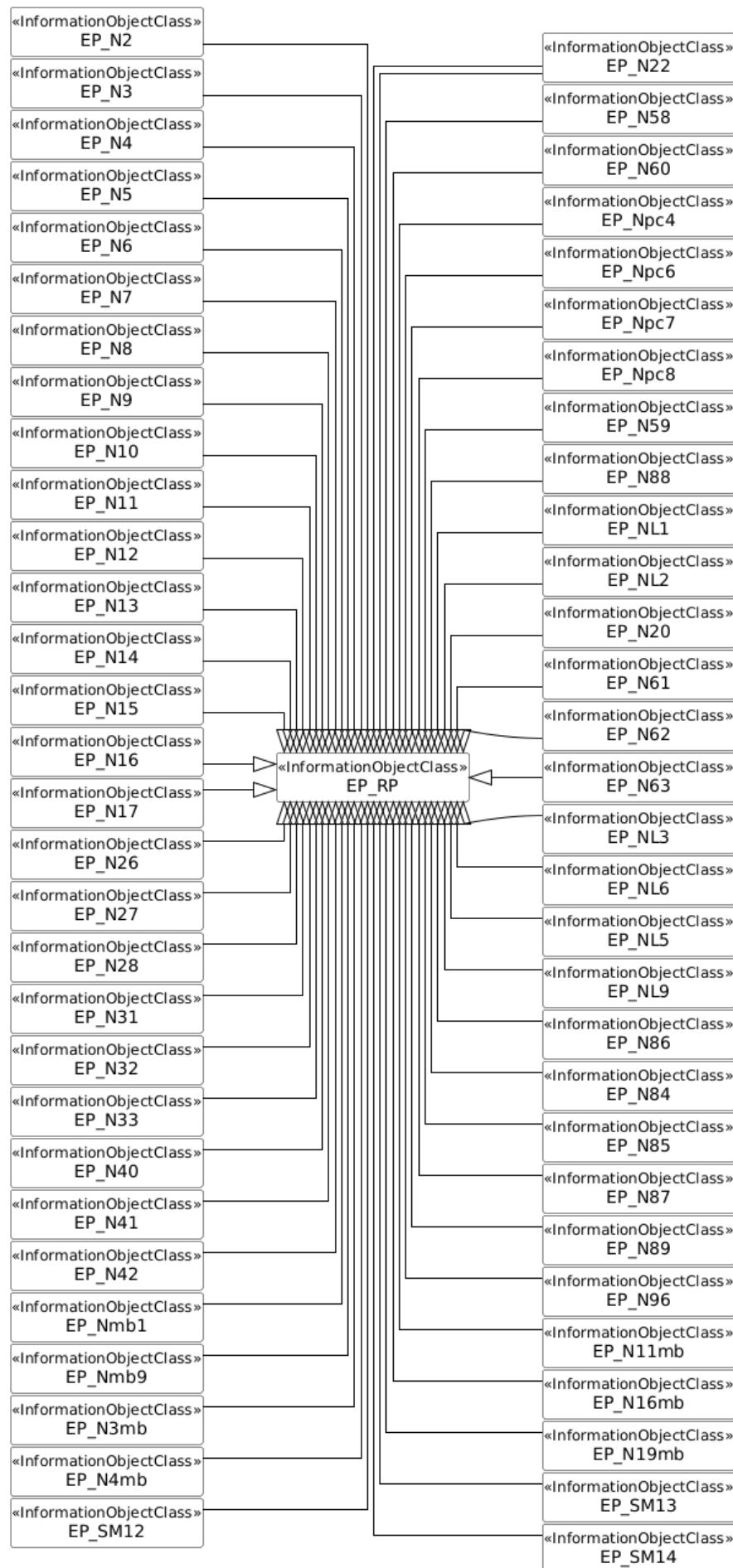
Figure 5.2.1.2-2: Inheritance hierarchy from IOC EP_RP related to the 5GC NF NRM
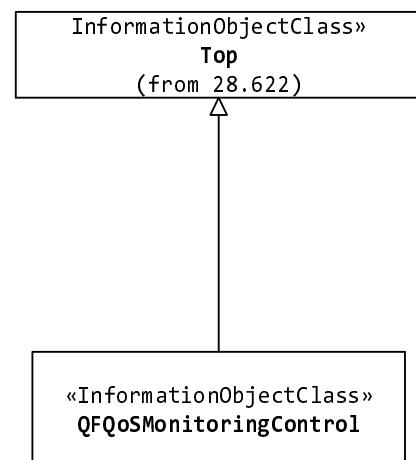
Figure 5.2.1.2-3: Inheritance hierarchy for IOC QFQoSMonitoringControl
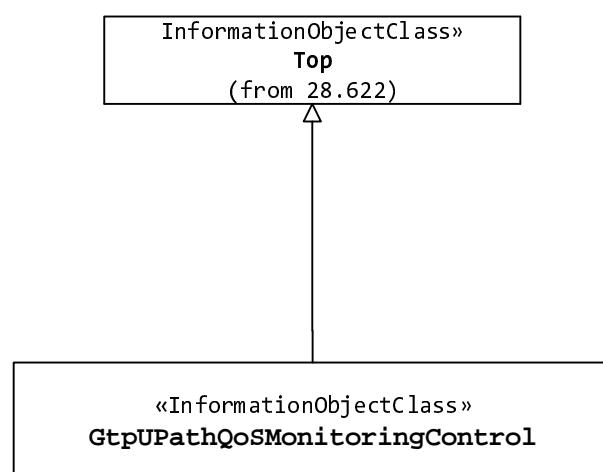
Figure 5.2.1.2-4: Inheritance hierarchy for IOC GtpUPathQoSMonitoringControl
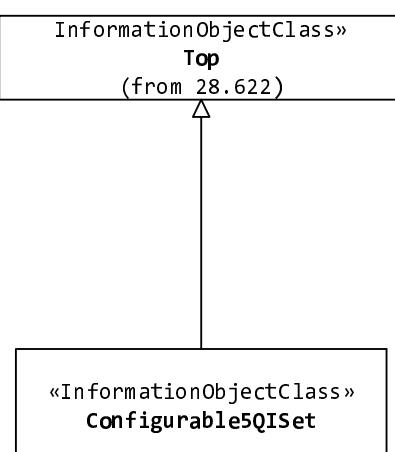
Figure 5.2.1.2-5: Inheritance hierarchy for IOC Configurable5QISet

```
┌─────────────────────────────┐
│   InformationObjectClass»    │
│            Top               │
│       (from 28.622)          │
└─────────────────────────────┘
              △
              │
              │
┌─────────────────────────────┐
│   «InformationObjectClass»   │
│     FiveQiDscpMappingSet     │
└─────────────────────────────┘
```
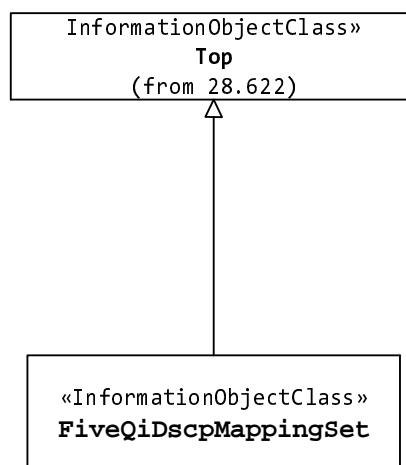
Figure 5.2.1.2-6: Inheritance hierarchy for IOC FiveQiDscpMapping

```
┌─────────────────────────────┐
│   InformationObjectClass»    │
│            Top               │
│       (from 28.622)          │
└─────────────────────────────┘
              △
              │
              │
┌─────────────────────────────┐
│   «InformationObjectClass»   │
│     PredefinedPccRuleSet     │
└─────────────────────────────┘
```
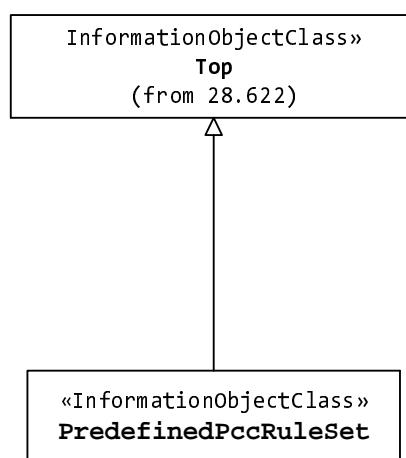
Figure 5.2.1.2-7: Inheritance hierarchy for predefined PCC rule modeling

```
┌─────────────────────────────┐
│   InformationObjectClass»    │
│            Top               │
│       (from 28.622)          │
└─────────────────────────────┘
              △
              │
              │
┌─────────────────────────────┐
│   «InformationObjectClass»   │
│        Dynamic5QISet         │
└─────────────────────────────┘
```
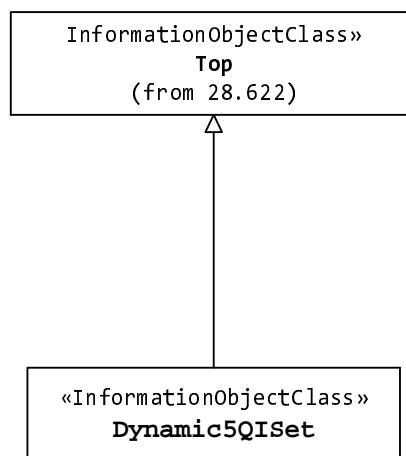
Figure 5.2.1.2-8: Inheritance hierarchy for IOC Dynamic5QISet
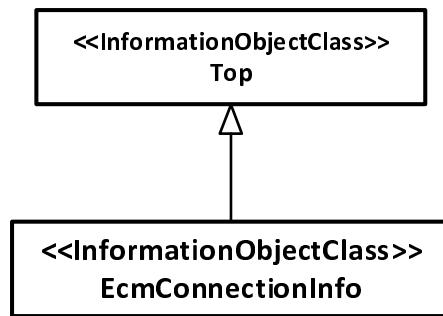
Figure 5.2.1.2-9: Inheritance hierarchy for EcmConnectionInfo
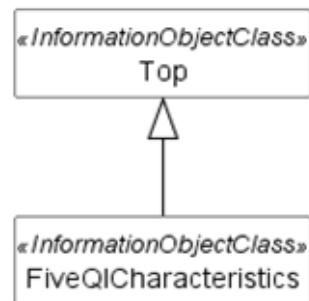
Figure 5.2.1.2-10: FiveQICharacteristics Inheritance
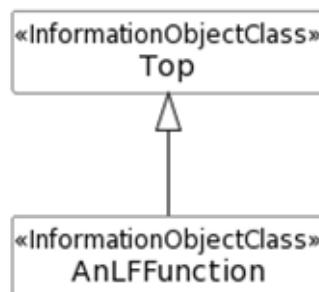
Figure 5.2.1.2-11: Inheritance hierarchy for NWDAF functional NRM

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.

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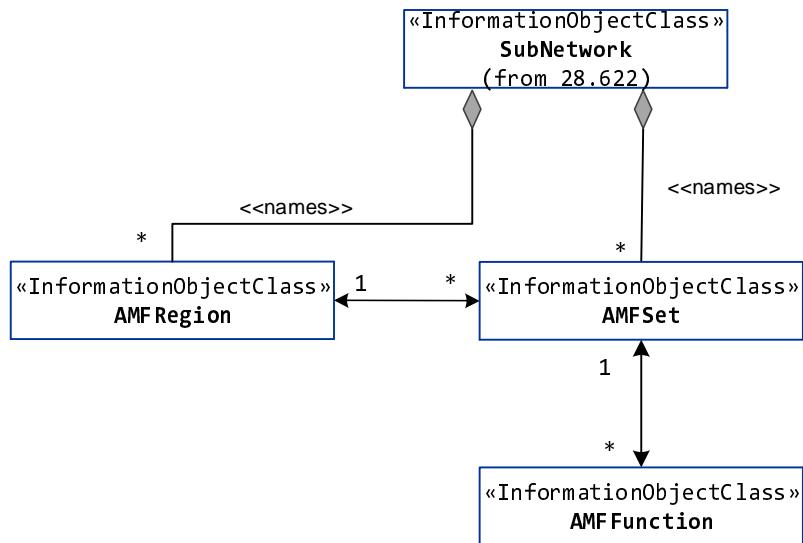
Figure 5.2.2.1-1: AMF Region/AMF Set NRM

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.
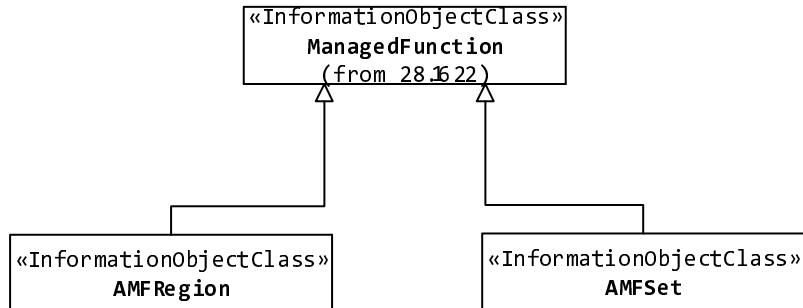
Figure 5.2.2.2-1: AMF Region/AMF Set Inheritance

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].

The attribute `sliceExpiryInfo` is used when the validity information of a network slice need to be configured. The attribute `sliceExpiryInfo.pLMNInfo` indicates the network slice to which the validity information applies.

5.3.1.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
aMFIdentifier	M	T	T	F	T
sBIFQDN	M	T	T	F	T
cNSIIdList	CM	T	F	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
amfInfo	M	T	T	F	T
nTNPLMNRestrictionsList	M	T	T	F	T
satelliteCoverageInfoList	CM	T	T	F	T
sliceExpiryInfo	CM	T	T	F	T
satelliteBackhaulInfoList	CM	T	T	F	T
mdtUserConsentReqList	CM	T	T	F	T
mappedCellIdInfoList	CO	T	T	F	T
Attribute related to role					
aMFSetRef	M	T	T	F	T

5.3.1.3   Attribute constraints

Name	Definition
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.
satelliteCoverageInfoList S	Condition: Present if 5G NR satellite access is used
sliceExpiryInfo S	Condition: Network slicing expiration feature is supported.
satelliteBackhaulInfoList S	Condition: Present if AMF supports the reporting of satellite backhaul information and indicating the satellite backhaul category change to SMF.
mdtUserConsentReqList	Condition: MDT Function is supported.
mappedCellIdInfoList S	Condition: Present if 5G NR satellite access is used

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 TS 28.622[30]) and the following attributes:

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
nRTAClist	M	T	T	F	T
sBIFQDN	M	T	T	F	T

cNSIIdList	CM	T	F	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
smfInfo	M	T	T	F	T
dnaiSatelliteMappingList	CM	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
cNSIIdList CM S	Condition: Network slicing feature is supported.
dnaiSatelliteMappingList S	Condition: Present if SMF supports selecting UPF on-board satellite

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 TS 23.501 [2].

5.3.3.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
nRTAClist	M	T	T	F	T
cNSIIdList	CM	T	T	F	T
energySavingControl	CM	T	T	F	T
energySavingState	CM	T	F	F	T
managedNFProfile	M	T	T	F	T
supportedBMOList	O	T	T	F	T
upfInfo	M	T	T	F	T

5.3.3.3 Attribute constraints

Name	Definition
cNSIIdList CM S	The condition is "network slicing feature is supported".
energySavingControl CM S	Condition: The energy saving feature is supported for the edge UPF.
energySavingState CM S	Condition: The energy saving feature is supported for the edge UPF.

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 TS 23.501 [2].

5.3.4.2 Attributes

The N3IWFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 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 TS 23.501 [2].

5.3.5.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
supportedBMOList	O	T	T	F	T
pcfInfo	O	T	T	F	T
Attribute related to role					
configurable5QISetRef	O	T	T	F	T
dynamic5QISetRef	O	T	F	F	T
predefinedPccRuleSetRefs	O	T	T	F	T

5.3.5.3 Attribute constraints

None.

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 TS 23.501 [2].

5.3.6.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
ausfInfo	M	T	T	F	

5.3.6.3 Attribute constraints

None.

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 TS 23.501 [2].

5.3.7.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
eCSAddrConfigInfo	O	T	T	F	T
udmInfo	O	T	T	F	T

mdtUserConsentReqList	CM	T	T	F	T

5.3.7.3 Attribute constraints

Name	Definition
mdtUserConsentReqList	Condition: MDT Function is supported.

5.3.7.4 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 TS 23.501 [2].

5.3.8.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
managedNFProfile	M	T	T	F	T
udrInfo	O	T	T	F	T

5.3.8.3 Attribute constraints

None.

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 TS 23.501 [2].

5.3.9.2 Attributes

The UDSFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 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
managedNFProfile	M	T	T	F	T

udsfInfo	M	T	T	F	T

5.3.9.3 Attribute constraints

None.

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 TS 23.501 [2].

5.3.10.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
nFProfileList	CM	T	T	F	T
cNSIIdList	CO	T	T	F	T
nrfInfo	O	T	T	F	T

5.3.10.3 Attribute constraints

Name	Definition
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 TS 23.501 [2].

5.3.11.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	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 represents the trust AF function in 5GC. For more information about the AF, see TS 23.501 [2].

5.3.12.2 Attributes

The AFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 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
trustAfInfo	M	T	T	F	T

5.3.12.3 Attribute constraints

None.

5.3.12.4 Notifications

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

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 TS 23.501 [2].

5.3.14.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNIdList	M	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
smsfInfo	O	T	T	F	T

5.3.14.3 Attribute constraints

None.

5.3.14.4 Notifications

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

5.3.15 LMFFunction

5.3.15.1 Definition

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

5.3.15.2 Attributes

The LMFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 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
lmfInfo	O	T	T	F	T
mappedCellIdInfoList	CO	T	T	F	T
ephemerisInfos	CO	T	T	F	T
trpInfoList	CO	T	T	F	T

5.3.15.3 Attribute constraints

Name	Definition
mappedCellIdInfoList	Condition: Present if 5G NR satellite access is used
ephemerisInfos	Condition: Present if 5G NR satellite access is used
trpInfoList	Condition: Present if 5G NR satellite access is used

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 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 TS 23.501 [2].

5.3.17.2 Attributes

The SEPPFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 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
seppInfo	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 TS 23.501 [2]. Several attributes (including "nwdafInfo", " administrativeState " and "ManagedNFProfile.servingScope") are used to control the functionalities (identified by nwdafEvent defined in TS 29.520 [85]) of the NWDAF instance.

The attribute "ManagedNFProfile.servingScope" is used to represent specified certain geographical area(s) can be served by the NWDAF instance.

The attribute "NwdafInfo.taiList" and " NwdafInfo.taiRangeList " is used to represent specified certain tracking area(s) can be served by the NWDAF instance.

5.3.18.2   Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
networkSliceInfoList	CM	T	T	T	T
nwdafInfo	M	T	T	F	T
administrativeState	O	T	T	F	T
nwdafLogicalFuncSupported	O	T	F	F	T

5.3.18.3   Attribute constraints

Name	Definition
networkSliceInfoList	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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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 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_NL1

5.3.45.1　Definition

This IOC represents the NL1 interface between AMF and LMF, which is defined in 3GPP TS 23.501 [2].

5.3.45.2　Attributes

The EP_NL1 IOC includes attributes inherited from EP_RP IOC (defined in 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_NL2`

5.3.46.1　Definition

This IOC represents the `NL2` interface between AMF and GMLC, which is defined in TS 23.273 [93].

5.3.46.2　Attributes

The `EP_NL2` IOC includes attributes inherited from `EP_RP` IOC (defined in 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 [23].

5.3.47.2　Attributes

The EP_N27 IOC includes attributes inherited from EP_RP IOC (defined in 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 [24].

5.3.48.2 Attributes

The EP_N31 IOC includes attributes inherited from EP_RP IOC (defined in 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 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 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 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 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 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 TS 23.501 [2]).

5.3.54.2 Attributes

Attribute Name	S	isReadable	isWritable	isInvariant	isNotifyable
nfInstanceId	M	T	F	T	F
nfType	M	T	F	F	F
heartBeatTimer	O	T	T	F	T
hostAddr	M	T	T	F	T
authzInfo	O	T	T	F	T
allowedPLMNs	O	T	T	F	T
sNPNList	O	T	T	F	T
allowedSNPNs	O	T	T	F	T
allowedNfTypes	O	T	T	F	T
allowedNfDomains	O	T	T	F	T
allowedNSSAIs	O	T	T	F	T
locality	O	T	T	F	T
capacity	O	T	T	F	T
recoveryTime	O	T	F	F	F
nfServicePersistence	O	T	F	F	F
nfSetIdList	O	T	T	F	T
nfProfileChangesSupportInd	O	T	F	F	F
defaultNotificationSubscriptions	O	T	F	F	F
servingScope	O	T	T	F	T
lcHSupportInd	O	T	F	F	T
olcHSupportInd	O	T	F	F	T
nfSetRecoveryTimeList	O	T	F	F	T
serviceSetRecoveryTimeList	O	T	F	F	F
scpDomains	O	T	T	F	T
vendorId	O	T	T	F	T
interPlmnFqdn	O	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.
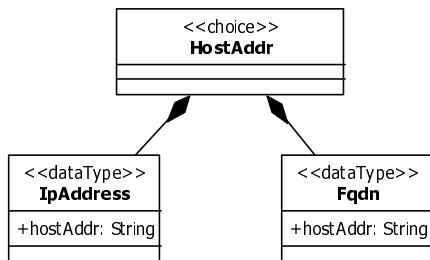
Figure 5.3.55.1-1: HostAddr <<choice>> for data types

NOTE: The IpAddress can be IPv4 address (See RFC 791 [37]) or IPv6 address (See RFC 2373 [38]). Refer TS 23.003 [13] for Fqdn.

5.3.56 Void

5.3.57 Void

5.3.58 AusfInfo <<dataType>>

5.3.58.1 Definition

This data type represents the information of an AUSF NF Instance (see TS 29.510 [23]).

5.3.58.2 Attributes

Attribute Name	S	isReadable	isWritable	isInvariant	isNotifyable
nFSrvGroupId	M	T	F	T	F
supiRanges	O	T	T	F	T
routingIndicators	O	T	T	F	T
suciInfos	O	T	T	F	T

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 Void

5.3.60 Void

5.3.61 Void

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 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 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 TS 23.501 [2].

5.3.65.2 Attributes

The NEFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 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
nefInfo	O	T	T	F	T

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 TS 23.501 [2].

5.3.67.2 Attributes

The SCPFunction IOC includes attributes inherited from ManagedFunction IOC (defined in 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
scpInfo	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 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 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 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
qFMonitoredSatelliteBackhaulCategories	O	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 `QFPacketDelayThresholdsType` <<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 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 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 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.

5.3.74   Void

5.3.75   `Configurable5QISet`

5.3.75.1   Definition

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

Sets are referenced by attributes (`configurable5QISetRef`) in applicable MOIs. For consistency it is recommended that referenced 5QI sets be defined within the same subtree.

5.3.75.2   Attributes

The `Configurable5QISet` IOC includes attributes inherited from Top IOC (defined in TS 28.622[30]) .

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`

5.3.76.1   Definition

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

5.3.76.2   Attributes

The `FiveQICharacteristics` IOC includes attributes inherited from Top IOC (defined in TS 28.622[30]) and the following 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 common notifications defined in subclause 5.5 are valid for this IOC, without exceptions or additions.

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 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 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 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
sNSSAIList	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 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 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 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 for the instance 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 TS 28.622[30]).

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.

5.3.95 NetworkSliceInfo <<dataType>>

5.3.95.1 Definition

This data type represents information of network slice when the NWDAF is authorized to collect the management data of the network slice.

5.3.95.2 Attributes

Attribute Name	S	isReadable	isWritable	isInvariant	isNotifyable
sNSSAI	M	T	T	F	T
cNSIId	CM	T	T	F	T
networkSliceRef	M	T	T	F	T

5.3.95.3 Attribute constraints

Name	Definition
cNSIId	Condition: Network slicing feature is supported and the NSI ID is supported by 5GC.

5.3.95.4 Notifications

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

5.3.96 NSACFFunction

5.3.96.1 Definition

This IOC represents the Network Slice Admission Control Function (NSACF) in 5GC. The NSACF monitors and controls the number of registered UEs per network slice for the network slices that are subject to Network Slice Admission Control (NSAC). The NSACF is configured with the maximum number of UEs per network slice and the maximum number of PDU Sessions per network slice which are allowed to be served by each network slice that is subject to NSAC. For more information about the NSACF and admission control procedure, see TS 23.501 [2] and TS 23.502 [2].

5.3.96.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
managedNFProfile	M	T	T	F	T
nsacfInfoSnssaiList	M	T	T	F	T
nsacfInfo	M	T	T	F	T

5.3.96.3 Attribute constraints

None

5.3.96.4 Notifications

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

5.3.97 SnssaiInfo <<dataType>>

5.3.97.1 Definition

This data type defines generic information for a S-NSSAI.

5.3.97.2 Attributes

Attribute Name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfo	M	T	T	F	T
administrativeState	M	T	T	F	T

5.3.97.3 Attribute constraints

None

5.3.97.4 Notifications

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

5.3.98 NsacfInfoSnssai <<dataType>>

5.3.98.1 Definition

This data type defines NSACF specific information per S-NSSAI .

5.3.98.2 Attributes

Attribute Name	S	isReadable	isWritable	isInvariant	isNotifyable
snssaiInfo	M	T	T	F	T
isSubjectToNsac	M	T	T	F	T
maxNumberofUEs	M	T	T	F	T
eACMode	CM	T	F	F	T
activeEacThreshold	CM	T	T	F	T
deactiveEacThreshold	CM	T	T	F	T
numberofUEs	O	T	F	F	T
uEIdList	O	T	F	F	T
taiListtAI	O	T	T	F	T
maxNumberofPDUSessions	M	T	T	F	T

5.3.98.3 Attribute constraints

Name	Definition
eACMode S	Condition: early access control feature is supported.
activeEacThreshold S	Condition: early access control feature is supported.
deactiveEacThreshold S	Condition: early access control feature is supported.

5.3.98.4 Notifications

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

5.3.99 EP_N60

5.3.99.1 Definition

This IOC represents the N60 interface between AMF and ASACF, which is defined in 3GPP TS 23.501 [2].

5.3.99.2 Attributes

The EP_N60 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.99.3 Attribute constraints

None.

5.3.99.4 Notifications

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

5.3.100 EP_N33

5.3.100.1 Definition

This IOC represents the N33 interface between NEF and AF, which is defined in 3GPP TS 23.501 [2].

5.3.100.2 Attributes

The EP_N33 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.100.3 Attribute constraints

None.

5.3.100.4 Notifications

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

5.3.101 `DDNMFFunction`

5.3.101.1 Definition

This IOC represents the 5G DDNMF which is the logical function handling network related actions required for dynamic 5G ProSe Direct Discovery. For more information about the 5G DDNMF, see 3GPP TS 23.304 [73].

5.3.101.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNId	M	T	T	F	T
sBIFQDN	M	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T

5.3.101.3 Attribute constraints

None.

5.3.101.4 Notifications

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

5.3.102 `EP_Npc4`

5.3.102.1 Definition

This IOC represents the Npc4 interface between the UDM and 5G DDNMF, which is defined in 3GPP TS 23.304 [73].

5.3.102.2 Attributes

The EP_Npc4 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.102.3 Attribute constraints

None.

5.3.102.4 Notifications

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

5.3.103 `EP_Npc6`

5.3.103.1 Definition

This IOC represents the Npc6 interface between the 5G DDNMF in the HPLMN and the 5G DDNMF in a Local PLMN (5G ProSe Direct Discovery), which is defined in TS 23.304 [73].

5.3.103.2 Attributes

The EP_Npc6 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.103.3 Attribute constraints

None.

5.3.103.4 Notifications

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

5.3.104 `EP_Npc7`

5.3.104.1 Definition

This IOC represents the Npc7 interface between the 5G DDNMF in the HPLMN and the 5G DDNMF in the VPLMN, which is defined in TS 23.304 [73].

5.3.104.2 Attributes

The EP_Npc7 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.104.3 Attribute constraints

None.

5.3.104.4 Notifications

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

5.3.105 GUAMInfo `<<dataType>>`

5.3.105.1 Definition

This <<dataType>> represents the GUAM identifier, a global unique identifier for the AMF.

5.3.105.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNId	M	T	T	F	T
aMFIdentifier	M	T	T	F	T

5.3.105.3 Attribute constraints

None.

5.3.105.4 Notifications

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

5.3.106 TaiRange `<<dataType>>`

5.3. 106.1 Definition

This <<dataType>> represents the range of TAIs.

5.3.106.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNId	M	T	T	F	T
nRTACRangeList	M	T	T	F	T

5.3.106.3 Attribute constraints

None.

5.3.106.4 Notifications

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

5.3.107 NRTACRange `<<dataType>>`

5.3.107.1 Definition

This <<dataType>> represents the range of TACs.

5.3.107.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
nRTACstart	O	T	T	F	T
nRTACend	O	T	T	F	T
nRTACpattern	O	T	T	F	T

Either the start and end attributes, or the pattern attribute, shall be present.

5.3.107.3 Attribute constraints

None.

5.3.107.4 Notifications

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

5.3.108 SCPInfo `<<dataType>>`

5.3.108.1 Definition

This <<dataType>> represents the information of a Service Communication Proxy (SCP) instance as defined in 3GPP TS 29.510 [23].

5.3.108.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
scpDomainInfoList	O	T	T	F	T
scpPrefix	O	T	T	F	T
scpPorts	O	T	T	F	T
addressDomains	O	T	T	F	T
ipv4Addresses	O	T	T	F	T
ipv6Prefixes	O	T	T	F	T
ipv4AddrRanges	O	T	T	F	T
ipv6PrefixRanges	O	T	T	F	T
servedNfSetIdList	O	T	T	F	T
remotePlmnList	O	T	T	F	T
remoteSnpnList	O	T	T	F	T
ipReachability	O	T	T	F	T
scpCapabilities	O	T	T	F	T

5.3.108.3 Attribute constraints

None.

5.3.108.4 Notifications

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

5.3.109 SCPDomainInfo `<<dataType>>`

5.3.109.1 Definition

This <<dataType>> represents the SCP domain specific information as defined in 3GPP TS 29.510 [23].

5.3.109.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
scpFQND	O	T	T	F	T
scpEndPoints	O	T	T	F	T
scpPorts	O	T	T	F	T
scpPrefix	O	T	T	F	T

If any of these attributes is present for a given SCP domain, it shall apply instead of the attributes fqdn, Ipv4Addresses and Ipv4Addresses within the NFProfile data type for the corresponding SCP Domain.

If none of these attributes is present for a given SCP domain, the attributes fqdn, Ipv4Addresses, and Ipv4Addresses within the NFProfile data type shall apply for the corresponding SCP Domain.

If scpPorts attribute is present, it has precedence over the scpPorts attribute of ScpInfo.

5.3.109.3   Attribute constraints

None.

5.3.109.4   Notifications

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

5.3.110   IpEndPoint <<dataType>>

5.3.110.1   Definition

This <<dataType>> represents the IP end points considering both IPv4 and IPv6 addresses.

5.3.110.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
hostAddr	M	T	T	F	T
transport	O	T	T	F	T
port	O	T	T	F	T

5.3.110.3   Attribute constraints

None.

5.3.110.4   Notifications

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

5.3.111   IPv4AddressRange <<dataType>>

5.3.111.1   Definition

This <<dataType>> represents the range of IPv4 addresses.

5.3.111.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
IPv4AddrRangeStart	M	T	T	F	T
IPv4AddrRangeEnd	M	T	T	F	T

5.3.111.3   Attribute constraints

None.

5.3.111.4   Notifications

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

5.3.112   IPv6PrefixRange <<dataType>>

5.3.112.1   Definition

This <<dataType>> represents the range of IPv6 address prefix.

5.3.112.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
IPv6PrefRangeStart	M	T	T	F	T
IPv6PrefRangeEnd	M	T	T	F	T

5.3.112.3 Attribute constraints

None.

5.3.112.4 Notifications

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

5.3.113 EASDFFunction

5.3.113.1 Definition

This IOC represents the Edge Application Server Discovery Function (EASDF) in 5GC which can handle the DNS messages according to the instruction from the SMF.

For more information about the 5G EASDF, see 3GPP TS 23.548 [78].

5.3.113.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNId	M	T	T	F	T
sBIFQDN	M	T	T	F	T
managedNFProfile	M	T	T	F	T
serverAddr	M	T	T	F	T
easdfInfo	O	T	T	F	T

5.3.113.3 Attribute constraints

None.

5.3.113.4 Notifications

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

5.3.114 EP_N88x

5.3.114.1 Definition

This IOC represents the N88 interface between the EASDF and SMF, which is defined in   TS 23.501 [2].

5.3.114.2 Attributes

The EP_N88 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.114.3 Attribute constraints

None.

5.3.114.4 Notifications

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

5.3.115 SNPNInfo <<dataType>>

5.3.115.1 Definition

This <<dataType>> represents the SNPN identifier and associated S-NSSAI.

5.3.115.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sNPNId	M	T	T	F	T
sNSSAI	CM	T	T	F	T

5.3.115.3 Attribute constraints

Name	Definition
sNSSAI S	Condition: slicing feature is supported.

5.3.115.4 Notifications

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

5.3.116 SNPNId <<dataType>>

5.3.116.1 Definition

This <<dataType>> represents the information of a SNPN identification.

5.3.116.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
mCC	M	T	T	F	T
mNC	M	T	T	F	T
nId	M	T	T	F	T

5.3.116.3 Attribute constraints

None.

5.3.116.4 Notifications

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

5.3.117 `EP_Npc8`

5.3.117.1 Definition

This IOC represents the Npc8 interface between the PCF and 5G DDNMF, which is defined in 3GPP TS 23.304 [73].

5.3.117.2 Attributes

The EP_Npc8 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.117.3 Attribute constraints

None.

5.3.117.4 Notifications

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

5.3.118 DefaultNotificationSubscription `<<dataType>>`

5.3.118.1 Definition

This <<dataType>> represents the range of default notification subscriptions as defined in 3GPP TS 29.510 [23].

5.3.118.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
notificationType	M	T	F	F	F
callbackURI	M	T	F	F	F
n1MessageClass	CM	T	F	F	F
n2InformationClass	CM	T	F	F	F
versions	O	T	F	F	F
binding	O	T	F	F	F

5.3.118.3 Attribute cons2traints

Name	Definition
n1MessageClass S	Condition: This attribute shall be present only if notificationType of N1_MESSAGES is supported.
n2InformationClass S	Condition: This attribute shall be present only if notificationType of N2_INFORMATION is supported.

5.3.118.4 Notifications

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

5.3.119 `EcmConnectionInfo`

5.3.119.1 Definition

This IOC contains attributes to enable ECSP management system to connect EDN NFs (i.e., EAS, ECS, and EES) to 5GC NFs (i.e., UPF, PCF, NEF, SCEF) (See clause 7.4.3 and 7.4.4 in TS 28.538 [79]).

5.3.119.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
eASServiceArea	CM	T	T	F	T
eESServiceArea	CM	T	T	F	T
eDNServiceArea	CM	T	T	F	T
eASIpAddress	CM	T	T	F	T
eESIpAddress	CM	T	T	F	T
eCSIpAddress	CM	T	T	F	T
ednIdentifier	M	T	T	F	T
ecmConnectionType	CM	T	T	F	T
5GCNfConnEcmInfoList	CM	T	F	F	T
uPFConnectionInfo	CM	T	F	F	T

5.3.119.3 Attribute constraints

Name	Definition
eASServiceArea S	Condition: EAS connection to 5GC NF is supported
eASIpAddress S	Condition: EAS connection to 5GC NF is supported
eESServiceArea S	Condition: EES connection to 5GC NF is supported
eESIpAddress S	Condition: EES connection to 5GC NF is supported
eDNServiceArea S	Condition: EAS or ECS connection to 5GC NF is supported
eCSIpAddress S	Condition: ECS connection to 5GC NF is supported
ecmConnectionType S	Condition: EAS connection to 5GC NF is supported
5GCNfConnEcmInfoList S	Condition: EAS, EES, and ECS connections to 5GC NF is supported
uPFConnectionInfo S	Condition: EAS connection to UPF is supported

5.3.119.4 Notifications

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

5.3.120 `5GCNfConnEcmInfo` <<dataType>>

5.3.120.1 Definition

This data type specifies the 5GC NF connection information.

5.3.120.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
5GCNFType	M	T	T	F	T

5GCNFIpAddress	M	T	T	F	T
5GCNFRef	M	T	T	F	T

Editor's note: Role based attribute of 5GCNfRef inside the dataType needs further work.

5.3.120.3   Attribute constraints

None

5.3.120.4   Notifications

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

5.3.121 UPFConnInfo <<dataType>>

5.3.121.1   Definition

This data type specifies the UPF connection information.

5.3.121.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
uPFIpAddress	M	T	T	F	T
uPFRef	M	T	T	F	T

5.3.121.3   Attribute constraints

None

5.3.121.4   Notifications

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

5.3.122 SnssaiSmfInfoItem <<dataType>>

5.3.122.1   Definition

This <<dataType>> represents the set of parameters supported by SMF for a given S-NSSAI.

5.3.122.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sNSSAI	M	T	T	F	T
dnnSmfInfoList	M	T	T	F	T

5.3.122.3   Attribute constraints

None.

5.3.122.4   Notifications

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

5.3.123 DnnSmfInfoItem `<<dataType>>`

5.3.123.1 Definition

This <<dataType>> represents the set of parameters supported by SMF for a given DNN.

The absence of 'dnaiList' indicates the DNN can be selected for any DNAI.

5.3.123.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dnn	M	T	T	F	T
dnaiList	O	T	T	F	T

5.3.123.3 Attribute constraints

None.

5.3.123.4 Notifications

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

5.3.124 Void

5.3.125 InterfaceUpfInfoItem `<<dataType>>`

5.3.125.1 Definition

This <<dataType>> provides information of a given IP interface of a UPF, (see clause 6.1.6.2.24 TS 29.510 [23]). The information provided shall include at least one of the addressing parameters: `ipv4EndpointAddresses`, `ipv6EndpointAddresses` or `fqdn`.

5.3.125.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
interfaceType	M	T	T	F	T
ipv4EndpointAddresses	CM	T	T	F	T
ipv6EndpointAddresses	CM	T	T	F	T
fqdn	CM	T	T	F	T
networkInstance	O	T	T	F	T

5.3.125.3 Attribute constraints

Name	Definition
ipv4EndpointAddresses	Condition: The both ipv6EndpointAddresses and fqdn are not present.
ipv6EndpointAddresses	Condition: The both ipv4EndpointAddresses and fqdn are not present.
fqdn	Condition: The both ipv4EndpointAddresses and ipv6EndpointAddresses are not present.

Note that at least one of the attributes shall contain a value.

5.3.125.4 Notifications

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

5.3.126 AtsssCapability <<dataType>>

5.3.126.1 Definition

This <<dataType>> provides information of a given IP interface of a UPF

5.3.126.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
atsssLL	CM	T	T	F	T
mptcp	CM	T	T	F	T
rttWithoutPmf	CM	T	T	F	T

5.3.126.3 Attribute constraints

Name	Definition
atsssLL CM S	Access Traffic Steering, Switching and Splitting procedures using the ATSSS-LL steering functionality is supported.
Mptcp CM S	Access Traffic Steering, Switching and Splitting procedures using the MPTCP steering functionality is supported.
rttWithoutPmf CM S	This attribute is present and set to true, if the mptcp attribute is present and set to true too.

5.3.126.4 Notifications

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

5.3.127 IpInterface <<dataType>>

5.3.127.1 Definition

This <<dataType>> provides information of a given IP interface related to one or more of the following functions: (i) Trusted WLAN Interworking Function (TWIF), (ii) Trusted Non-3GPP Gateway Function (TNGF), and (iii) Wireline Access Gateway Function (WAGF). The information provided shall include at least one of the addressing parameters: ipv4EndpointAddresses, ipv6EndpointAddresses or fqdn.

5.3.127.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
ipv4EndpointAddresses	CM	T	T	F	T
ipv6EndpointAddresses	CM	T	T	F	T
fqdn	CM	T	T	F	T

5.3.127.3 Attribute constraints

Name	Definition
ipv4EndpointAddresses	Condition: The other two attributes are not present.
ipv6EndpointAddresses	Condition: The other two attributes are not present.
fqdn	Condition: The other two attributes are not present.

Note that at least one of the attributes shall contain a value.

5.3.127.4 Notifications

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

5.3.128 `SupiRange` <<dataType>>

5.3.128.1 Definition

This data type represents a ranges of SUPIs that can be served by the AUSF instance. (See TS 29.510 [23]).

5.3.128.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
start	O	T	T	F	T
end	O	T	T	F	T
pattern	O	T	T	F	T

5.3.128.3 Attribute constraints

None.

5.3.128.4 Notifications

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

5.3.129 `IdentityRange` <<dataType>>

5.3.129.1 Definition

This data type represents a ranges of GPSIs that can be served by the PCF instance. (See TS 29.510 [23]).

5.3.129.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
start	O	T	T	F	T
end	O	T	T	F	T
pattern	O	T	T	F	T

5.3.129.3 Attribute constraints

None.

5.3.129.4 Notifications

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

5.3.130 `ProSeCapability` <<dataType>>

5.3.130.1 Definition

This data type represents the supported ProSe Capability by the PCF. (See TS 29.510 [23]).

5.3.130.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
proseDirectDiscovery	O	T	T	F	T
proseDirectCommunication	O	T	T	F	T
proseL2UetoNetworkRelay	O	T	T	F	T
proseL3UetoNetworkRelay	O	T	T	F	T
proseL2RemoteUe	O	T	T	F	T
proseL3RemoteUe	O	T	T	F	T

5.3.130.3   Attribute constraints

None.

5.3.130.4   Notifications

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

5.3.131   V2xCapability <<dataType>>

5.3.131.1   Definition

This data type represents the supported V2X Capability by the PCF. (See TS 29.510 [23]).

5.3.131.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
lteV2x	O	T	T	F	T
nrV2x	O	T	T	F	T

5.3.131.3   Attribute constraints

None.

5.3.131.4   Notifications

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

5.3.132   InternalGroupIdRange <<dataType>>

5.3.132.1   Definition

This data type represents a range of Group IDs (internal group identities), either based on a numeric range, or based on regular-expression matching. (See TS 29.510 [23]).

5.3.132.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
start	O	T	T	F	T
end	O	T	T	F	T
pattern	O	T	T	F	T

5.3.132.3 Attribute constraints

None.

5.3.132.4 Notifications

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

5.3.133 `SuciInfo` <<dataType>>

5.3.133.1 Definition

This data type represents SUCI information containing Routing Indicator and Home Network Public Key ID. (See TS 29.510 [23]).

5.3.133.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
routingInds	O	T	T	F	T
hNwPubKeyIds	O	T	T	F	T

5.3.133.3 Attribute constraints

None.

5.3.133.4 Notifications

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

5.3.134 `SharedDataIdRange` <<dataType>>

5.3.134.1 Definition

This data type represents a range of Shared Data IDs that identify shared data available in the UDR instance. (See TS 29.510 [23]).

5.3.134.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pattern	O	T	T	F	T

5.3.134.3 Attribute constraints

None.

5.3.134.4 Notifications

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

5.3.135 `PfdData` <<dataType>>

5.3.135.1 Definition

This data type represents the list of Application IDs and/or AF IDs managed by a given NEF Instance. (See clause 6.1.6.2.49 TS 29.510 [23]).

5.3.135.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
appIds	O	T	T	F	T
afIds	O	T	T	F	T

5.3.135.3   Attribute constraints

None.

5.3.135.4   Notifications

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

5.3.136   AfEventExposureData <<dataType>>

5.3.136.1   Definition

This data type represents the AF Event Exposure data managed by a given NEF Instance. (See clause 6.1.6.2.50 TS 29.510 [23]).

5.3.136.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
afEvents	M	T	T	F	T
afIds	O	T	T	F	T
appIds	O	T	T	F	T

5.3.136.3   Attribute constraints

None.

5.3.136.4   Notifications

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

5.3.137   UnTrustAfInfo <<dataType>>

5.3.137.1   Definition

This data type represents information of an untrusted AF Instance. (See clause 6.1.6.2.95 TS 29.510 [23]).

5.3.137.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
afId	M	T	T	F	T
sNssaiInfoList	O	T	T	F	T
mappingInd	O	T	T	F	T

5.3.137.3   Attribute constraints

None.

5.3.137.4 Notifications

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

5.3.138 SnssaiInfoItem <<dataType>>

5.3.138.1 Definition

This data type represents set of parameters supported by NF for a given S-NSSAI. (See clause 6.1.6.2.97 of TS 29.510 [23]).

5.3.138.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sNssai	M	T	T	F	T
dnnInfoList	M	T	T	F	T

5.3.138.3 Attribute constraints

None.

5.3.138.4 Notifications

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

5.3.139 ExtSnssai <<dataType>>

5.3.139.1 Definition

This data type represents set of parameters supported by NF for a given S-NSSAI. (See clause 6.1.6.2.97 TS 29.510 [23]).

5.3.139.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
snssai	M	T	T	F	T
snssaiExtension	O	T	T	F	T

5.3.139.3 Attribute constraints

None.

5.3.139.4 Notifications

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

5.3.140 SnssaiExtension <<dataType>>

5.3.140.1 Definition

This data type represents set of parameters supported by NF for a given DNN. (See clause 5.4.4.66 of TS 29.571 [61]).

5.3.140.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable

ETSI

sdRange	CM	T	T	F	T
wildcardSd	CM	T	T	F	T

5.3.140.3 Attribute constraints

Name	Definition
sdRange S	Condition: sdRange is supported.
wildcardSd S	Condition: wildcardSd is supported.

5.3.140.4 Notifications

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

5.3.141 DnnInfoItem <<dataType>>

5.3.141.1 Definition

This data type represents set of parameters supported by NF for a given DNN. (See clause 6.1.6.2.98 TS 29.510 [23]).

The absence of 'dnaiList' indicates the DNN can be selected for any DNAI.

5.3.141.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dnn	M	T	T	F	T

5.3.141.3 Attribute constraints

None.

5.3.141.4 Notifications

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

5.3.142 SdRange <<dataType>>

5.3.142.1 Definition

This data type represents a SD range. (See clause 5.4.4.6.67 TS 29.571 [61]).

5.3.142.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
start	M	T	T	F	T
end	M	T	T	F	T

5.3.142.3 Attribute constraints

None.

5.3.142.4 Notifications

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

5.3.142a NsacfInfo <<dataType>>

5.3.142a.1 Definition

This data type represents the information of an NSACF NF Instance (see TS 29.510 [23]).

5.3.142a.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
nsacfCapability	M	T	T	F	T
taiList	O	T	T	F	T
taiRangeList	O	T	T	F	T

5.3.142a.3 Attribute constraints

None.

5.3.142a.4 Notifications

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

5.3.142b NsacfCapability <<dataType>>

5.3.142b.1 Definition

This data type represents the NSACF service capability. (See TS 29.510 [23]).

5.3.142b.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
supportUeSAC	CO	T	T	F	T
supportPduSAC	CO	T	T	F	T

5.3.142b.3 Attribute constraints

None.

5.3.142b.4 Notifications

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

5.3.142c NwdafInfo <<dataType>>

5.3.142c.1 Definition

This data type represents specific data for the NWDAF. (See TS 29.510 [23]).

5.3.142c.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
nwdafEvents	CM	T	T	F	T
eventIds	CM	T	T	F	T
taiList	O	T	T	F	T
taiRangeList	O	T	T	F	T
nwdafCapability	O	T	T	F	T

analyticsDelay	O	T	T	F	T
servingNfTypeList	O	T	T	F	T
servingNfSetIdList	O	T	T	F	T
mlAnalyticsList	CM	T	T	F	T

5.3.142c.3   Attribute constraints

Name	Definition
eventIds S	Condition: Nnwdaf_AnalyticsInfo service supports the eventIds.
nwdafEvents S	Condition: Nnwdaf_AnalyticsInfo service supports the nedafEvents.
mlAnalyticsList S	Condition: Nnwdaf_MLModelProvision service supports the ML Analytics Filter information

5.3.142c.4   Notifications

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

5.3.142d NwdafCapability <<dataType>>

5.3.142d.1   Definition

This data type represents the capability supported by the NWDAF. (See TS 29.510 [23]).

5.3.142d.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
analyticsAggregation	O	T	T	F	T
analyticsMetadataProvisioning	O	T	T	F	T

5.3.142d.3   Attribute constraints

None.

5.3.142d.4   Notifications

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

5.3.142e MlAnalyticsInfo <<dataType>>

5.3.142e.1   Definition

This data type represents ML Analytics Filter information supported by the Nnwdaf_MLModelProvision service (See TS 29.510 [23]).

5.3.142e.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
mlAnalyticsIds	CM	T	T	F	T
sNSSAIList	O	T	T	F	T
trackingAreaList	O	T	T	F	T
mlModelInterInfo	O	T	T	F	T
flCapabilityType	O	T	T	F	T
flTimeInterval	O	T	T	F	T

5.3.142e.3   Attribute constraints

Name	Definition
mlAnalyticsIds S	Condition: Network slicing feature is supported and the NWDAF is allowedauthorized to collect the management data of the network slices.

5.3.142e.4   Notifications

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

5.3.143   PlmnIdNid <<dataType>>

5.3.143.1   Definition

This <<dataType>> represents the SCP domain specific information as defined in TS 29.510 [23].

5.3.143.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
mcc	M	T	T	F	T
mnc	M	T	T	F	T
nid	CM	T	T	F	T

5.3.143.3   Attribute constraints

Name	Definition
nid S	Condition: The SNPN is supported.

5.3.143.4   Notifications

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

5.3.143a SeppInfo <<dataType>>

5.3.143a.1   Definition

This data type represents information of a SEPP instance, as described in clause 6.1.6.2.72 of TS 29.510 [23].

5.3.143a.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
seppPrefix	O	T	T	F	T
seppPorts	CM	T	T	F	T
remotePlmnList	O	T	T	F	T
remoteSnpnList	O	T	T	F	T

5.3.143a.3   Attribute constraints

Name	Definition
seppPorts S	Condition: If the HTTP client does not use the default HTTP port number, i.e. TCP port 80 for "http" URIs or TCP port 443 for "https" URIs as specified in IETF RFC 7540 [9] when sending a request to the SEPP.

5.3.143a.4   Notifications

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

5.3.143b UdsfInfo <<dataType>>

5.3.143b.1 Definition

This data type represents information related to UDSF, as described in clause 6.1.6.2.63 of TS 29.510 [23].

5.3.143b.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
groupId	O	T	T	F	T
supiRanges	O	T	T	F	T
storageIdRanges	CM	T	T	F	T

5.3.143b.3 Attribute constraints

Name	Definition
storageIdRanges S	Condition: the UDSF's supported realms and storages are not determined by the UDSF's consumer.

5.3.143b.4 Notifications

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

5.3.143c SmsfInfo <<dataType>>

5.3.143c.1 Definition

This data type represents specific data for a SMSF Instance. (See clause 6.1.6.2.113 TS 29.510 [23]).

5.3.143c.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
roamingUeInd	O	T	T	F	T
remotePlmnRangeList	O	T	T	F	T

5.3.143c.3 Attribute constraints

None.

5.3.143c.4 Notifications

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

5.3.143d PlmnRange <<dataType>>

5.3.143d.1 Definition

This data type represents range of PLMN IDs. (See clause 6.1.6.2.34 TS 29.510 [23]).

5.3.143d.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
start	O	T	T	F	T
end	O	T	T	F	T
pattern	O	T	T	F	T

5.3.143d.3 Attribute constraints

None.

5.3.143d.4 Notifications

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

5.3.143e UdmInfo <<dataType>>

5.3.143e.1 Definition

This data type represents information of an UDM NF Instance. (See clause 6.1.6.2.7 TS 29.510 [23]).

5.3.143e.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
groupId	O	T	T	F	T
supiRanges	O	T	T	F	T
gpsiRanges	O	T	T	F	T
externalGroupIdentifiersRanges	O	T	T	F	T
routingIndicators	O	T	T	F	T
internalGroupIdentifiersRanges	O	T	T	F	T
suciInfos	O	T	T	F	T

5.3.143e.3 Attribute constraints

None.

5.3.143e.4 Notifications

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

5.3.144 UdrInfo <<dataType>>

5.3.144.1 Definition

This data type represents information of an UDR NF Instance. (See clause 6.1.6.2.6 TS 29.510 [23]).

5.3.144.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
groupId	O	T	T	F	T
supiRanges	O	T	T	F	T
gpsiRanges	O	T	T	F	T
externalGroupIdentifiersRanges	O	T	T	F	T
supportedDataSets	O	T	T	F	T
sharedDataIdRanges	O	T	T	F	T

5.3.144.3 Attribute constraints

None.

5.3.144.4 Notifications

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

5.3.144a LmfInfo <<dataType>>

5.3.144a.1 Definition

This data type represents the Specific data for the LMF. (See clause 6.1.6.2.46 TS 29.510 [23]).

5.3.144a.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servingClientTypes	CM	T	T	F	T
lmfId	O	T	T	F	T
servingAccessTypes	CM	T	T	F	T
servingAnNodeTypes	CM	T	T	F	T
servingRatTypes	CM	T	T	F	T
taiList	O	T	T	F	T
taiRangeList	O	T	T	F	T
supportedGADShapes	O	T	T	F	T

5.3.144a.3 Attribute constraints

Name	Definition
servingClientTypes CM S	Condition: the LMF is dedicated to serve the listed external client type(s), e.g. emergency client.
servingAccessTypes CM S	Condition: not all access types are supported.
servingAnNodeTypes CM S	Condition: not all AN node types are supported.
servingRatTypes CM S	Condition: not all RAT types are supported.

5.3.144a.4 Notifications

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

5.3.144b TrustAfInfo <<dataType>>

5.3.144b.1 Definition

This data type represents the information of a trusted AF Instance. (See clause 6.1.6.2.96 TS 29.510 [23]).

5.3.144b.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sNssaiInfoList	O	T	T	F	T
afEvents	O	T	T	F	T
appIds	O	T	T	F	T
internalGroupId	O	T	T	F	T
mappingInd	O	T	T	F	T

5.3.144b.3 Attribute constraints

None.

5.3.144b.4 Notifications

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

5.3.144c EasdfInfo <<dataType>>

5.3.144c.1   Definition

This data type represents EASDF specific data. (See clause 5.4.5.1 of   TS 29.571 [61]).

5.3.144c.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sNssaiEasdfInfoList	O	T	T	F	T
easdfN6IpAddressList	O	T	T	F	T
upfN6IpAddressList	O	T	T	F	T

5.3.144c.3   Attribute constraints

None.

5.3.144c.4   Notifications

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

5.3.144d SnssaiEasdfInfoItem <<dataType>>

5.3.144d.1   Definition

This data type represents parameters supported by the EASDF per S-NSSAI. (See clause 6.1.6.2.78 TS 29.510 [23]).

5.3.144d.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sNssai	M	T	T	F	T
dnnEasdfInfoList	M	T	T	F	T

5.3.144d.3   Attribute constraints

None.

5.3.144d.4   Notifications

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

5.3.144e DnnEasdfInfoItem <<dataType>>

5.3.144e.1   Definition

This data type represents parameters supported by the EASDF per DNN. (See clause 6.1.6.2.79 TS 29.510 [23]).

5.3.144e.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dnn	M	T	T	F	T
dnaiList	O	T	T	F	T

5.3.144e.3   Attribute constraints

None.

5.3.144e.4   Notifications

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

5.3.145   NSSAAFFunction

5.3.145.1   Definition

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

5.3.145.2   Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
cNSIIdList	O	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
nssaafInfo	O	T	T	F	T

5.3.145.3   Attribute constraints

None.

5.3.145.4   Notifications

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

5.3.146   NssaafInfo <<dataType>>

5.3.146.1   Definition

This data type represents the information of a NSSAAF NF Instance. (See clause 6.1.6.2.104 TS 29.510 [23]).

5.3.146.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
supiRanges	O	T	T	F	T
internalGroupIdentifiersRanges	O	T	T	F	T

5.3.146.3   Attribute constraints

None.

5.3.146.4   Notifications

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

5.3.147 `EP_N58`

5.3.147.1 Definition

This IOC represents an end point of N58 interface between NSSAAF and AMF, which is defined in TS 23.501 [2] and 33.501 [52].

5.3.147.2 Attributes

The EP_N58 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.147.3 Attribute constraints

None.

5.3.147.4 Notifications

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

5.3.148 `EP_N59`

5.3.148.1 Definition

This IOC represents an end point of N59 interface between NSSAAF and UDM, which is defined in TS 23.501 [2] and 33.501 [52].

5.3.148.2 Attributes

The EP_N59 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.148.3 Attribute constraints

None.

5.3.148.4 Notifications

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

5.3.149 `NrfInfo` <<dataType>>

5.3.149.1   Definition

This data type represents information of an NRF NF Instance, used in hierarchical NRF deployments. (See clause 6.1.6.2.31 TS 29.510 [23]).

5.3.149.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servedUdrInfo	O	T	T	F	T
servedUdrInfoList	O	T	T	F	T
servedUdmInfo	O	T	T	F	T
servedUdmInfoList	O	T	T	F	T
servedAusfInfo	O	T	T	F	T
servedAusfInfoList	O	T	T	F	T
servedAmfInfo	O	T	T	F	T
servedAmfInfoList	O	T	T	F	T
servedSmfInfo	O	T	T	F	T
servedSmfInfoList	O	T	T	F	T
servedUpfInfo	O	T	T	F	T
servedUpfInfoList	O	T	T	F	T
servedPcfInfo	O	T	T	F	T
servedPcfInfoList	O	T	T	F	T
servedBsfInfo	O	T	T	F	T
servedBsfInfoList	O	T	T	F	T
servedChfInfo	O	T	T	F	T
servedChfInfoList	O	T	T	F	T
servedNefInfo	O	T	T	F	T
servedNwdafInfo	O	T	T	F	T
servedNwdafInfoList	O	T	T	F	T
servedPcscfInfoList	O	T	T	F	T
servedGmlcInfo	O	T	T	F	T
servedLmfInfo	O	T	T	F	T
servedNfInfo	O	T	T	F	T
servedHssInfoList	O	T	T	F	T
servedUdsfInfo	O	T	T	F	T
servedUdsfInfoList	O	T	T	F	T
servedScpInfoList	O	T	T	F	T
servedSeppInfoList	O	T	T	F	T
servedAanfInfoList	O	T	T	F	T
served5gDdnmfInfo	O	T	T	F	T
servedMfafInfoList	O	T	T	F	T
servedEasdfInfoList	O	T	T	F	T
servedDccfInfoList	O	T	T	F	T
servedMbSmfInfoList	O	T	T	F	T
servedTsctsfInfoList	O	T	T	F	T
servedMbUpfInfoList	O	T	T	F	T
servedTrustAfInfo	O	T	T	F	T
servedNssaafInfo	O	T	T	F	T

5.3.149.3   Attribute constraints

None.

5.3.149.4   Notifications

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

5.3.150 CHFFunction

5.3.150.1 Definition

This IOC represents the CHF function. For more information about the CHF, see TS 23.501 [2] and TS 32.240 [88].

5.3.150.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
chfInfo	O	T	T	F	T

5.3.150.3 Attribute constraints

None.

5.3.150.4 Notifications

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

5.3.151 ChfInfo <<dataType>>

5.3.151.1 Definition

This data type represents the Specific data for the CHF. (See clause 6.1.6.2.32 TS 29.510 [23]).

5.3.151.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
supiRangeList	O	T	T	F	T
gpsiRangeList	O	T	T	F	T
plmnRangeList	O	T	T	F	T
groupId	O	T	T	F	T
primaryChfInstance	CM	T	T	F	T
secondaryChfInstance	CM	T	T	F	T

5.3.151.3 Attribute constraints

Name	Definition
primaryChfInstance CM S	Condition: the CHF instance serves as a secondary CHF instance of another primary CHF instance.
secondaryChfInstance CM S	Condition: the CHF instance serves as a primary CHF instance of another secondary CHF instance.

5.3.151.4 Notifications

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

5.3.152 `EP_N40`

5.3.152.1 Definition

This IOC represents an end point of N40 interface between CHF and SMF, which is defined in TS 23.501 [2] and TS 32.240 [88].

5.3.152.2 Attributes

The EP_N40 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.152.3 Attribute constraints

None.

5.3.152.4 Notifications

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

5.3.153 `EP_N41`

5.3.153.1 Definition

This IOC represents an end point of N41 interface between AMF and CHF in HPLMN, which is defined in TS 23.501 [2] and TS 32.240 [88].

5.3.153.2 Attributes

The EP_N41 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.153.3 Attribute constraints

None.

5.3.153.4 Notifications

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

5.3.154 `EP_N42`

5.3.154.1 Definition

This IOC represents an end point of N42 interface between AMF and CHF in VPLMN, which is defined in TS 23.501 [2] and TS 32.240 [88].

5.3.154.2 Attributes

The EP_N42 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.154.3 Attribute constraints

None.

5.3.154.4 Notifications

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

5.3.155 `EP_N28`

5.3.155.1 Definition

This IOC represents an end point of N28 interface between CHF and PCF, which is defined in TS 23.501 [2] and TS 32.240 [88].

5.3.155.2 Attributes

The EP_N28 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.155.3 Attribute constraints

None.

5.3.155.4 Notifications

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

5.3.156 `MFAFFunction`

5.3.156.1 Definition

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

5.3.156.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
mfafInfo	O	T	T	F	T

5.3.156.3 Attribute constraints

None.

5.3.156.4 Notifications

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

5.3.157 `MfafInfo` <<dataType>>

5.3.157.1 Definition

This data type represents the Specific data for the MFAF. (See clause 6.1.6.2.75 TS 29.510 [23]).

5.3.157.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servingNfTypeList	O	T	T	F	T
servingNfSetIdList	O	T	T	F	T
taiList	O	T	T	F	T
taiRangeList	O	T	T	F	T

5.3.157.3 Attribute constraints

None.

5.3.157.4 Notifications

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

5.3.158 `DCCFFunction`

5.3.158.1 Definition

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

5.3.158.2   Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
cNSIIdList	O	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
dccfInfo	O	T	T	F	T

5.3.158.3   Attribute constraints

None.

5.3.158.4   Notifications

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

5.3.159   `DccfInfo` <<dataType>>

5.3.159.1   Definition

This data type represents the Specific data for the DCCF. (See clause 6.1.6.2.46 TS 29.510 [23]).

5.3.159.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servingNfTypeList	O	T	T	F	T
servingNfSetIdList	O	T	T	F	T
taiList	O	T	T	F	T
taiRangeList	O	T	T	F	T

5.3.159.3   Attribute constraints

None.

5.3.159.4   Notifications

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

5.3.160   `AmfInfo` <<dataType>>

5.3.160.1   Definition

This data type represents information of an AMF Instance. (See clause 6.1.6.2.11 TS 29.510 [23]).

5.3.160.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
aMFRegionId	M	T	T	F	T
aMFSetId	M	T	T	F	T
taiList	O	T	T	F	T
taiRangeList	O	T	T	F	T
gUAMIdList	M	T	F	F	T

`backupInfoAmfFailure`	O	T	T	F	T
`backupInfoAmfRemoval`	O	T	T	F	T
`n2InterfaceAmfInfo`	O	T	T	F	T
`amfOnboardingCapability`	O	T	T	F	T
`highLatencyCom`	O	T	T	F	T

5.3.160.3 Attribute constraints

None.

5.3.160.4 Notifications

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

5.3.161 `SmfInfo` <<dataType>>

5.3.161.1 Definition

This data type represents information of an SMF Instance. (See clause 6.1.6.2.12 TS 29.510 [23]).

5.3.161.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
`sNssaiSmfInfoList`	M	T	T	F	T
`taiList`	O	T	T	F	T
`taiRangeList`	O	T	T	F	T
`pgwFqdn`	O	T	T	F	T
`pgwIpAddrList`	O	T	T	F	T
`accessType`	O	T	T	F	T
`priority`	O	T	T	F	T
`vsmfSupportInd`	O	T	T	F	T
`pgwFqdnList`	CM	T	T	F	T
`ismfSupportInd`	O	T	T	F	T
`smfOnboardingCapability`	O	T	T	F	T
`smfUPRPCapability`	O	T	T	F	T

5.3.161.3 Attribute constraints

Name	Definition
`pgwFqdnList` CM S	Condition: Present if `pgwFqdn` attribute is present.

5.3.161.4 Notifications

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

5.3.162 `UpfInfo` <<dataType>>

5.3.162.1 Definition

This data type represents information of an UPF Instance. (See clause 6.1.6.2.13 TS 29.510 [23]).

5.3.162.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
`sNssaiUpfInfoList`	M	T	T	F	T
`smfServingArea`	O	T	T	F	T
`interfaceUpfInfoList`	O	T	T	F	T
`iwkEpsInd`	O	T	F	F	T

pduSessionTypes	O	T	F	F	T
atsssCapability	CM	T	F	F	T
ueIpAddrInd	O	T	F	F	T
taiList	O	T	T	F	T
taiRangeList	O	T	T	F	T
wAgfInfo	CM	T	T	F	T
tngfInfo	CM	T	T	F	T
twifInfo	CM	T	T	F	T
priority	O	T	T	F	T
redundantGtpu	O	T	F	F	T
ipups	O	T	T	F	T
dataForwarding	O	T	T	F	T
supportedPfcpFeatures	O	T	F	F	T
sxaInd	O	T	F	F	T

5.3.162.3   Attribute constraints

Name	Definition
atsssCapability CM S	If presents, then one of the atsssLL or mptcp shall be supported. Otherwise, if not present, the UPF shall be regarded with no ATSSS capability.
wAgfInfo CM S	The condition is "the UPF is collocated with W-AGF".
tngfInfo CM S	The condition is "the UPF is collocated with TNGF".
twifInfo CM S	The condition is "the UPF is collocated with TWIF".

5.3.162.4   Notifications

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

5.3.163   PcfInfo <<dataType>>

5.3.163.1   Definition

This data type represents information of a PCF Instance. (See clause 6.1.6.2.20 TS 29.510 [23]).

5.3.163.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
groupId	O	T	T	F	T
dnnList	O	T	T	F	T
supiRanges	O	T	T	F	T
gpsiRanges	O	T	T	F	T
rxDiamHost	CM	T	T	F	T
rxDiamRealm	CM	T	T	F	T
v2xSupportInd	O	T	F	F	T
proseSupportInd	O	T	F	F	T
proseCapability	CM	T	T	F	T
v2xCapability	CM	T	T	F	T
a2xSupportInd	O	T	F	F	T
a2xCapability	CM	T	T	F	T
rangingSlPosSupportInd	O	T	F	F	T

5.3.163.3   Attribute constraints

Name	Definition
rxDiamHost CM S	Condition: Rx interface feature is supported.
rxDiamRealm CM S	Condition: Rx interface feature is supported.
proseCapability CM S	Condition: ProSe Capability is supported.
v2xCapability CM S	Condition: V2X Capability is supported.
a2xCapability CM S	Condition: the PCF supports A2X Capability.

5.3.163.4 Notifications

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

5.3.164 NefInfo <<dataType>>

5.3.164.1 Definition

This data type represents information of an NEF Instance. (See clause 6.1.6.2.48 TS 29.510 [23]).

The absence of 'dnaiList' indicates the NEF can be selected for any DNAI.

5.3.164.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
tailList	O	T	F	T	F
taiRangeList	O	T	F	T	F
nefId	CM	T	T	F	T
pfdData	O	T	F	F	T
afEeData	O	T	F	F	T
gpsiRanges	O	T	T	F	T
externalGroupIdentifiersRanges	O	T	T	F	T
servedFqdnList	O	T	T	F	T
dnaiList	O	T	T	F	T
unTrustAfInfoList	O	T	T	F	T
uasNfFunctionalityInd	O	T	T	F	T
multiMemAfSessQosInd	O	T	T	F	T
memberUESelAssistInd	O	T	T	F	T

5.3.164.3 Attribute constraints

Name	Definition
nefId CM S	Condition: NIDD service is supported.

5.3.164.4 Notifications

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

5.3.165 BSFFunction

5.3.165.1 Definition

This IOC represents the BSF function in 5GC. For more information about the BSF, see TS 23.503 [59].

5.3.165.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
cNSIIdList	O	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
bsfInfo	O	T	T	F	T

5.3.165.3 Attribute constraints

None.

5.3.165.4 Notifications

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

5.3.166 BsfInfo <<dataType>>

5.3.166.1 Definition

This data type represents the Specific data for the BSF. (See clause 6.1.6.2.21 TS 29.510 [23]).

5.3.166.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
ipv4AddressRanges	O	T	T	F	T
dnnList	O	T	T	F	T
ipDomainList	O	T	T	F	T
ipv6PrefixRanges	O	T	T	F	T
rxDiamHost	CM	T	T	F	T
rxDiamRealm	CM	T	T	F	T
groupId	O	T	T	F	T
supiRanges	O	T	T	F	T
gpsiRanges	O	T	T	F	T

5.3.166.3 Attribute constraints

Name	Definition
rxDiamHost CM S	Condition: the BSF supports Rx interface.
rxDiamRealm CM S	Condition: the BSF supports Rx interface.

5.3.166.4 Notifications

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

5.3.167 AANFFunction

5.3.167.1 Definition

This IOC represents the AAnF function in 5GC. For more information about the AANF, see TS 33.535 [91].

5.3.167.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
aanfInfo	O	T	T	F	T

5.3.167.3 Attribute constraints

None.

5.3.167.4 Notifications

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

5.3.168 AanfInfo <<dataType>>

5.3.168.1 Definition

This data type represents the Specific data for the AAnF. (See clause 6.1.6.2.73 TS 29.510 [23]).

5.3.168.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
routingIndicators	O	T	T	F	T

5.3.168.3 Attribute constraints

None.

5.3.168.4 Notifications

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

5.3.169 EP_N61

5.3.169.1 Definition

This IOC represents an end point of N61 interface between AUSF and AAnF, which is defined in TS 23.501 [2] and TS 33.535 [91].

5.3.169.2 Attributes

The EP_N61 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.169.3 Attribute constraints

None.

5.3.169.4 Notifications

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

5.3.170 `EP_N62`

5.3.170.1 Definition

This IOC represents an end point of N62 interface between AF and AAnF, which is defined in TS 23.501 [2] and TS 33.535 [91].

5.3.170.2 Attributes

The `EP_N62` IOC includes attributes inherited from `EP_RP` IOC (defined in 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

5.3.170.3 Attribute constraints

None.

5.3.170.4 Notifications

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

5.3.171 `EP_N63`

5.3.171.1 Definition

This IOC represents an end point of N63 interface between NEF and AAnF, which is defined in TS 23.501 [2] and 33.535 [91].

5.3.171.2 Attributes

The `EP_N63` IOC includes attributes inherited from `EP_RP` IOC (defined in 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

5.3.171.3 Attribute constraints

None.

5.3.171.4 Notifications

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

5.3.172 `TSCTSFFunction`

5.3.172.1 Definition

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

5.3.172.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
tsctsfInfo	O	T	T	F	T

5.3.172.3 Attribute constraints

None.

5.3.172.4 Notifications

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

5.3.173 `TsctsfInfo` <<dataType>>

5.3.173.1 Definition

This data type represents the Specific data for the TSCTSF. (See clause 6.1.6.2.91 TS 29.510 [23]).

5.3.173.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sNssaiInfoList	O	T	T	F	T
externalGroupIdentifiersRanges	O	T	T	F	T
supiRanges	O	T	T	F	T
gpsiRanges	O	T	T	F	T
internalGroupIdentifiersRanges	O	T	T	F	T

5.3.173.3 Attribute constraints

None.

5.3.173.4 Notifications

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

5.3.174 `EP_N84`

5.3.174.1 Definition

This IOC represents an end point of N84 interface between TSCTSF and PCF, which is defined in TS 23.501 [2].

5.3.174.2 Attributes

The `EP_N84` IOC includes attributes inherited from `EP_RP` IOC (defined in 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

5.3.174.3 Attribute constraints

None.

5.3.174.4 Notifications

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

5.3.175 `EP_N85`

5.3.175.1 Definition

This IOC represents an end point of N85 interface between TSCTSF and NEF, which is defined in TS 23.501 [2].

5.3.175.2 Attributes

The `EP_N85` IOC includes attributes inherited from `EP_RP` IOC (defined in 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

5.3.175.3 Attribute constraints

None.

5.3.175.4 Notifications

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

5.3.176 `EP_N86`

5.3.176.1 Definition

This IOC represents an end point of N86 interface between TSCTSF and AF, which is defined in TS 23.501 [2].

5.3.176.2 Attributes

The `EP_N86` IOC includes attributes inherited from `EP_RP` IOC (defined in 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

5.3.176.3 Attribute constraints

None.

5.3.176.4 Notifications

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

5.3.177 EP_N87

5.3.177.1 Definition

This IOC represents an end point of N87 interface between TSCTSF and UDM, which is defined in TS 23.501 [2].

5.3.177.2 Attributes

The EP_N87 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.177.3 Attribute constraints

None.

5.3.177.4 Notifications

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

5.3.178 EP_N89

5.3.178.1 Definition

This IOC represents an end point of N89 interface between TSCTSF and AMF, which is defined in TS 23.501 [2].

5.3.178.2 Attributes

The EP_N89 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.178.3 Attribute constraints

None.

5.3.178.4 Notifications

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

5.3.179 EP_N96

5.3.179.1 Definition

This IOC represents an end point of N96 interface between TSCTSF and NRF, which is defined in TS 23.501 [2].

5.3.179.2 Attributes

The EP_N96 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.179.3 Attribute constraints

None.

5.3.179.4 Notifications

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

5.3.180 GMLCFunction

5.3.180.1 Definition

This IOC represents the GMLC function in 5GC. For more information about the 5G GMLC, see TS 23.501 [2] and TS 23.273 [93].

5.3.180.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
sBIFQDN	M	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
gmlcInfo	O	T	T	F	T

5.3.180.3 Attribute constraints

None.

5.3.180.4 Notifications

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

5.3.181 GmlcfInfo <<dataType>>

5.3.181.1 Definition

This data type represents the Specific data for the GMLC. (See clause 6.1.6.2.47 TS 29.510 [23]).

5.3.181.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servingClientTypes	O	T	T	F	T
gmlcNumbers	O	T	T	F	T

5.3.181.3 Attribute constraints

None.

5.3.181.4 Notifications

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

5.3.182 EP_NL3

5.3.182.1 Definition

This IOC represents the NL3 interface between vGMLC and hGMLC, which is defined in TS 23.273 [93].

5.3.182.2 Attributes

The EP_NL3 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.182.3 Attribute constraints

None.

5.3.182.4 Notifications

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

5.3.183 EP_NL5

5.3.183.1 Definition

This IOC represents the NL5 interface between NEF and GMLC, which is defined in TS 23.273 [93].

5.3.183.2 Attributes

The `EP_NL5` IOC includes attributes inherited from `EP_RP` IOC (defined in 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

5.3.183.3 Attribute constraints

None.

5.3.183.4 Notifications

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

5.3.184 EP_NL6

5.3.184.1 Definition

This IOC represents the NL6 interface between UDM and GMLC, which is defined in TS 23.273 [93].

5.3.184.2 Attributes

The `EP_NL6` IOC includes attributes inherited from `EP_RP` IOC (defined in 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

5.3.184.3 Attribute constraints

None.

5.3.184.4 Notifications

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

5.3.185 EP_NL9

5.3.185.1 Definition

This IOC represents the NL9 interface between NWDAF and GMLC, which is defined in TS 23.273 [93].

5.3.185.2 Attributes

The `EP_NL9` IOC includes attributes inherited from `EP_RP` IOC (defined in 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

5.3.185.3 Attribute constraints

None.

5.3.185.4 Notifications

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

5.3.186 NTNPLMNRestrictionsInfo <<dataType>>

5.3.186.1 Definition

This datatype defines the location restrictions per PLMN that relates to non-terrestrial network access.

5.3.186.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNId	M	T	T	F	T
blockedLocationInfoList	M	T	T	F	T

5.3.186.3 Attribute constraints

None.

5.3.186.4 Notifications

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

5.3.187 BlockedLocationInfo <<dataType>>

5.3.187.1 Definition

This datatype defines the information related with the location for which the PLMN access restrictions are to be applied in case of NTN

5.3.187.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
blockedLocation	M	T	T	F	T
blockedDurWindow	M	T	T	F	T
blockedSlice	M	T	T	F	T

5.3.187.3 Attribute constraints

None.

5.3.187.4 Notifications

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

5.3.188 SatelliteCoverageInfo <<dataType>>

5.3.188.1 Definition

This is the <<datatype>> for attribute satelliteCoverageInfoList.

This datatype defines information related to NR Satellite RAT type and corresponding information of satellite coverage.

5.3.188.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
nRSatelliteRATtype	M	T	T	F	T
locationInfo	M	T	T	F	T

5.3.188.3 Attribute constraints

None.

5.3.188.4 Notifications

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

5.3.189 NtnLocationInfo <<dataType>>

5.3.189.1 Definition

This datatype defines the information about locations and corresponding time windows for which the satellite coverage will be available or unavailable.

5.3.189.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
location	M	T	T	F	T
availabilityWindows	CM	T	T	F	T
nonAvailabilityWindows	CM	T	T	F	T

5.3.189.3 Attribute constraints

Name	Definition
availabilityWindows S	Condition: Either availabilityWindows or nonAvailabilityWindows will be present.
nonAvailabilityWindows S	Condition: Either availabilityWindows or nonAvailabilityWindows will be present.

5.3.189.4 Notifications

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

5.3.190 `N2InterfaceAmfInfo` <<dataType>>

5.3.190.1   Definition

This data type represents AMF N2 interface information. (See clause 6.1.6.2.26 TS 29.510 [23]).

5.3.190.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
ipv4EndpointAddress	CM	T	T	F	T
ipv6EndpointAddress	CM	T	T	F	T
amfName	O	T	T	F	T

5.3.190.3   Attribute constraints

Name	Definition
ipv4EndpointAddress CM S	Condition: if ipv6EndpointAddress is not included.
ipv6EndpointAddress CM S	Condition: if ipv4EndpointAddress is not included..

5.3.190.4   Notifications

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

5.3.191 `A2xCapability` <<dataType>>

5.3.191.1   Definition

This data type indicates the supported A2X Capability by the PCF. (See clause 6.1.6.2.120 TS 29.510 [23]).

5.3.191.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
lteA2x	O	T	T	F	T
nrA2x	O	T	T	F	T

5.3.191.3   Attribute constraints

None.

5.3.191.4   Notifications

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

5.3.192 `MBUPFFunction`

5.3.192.1   Definition

This IOC represents the MB-UPF function defined in TS 23.501 [2] and TS 23.247 [96].

5.3.192.2 Attributes

The `MBUPFFunction` IOC includes attributes inherited from `ManagedFunction` IOC (defined in 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
mbUpfInfo	O	T	T	F	T

5.3.192.3 Attribute constraints

None.

5.3.192.4 Notifications

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

5.3.193 MbUpfInfo <<dataType>>

5.3.193.1 Definition

This data type represents the specific data for the MB-UPF. (See clause 6.1.6.2.94 TS 29.510 [23]).

5.3.193.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sNssaiMbUpfInfoList	M	T	T	F	T
mbSmfServingArea	O	T	T	F	T
interfaceMbUpfInfoList	O	T	T	F	T
taiList	O	T	T	F	T
taiRangeList	O	T	T	F	T
priority	O	T	T	F	T
supportedPfcpFeatures	O	T	T	F	T

5.3.193.3 Attribute constraints

None.

5.3.193.4 Notifications

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

5.3.194 SnssaiUpfInfoItem <<dataType>>

5.3.194.1 Definition

This data type represents set of parameters supported by UPF for a given S-NSSAI. (See clause 6.1.6.2.14 TS 29.510 [23]).

5.3.194.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sNssai	M	T	T	F	T
dnnUpfInfoList	M	T	T	F	T
redundantTransport	O	T	T	F	T

5.3.194.3   Attribute constraints

None.

5.3.194.4   Notifications

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

5.3.195   DnnUpfInfoItem <<dataType>>

5.3.195.1   Definition

This data type represents set of parameters supported by UPF for a given DNN. (See clause 6.1.6.2.15 TS 29.510 [23]).

5.3.195.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dnn	M	T	T	F	T
dnaiList	O	T	T	F	T
pduSessionTypes	O	T	T	F	T
ipv4AddressRanges	O	T	T	F	T
ipv6PrefixRanges	O	T	T	F	T
natedIpv4AddressRanges	O	T	T	F	T
natedIpv6PrefixRanges	O	T	T	F	T
ipv4IndexList	O	T	T	F	T
ipv6IndexList	O	T	T	F	T
networkInstance	O	T	T	F	T
dnaiNwInstanceList	O	T	T	F	T

5.3.195.3   Attribute constraints

mbsAreaSessions CM S	Condition: For an MBS session with location dependent content.

5.3.195.4   Notifications

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

5.3.196   EP_N3mb

5.3.196.1   Definition

This IOC represents the N3mb interface between MB-UPF and NG-RAN, which is defined in TS 23.247 [96].

5.3.196.2   Attributes

The EP_N3mb IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.196.3   Attribute constraints

None.

5.3.196.4   Notifications

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

5.3.197   EP_N19mb

5.3.197.1   Definition

This IOC represents the N19mb interface between MB-UPF and UPF, which is defined in TS 23.247 [96].

5.3.197.2   Attributes

The EP_N19mb IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.197.3   Attribute constraints

None.

5.3.197.4   Notifications

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

5.3.198   EP_N4mb

5.3.198.1   Definition

This IOC represents the N4mb interface between MB-UPF and MB-SMF, which is defined in TS 23.247 [96].

5.3.198.2   Attributes

The EP_N4mb IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.198.3   Attribute constraints

None.

5.3.198.4 Notifications

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

5.3.199 `EP_Nmb9`

5.3.199.1 Definition

This IOC represents the Nmb9 interface between MB-UPF and MBSTF, which is defined in TS 23.247 [96].

5.3.199.2 Attributes

The `EP_Nmb9` IOC includes attributes inherited from `EP_RP` IOC (defined in 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

5.3.199.3 Attribute constraints

None.

5.3.199.4 Notifications

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

5.3.200 `MBSMFFunction`

5.3.200.1 Definition

This IOC represents the MB-SMF function defined in TS 23.501 [2] and TS 23.247 [98].

5.3.200.2 Attributes

The `MBSMFFunction` IOC includes attributes inherited from `ManagedFunction` IOC (defined in 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
mbSmfInfo	O	T	T	F	T

5.3.200.3 Attribute constraints

None.

5.3.200.4 Notifications

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

5.3.201 Void

5.3.202 `MbSmfInfo` <<dataType>>

5.3.202.1 Definition

This data type represents the specific data for the MB-SMF. (See clause 6.1.6.2.85 TS 29.510 [23]).

5.3.202.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sNssaiInfoList	O	T	T	F	T
tmgiRangeList	O	T	T	F	T
taiList	O	T	T	F	T
taiRangeList	O	T	T	F	T
mbsSessionList	O	T	T	F	T

5.3.202.3 Attribute constraints

None.

5.3.202.4 Notifications

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

5.3.203 `TmgiRange` <<dataType>>

5.3.203.1 Definition

This data type represents range of TMGIs. (See clause 6.1.6.2.86 TS 29.510 [23]).

5.3.203.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
mbsServiceIdStart	M	T	T	F	T
mbsServiceIdEnd	M	T	T	F	T
pLMNId	M	T	T	F	T
nId	O	T	T	F	T

5.3.203.3 Attribute constraints

None.

5.3.203.4 Notifications

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

5.3.204 `MbsSession` <<dataType>>

5.3.204.1 Definition

This data type represents MBS Session served by an MB-SMF. (See clause 6.1.6.2.87 TS 29.510 [23]).

5.3.204.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
mbsSessionId	M	T	T	F	T
mbsAreaSessions	CM	T	T	F	T

5.3.204.3 Attribute constraints

mbsAreaSessions CM S	Condition: For an MBS session with location dependent content.

5.3.204.4 Notifications

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

5.3.205 SnssaiMbSmfInfoItem <<dataType>>

5.3.205.1 Definition

This data type represents parameters supported by an MB-SMF for a given S-NSSAI. (See clause 6.1.6.2.88 TS 29.510 [23]).

5.3.205.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sNssai	M	T	T	F	T
dnnInfoList	M	T	T	F	T

5.3.205.3 Attribute constraints

None.

5.3.205.4 Notifications

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

5.3.206 DnnMbSmfInfoItem <<dataType>>

5.3.206.1 Definition

This data type represents parameters supported by an MB-SMF for a given DNN. (See clause 6.1.6.2.89 TS 29.510 [23]).

5.3.206.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dnn	M	T	T	F	T

5.3.206.3 Attribute constraints

None.

5.3.206.4 Notifications

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

5.3.207 `MbsServiceAreaInfo` <<dataType>>

5.3.207.1 Definition

This data type represents MBS Service Area Information for Location dependent MBS session. (See clause 5.9.4.15 TS 29.571 [61]).

5.3.207.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
areaSessionId	M	T	T	F	T
mbsServiceArea	M	T	T	F	T

5.3.207.3 Attribute constraints

None.

5.3.207.4 Notifications

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

5.3.208 `Ssm` <<dataType>>

5.3.208.1 Definition

This data type represents Source specific IP multicast address identifying the MBS session. (See clause 5.9.4.3 TS 29.571 [61]).

5.3.208.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sourceIpAddr	O	T	T	F	T
destIpAddr	O	T	T	F	T

5.3.208.3 Attribute constraints

None.

5.3.208.4 Notifications

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

5.3.209 `Tmgi` <<dataType>>

5.3.209.1 Definition

This data type represents TMGI identifying the MBS session. (See clause 5.9.4.2 TS 29.571 [61]).

5.3.209.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
mbsServiceId	O	T	T	F	T
pLMNId	O	T	T	F	T

5.3.209.3   Attribute constraints

None.

5.3.209.4   Notifications

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

5.3.210   `MbsServiceId` <<dataType>>

5.3.210.1   Definition

This data type represents MBS session identifier. (See clause 5.9.4.1 TS 29.571 [61]).

5.3.210.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
tmgi	O	T	T	F	T
Ssm	O	T	T	F	T
nId	O	T	T	F	T

5.3.210.3   Attribute constraints

None.

5.3.210.4   Notifications

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

5.3.211   `MbsServiceArea` <<dataType>>

5.3.211.1   Definition

This data type represents MBS Service Area Information for Location dependent MBS session. (See clause 5.9.4.4 TS 29.571 [61]).

5.3.211.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
ncgiList	O	T	T	F	T
taiList	O	T	T	F	T

5.3.211.3   Attribute constraints

None.

5.3.211.4   Notifications

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

5.3.212 `Ncgi` <<dataType>>

5.3.212.1 Definition

This data type represents 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 clause 8.2 of TS 38.300 [3] and clause 5.4.4.6 TS 29.571 [61]).

5.3.212.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNId	M	T	T	F	T
nrCellId	M	T	T	F	T
nId	CM	T	T	F	T

5.3.212.3 Attribute constraints

nId CM S	Condition: Network Identifier, shall be present in case of SNPN, PlmnId together with Nid indicates the identity of the SNPN to which the NR cell belongs to.

5.3.212.4 Notifications

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

5.3.213 `EP_N16mb`

5.3.213.1 Definition

This IOC represents the N16mb interface between MB-SMF and SMF, which is defined in TS 23.247 [98].

5.3.213.2 Attributes

The `EP_N16mb` IOC includes attributes inherited from `EP_RP` IOC (defined in 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

5.3.213.3 Attribute constraints

None.

5.3.213.4 Notifications

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

5.3.214 `EP_N11mb`

5.3.214.1 Definition

This IOC represents the N11mb interface between AMF and MB-SMF, which is defined in TS 23.247 [98].

5.3.214.2 Attributes

The `EP_N11mb` IOC includes attributes inherited from `EP_RP` IOC (defined in 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

5.3.214.3 Attribute constraints

None.

5.3.214.4 Notifications

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

5.3.215 EP_Nmb1

5.3.215.1 Definition

This IOC represents the Nmb1 interface between MB-SMF and MBSF, which is defined in TS 23.247 [98].

5.3.215.2 Attributes

The `EP_Nmb1` IOC includes attributes inherited from `EP_RP` IOC (defined in 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

5.3.215.3 Attribute constraints

None.

5.3.215.4 Notifications

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

5.3.216 5GDdnmfInfo <<dataType>>

5.3.216.1 Definition

This data type represents the Specific data for the 5G DDMF NF. (See clause 6.1.6.2.74 TS 29.510 [23]).

5.3.216.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNId	M	T	T	F	T

5.3.216.3   Attribute constraints

None.

5.3.216.4   Notifications

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

5.3.217   `HssInfo <<dataType>>`

5.3.217.1   Definition

This data type represents the Specific data for the HSS NF. (See clause 6.1.6.2.57 TS 29.510 [23]).

5.3.217.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
groupId	O	T	T	F	T
imsiRanges	O	T	T	F	T
imsPrivateIdentityRanges	O	T	T	F	T
imsPublicIdentityRanges	O	T	T	F	T
msisdnRanges	O	T	T	F	T
externalGroupIdentifiersRanges	O	T	T	F	T
hssDiameterAddress	O	T	T	F	T
additionalDiamAddresses	O	T	T	F	T

5.3.217.3   Attribute constraints

None.

5.3.217.4   Notifications

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

5.3.218   `NetworkNodeDiameterAddress <<dataType>>`

5.3.218.1   Definition

This data type represents the Diameter Address of a Network Node. (See clause 6.2.6.2.10 TS 29.503 [97]).

5.3.218.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
name	O	T	T	F	T
realm	O	T	T	F	T

5.3.218.3   Attribute constraints

None.

5.3.218.4   Notifications

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

5.3.219 ImsiRange <<dataType>>

5.3.219.1 Definition

This data type represents a range of IMSIs (subscriber identities), either based on a numeric range, or based on regular-expression matching. (See clause 6.1.6.2.58 TS 29.510 [23]).

5.3.219.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
start	O	T	T	F	T
end	O	T	T	F	T
pattern	O	T	T	F	T

5.3.219.3 Attribute constraints

None.

5.3.219.4 Notifications

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

5.3.220 MNPFFunction

5.3.220.1 Definition

This IOC represents the MNPF NF defined in TS 23.540 [100].

5.3.220.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfoList	M	T	T	F	T
managedNFProfile	M	T	T	F	T
commModelList	M	T	T	F	T
mnpfInfo	O	T	T	F	T

5.3.220.3 Attribute constraints

None.

5.3.220.4 Notifications

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

5.3.221 MnpfInfo <<dataType>>

5.3.221.1 Definition

This data type represents the specific data for the MNPF. (See clause 6.1.6.2.109 TS 29.510 [23]).

5.3.221.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
msisdnRanges	M	T	T	F	T

5.3.221.3   Attribute constraints

None.

5.3.221.4   Notifications

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

5.3.222   EP_SM12

5.3.222.1   Definition

This IOC represents the SM12 interface between MNPF and SMS-GMSC, and it is defined in TS 23.540 [100].

5.3.222.2   Attributes

The EP_SM12 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.222.3   Attribute constraints

None.

5.3.222.4   Notifications

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

5.3.223   EP_SM13

5.3.223.1   Definition

This IOC represents the SM13 interface between MNPF and SCP, and it is defined in TS 23.540 [100].

5.3.223.2   Attributes

The EP_SM13 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.223.3 Attribute constraints

None.

5.3.223.4 Notifications

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

5.3.224 EP_SM14

5.3.224.1 Definition

This IOC represents the SM14 interface between MNPF and NRF, and it is defined in TS 23.540 [100].

5.3.224.2 Attributes

The EP_SM14 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.224.3 Attribute constraints

None.

5.3.224.4 Notifications

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

5.3.225 EP_N34

5.3.225.1 Definition

This IOC represents the N34 interface between NWDAF and NSSF, which is defined in 3GPP TS 23.501 [2].

5.3.225.2 Attributes

The EP_N34 IOC includes attributes inherited from EP_RP IOC (defined in 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

5.3.225.3 Attribute constraints

None.

5.3.225.4 Notifications

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

5.3.226 `AnLFFunction`

5.3.226.1 Definition

This IOC represents the Analytics logical function (AnLF) contained by NWDAF (see TS 23.288 [101]).

The AnLF may be supported by AI/ML feature (See TS 28.105 [105]). Attribute mLModelRef indicates that AI/ML is supported for this function. Attribute AIMLInferenceFunctionRef indicates that AI/ML Inference Function is supported for this function.

5.3.226.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
`activationStatus`	M	T	F	F	T
Attribute related to role					
`mLModelRefList`	CM	T	F	F	T
`aIMLInferenceFunctionRefList`	CM	T	F	F	T

5.3.226.3 Attribute constraints

Name	Definition
`mLModelRefList`	The condition is "AIML feature is supported".
`aIMLInferenceFunctionRefList`	The condition is "AIMLInferenceFunction is supported".

5.3.226.4 Notifications

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

5.3.227 `DnnTsctsfInfoItem` <<dataType>>

5.3.227.1 Definition

This data type represents set of parameters supported by TSCTSF for a given DNN. (See clause 6.1.6.2.93 TS 29.510 [23]).

5.3.227.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
`dnn`	M	T	T	F	T

5.3.227.3 Attribute constraints

None.

5.3.227.4 Notifications

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

5.3.228 SliceExpiryInfo <<dataType>>

5.3.228.1 Definition

This <<dataType>> represents the information about the time at which the network slice is scheduled to be expired as it is not required anymore.

5.3.228.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNInfo	M	T	F	F	T
expiryTime	M	T	F	F	T

5.3.228.3 Attribute constraints

None.

5.3.228.4 Notifications

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

5.3.229 NfInfo <<dataType>>

5.3.229.1 Definition

This data type represents the information of a generic NF Instance. (See clause 6.1.6.2.56 TS 29.510 [23]).

5.3.229.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
nfType	M	T	T	F	T

5.3.229.3 Attribute constraints

None.

5.3.229.4 Notifications

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

5.3.230 PcscfInfo <<dataType>>

5.3.230.1 Definition

This data type represents the information of a P-CSCF NF Instance. (See clause 6.1.6.2.53 TS 29.510 [23]).

5.3.230.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
accessType	O	T	T	F	T
dnnList	O	T	T	F	T
gmFqdn	O	T	T	F	T
gmIpv4Addresses	O	T	T	F	T
gmIpv6Addresses	O	T	T	F	T
mwFqdn	O	T	T	F	T
mwIpv4Addresses	O	T	T	F	T
mwIpv6Addresses	O	T	T	F	T
servedIpv4AddressRanges	O	T	T	F	T

5.3.230.3 Attribute constraints

None.

5.3.230.4 Notifications

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

5.3.231 SatelliteBackhaulInfo <<dataType>>

5.3.231.1 Definition

This datatype defines information related to satellite backhaul category and corresponding information of (R)AN.

5.3.231.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
nTNGlobalRanNodeID	M	T	T	F	T
satelliteBackhaulCategory	M	T	T	F	T
geoSatelliteId	CM	T	T	F	T

5.3.231.3 Attribute constraints

Name	Definition
geoSatelliteId S	Condition: Present if UPF is deployed on a GEO satellite. NOTE 1: In the present document, only the feature of deploying UPF on GEO satellite is supported.

5.3.231.4 Notifications

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

5.3.232 NTNGlobalRanNodeID <<dataType>>

5.3.232.1 Definition

This datatype identifies which (R)AN node the satellite backhaul type is applicable to.

5.3.232.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
pLMNId	M	T	T	F	T
CHOICE_1 n3IwfId	CM	T	T	F	T
CHOICE_2 gNbId	CM	T	T	F	T
CHOICE_3 ngeNbId	CM	T	T	F	T
CHOICE_4 wagfId	CM	T	T	F	T
CHOICE_5 tngfId	CM	T	T	F	T
CHOICE_6 twifId	CM	T	T	F	T

5.3.232.3 Attribute constraints

Name	Definition
n3IwfId S	Condition: Present if the (R)AN Node represents a N3IWF.
gNbId S	Condition: Present if the (R)AN Node represents a gNB.

ngeNbId S	Condition: Present if the (R)AN Node represents a NG-eNB.
wagfId S	Condition: Present if the (R)AN Node represents a W-AGF.
tngfId S	Condition: Present if the (R)AN Node represents a TNGF.
twifId S	Condition: Present if the (R)AN Node represents a TWIF.

5.3.232.4   Notifications

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

5.3.233 `DnaiSatelliteMapping` <<dataType>>

5.3.233.1   Definition

This data type provides the mapping between DNAI and GEO satellite ID, with each GEO Satellite ID assigned one or more DNAI values. SMF uses this attribute to select UPF on-board GEO satellite as the PSA UPF or UL CL/BP and local PSA.

5.3.233.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dnaiList	M	T	T	F	T
geoSatelliteId	M	T	T	F	T

5.3.233.3   Attribute constraints

None.

5.3.233.4   Notifications

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

5.3.234 `TrpInfo` <<dataType>>

5.3.234.1   Definition

This data type represents the mapping relationship between gNB and TRPs.

5.3.234.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
gNBId	M	T	T	F	T
trpMappingInfoList	M	T	T	F	T

5.3.234.3   Attribute constraints

None

5.3.234.4   Notifications

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

5.3.235 `TrpMappingInfo` <<dataType>>

5.3.235.1 Definition

This data type represents the mapping relationship between satellite and TRPs.

5.3.235.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
satelliteId	CO	T	T	F	T
trpIds	M	T	T	F	T

NOTE: TRP ID should also be configured in NR NRM.

5.3.235.3 Attribute constraints

Name	Definition
satelliteId	Condition: Present if NR satellite access is used

5.3.235.4 Notifications

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

5.3.236 `NFProfile` <<dataType>>

5.3.236.1 Definition

This data type represents the NF profile stored in NRF, defined in TS 29.510 [23].

5.3.236.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
nfInstanceId	M	T	F	T	T
nfType	M	T	F	F	T
nfStatus	M	T	T	F	T
plmnList	CM	T	T	F	T
sNssais	O	T	T	F	T
fqdn	M	T	T	F	T
interPlmnFqdn	CM	T	T	F	T
nfServices	O	T	T	F	T

5.3.236.3 Attribute constraints

Name	Definition
plmnList	Condition: if plmnList is available for the NF.
interPlmnFqdn	Condition: if the NF needs to be discoverable by other NFs in a different PLMN

5.3.236.4 Notifications

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

5.3.237 NFService <<dataType>>

5.3.237.1 Definition

This data type represents the NF Service defined in TS 29.510 [23].

5.3.237.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
serviceInstanceId	M	T	F	T	T
serviceName	M	T	F	T	T
versions	M	T	F	F	T
schema	M	T	T	F	T
fqdn	O	T	T	F	T
interPlmnFqdn	O	T	T	F	T
ipEndPoints	O	T	T	F	T
apiPrefix	O	T	T	F	T
allowedPLMNs	O	T	T	F	T
allowedNfTypes	O	T	T	F	T
allowedNSSAIs	O	T	T	F	T

5.3.237.3 Attribute constraints

None.

5.3.237.4 Notifications

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

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 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 isNullable: False
aMFSetMemberList	It is the list of DNs of AMFFunction instances of the AMFSet. allowedValues: N/A	type: DN multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
aMFRegionId	It represents the AMF Region ID, which identifies the region. allowedValues: defined in subclause 2.10.1 of 3GPP TS 23.003 [13].	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
gUAMIdList	List of supported Globally Unique AMF Ids (GUAMIs).	type: GUAMInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
backupInfoAmfFailure	List of GUAMIs for which the AMF acts as a backup for AMF failure.	type: GUAMInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
backupInfoAmfRemoval	List of GUAMIs for which the AMF acts as a backup for planned AMF removal.	type: GUAMInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
localAddress	This parameter specifies the localAddress including IP address and VLAN ID used for initialization of the underlying transport. First string is IP address, IP address can be an IPv4 address (See RFC 791 [37]) or an IPv6 address (See RFC 2373 [38]). Second string is VLAN Id (See IEEE 802.1Q [39]).	type: String multiplicity: 2 isOrdered: True isUnique: 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 RFC 791 [37]) or an IPv6 address (See RFC 2373 [38]).	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
nFProfileList	It is a set of NFProfile(s) to be registered in the NRF instance. NFProfile is defined in 3GPP TS 29.510 [23]. allowedValues: N/A	type: NFProfile multiplicity: * isOrdered: False isUnique: True defaultValue: None 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 TS 23.501 [2] and subclause 6.1.6.2.7 of TS 29.531 [24].	type: String multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
energySavingControl	This attribute allows management system to initiate energy saving activation or deactivation for the edge UPF. allowedValues: TO_BE_ENERGYSAVING, TO_BE_NOT_ENERGYSAVING.	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: True
energySavingState	This attribute specifies the status regarding the energy saving in the edge UPF. If the value of energySavingControl is TO_BE_ENERGYSAVING, then it shall be tried to achieve the value IS_ENERGYSAVING for the energySavingState. If the value of energySavingControl is TO_BE_NOT_ENERGYSAVING, then it shall be tried to achieve the value IS_NOT_ENERGYSAVING for the energySavingState. allowedValues: IS_NOT_ENERGYSAVING, IS_ENERGYSAVING.	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
sNSSAIList	See subclause 4.4.1.	
pLMNInfoList	It defines the PLMN(s) of a Network Function.	type: PLMNInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
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 isNullable: False
interPlmnFqdn	If the NF needs to be discoverable by other NFs in a different PLMN, then an FQDN that is used for inter-PLMN routing as specified in 3GPP TS 23.003 [13] shall be registered with the NRF.	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None 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 isNullable: False
nRTAClist	It is the list of Tracking Area Codes (either legacy TAC or extended TAC). allowedValues: Legacy TAC and Extended TAC are defined in clause 9.3.3.10 of TS 38.413 [5].	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False

taiList	The list of TAIs.	type: TAI multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
taiRangeList	The range of TAIs.	type: TAIRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
sNssaiSmfInfoList	List of parameters supported by the SMF per S-NSSAI	type: SnssaiSmfInfoItem multiplicity: * isOrdered: False isUnique: Ture defaultValue: None isNullable: False
dnnSmfInfoList	List of parameters supported by the SMF per DNN	type: DnnSmfInfoItem multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
dnn	String representing a Data Network as defined in clause 9A of 3GPP TS 23.003 [13]; it shall contain either a DNN Network Identifier, or a full DNN with both the Network Identifier and Operator Identifier, as specified in 3GPP TS 23.003 [13] clause 9.1.1 and 9.1.2. It shall be coded as string in which the labels are separated by dots (e.g. "Label1.Label2.Label3"). Whether the dnn data type contains just the DNN Network Identifier, or the Network Identifier plus the Operator Identifier, shall be documented in each API where this data type is used.	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
dnaiList	List of Data network access identifiers supported for this DNN. allowedValues: DNAI (Data network access identifier), see clause 5.6.7 of 3GPP TS 23.501 [2].	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
pgwFqdn	The FQDN of the PGW if the SMF is a combined SMF/PGW-C.	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
pgwIpAddrList	The PGW IP addresses of the combined SMF/PGW-C. It allows the NF Service consumer to find the target combined SMF/PGW-C by PGW IP Address, e.g., when only PGW IP Address is available.	type: IpAddr multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False

vsmfSupportInd	Used by an SMF to explicitly indicate the support of V-SMF capability and its preference to be selected as V-SMF. When present it indicate whether the V-SMF capability is supported by the SMF: - TRUE: V-SMF capability supported by the SMF - FALSE: V-SMF capability not supported by the SMF. When absent the V-SMF capability support of the SMF is not specified.	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
pgwFqdnList	When present, this attribute provides additional FQDNs to the FQDN indicated in the pgwFqdn attribute. The pgwFqdnList attribute may be present if the pgwFqdn attribute is present.	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
nRTACRangeList	The range of TACs.	type: NRTACRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
nRTACstart	First value identifying the start of a TAC range, to be used when the range of TAC's can be represented as a hexadecimal range (e.g., TAC ranges). 3-octet string identifying a tracking area code, 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 TAC shall appear first in the string, and the character representing the 4 least significant bit of the TAC shall appear last in the string. Pattern: "^([A-Fa-f0-9]{4}|[A-Fa-f0-9]{6})$"	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
nRTACend	Last value identifying the end of a TAC range, to be used when the range of TAC's can be represented as a hexadecimal range (e.g. TAC ranges). 3-octet string identifying a tracking area code, each character in the string shall take a value of "0" to "9" or "A" to "F" and shall represent 4 bits. The most significant character representing the 4 most significant bits of the TAC shall appear first in the string, and the character representing the 4 least significant bit of the TAC shall appear last in the string. Pattern: "^([A-Fa-f0-9]{4}|[A-Fa-f0-9]{6})$"	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
nRTACpattern	Pattern (regular expression according to the ECMA-262 dialect [75]) representing the set of TAC's belonging to this range. A TAC value is considered part of the range if and only if the TAC string fully matches the regular expression.	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None 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 isNullable: False

managedNFProfile	This parameter defines profile for managed NF (See TS 23.501 [2]). allowedValues: N/A	type: ManagedNFProfile multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None 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 TS 23.501[2] for NF types	type: ENUM multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
heartBeatTimer	Time between two consecutive heart-beat messages from an NF Instance to the NRF defined in seconds.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
fqdn	This parameter defines FQDN of the Network Function (See TS 23.003 [13]) allowedValues: N/A	type: String multiplicity: 0..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 RFC 791 [37]) or IPv6 address (See 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 TS 23.501[2]). allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
allowedPLMNs	PLMNs allowed to access the NF instance. If not provided, any PLMN is allowed to access the NF.	type: PLMNId multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
sNPNList	SNPN(s) of the Network Function. This attributeIE shall be present if the NF pertains to one or more SNPNs. (see clauses 6.1.6 in 3GPP TS 29.510 [23]).	type: SNPNInfoID multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
allowedSNPNs	SNPNs allowed to access the NF instance. The absence of this attribute in the NF profile indicates that no SNPN, other than the SNPN(s) registered in the snpnList attribute of the NF Profile, is allowed to access the service instance.	type: SNPNId multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False

mCC	This is the Mobile Country Code (MCC) of the PLMN identifier. See TS 23.003 [13] subclause 2.2 and 12.1. allowedValues: a bounded string of 3 characters representing 3 digits.	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
mNC	This is the Mobile Network Code (MNC) of the PLMN identifier. See TS 23.003 [13] subclause 2.2 and 12.1. allowedValues: A bounded string of 2 or 3 characters representing 2 or 3 digits.	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
nId	Network Identity; Shall be present if PlmnIdNid identifies an SNPN (see clauses 5.30.2.3, 5.30.2.9, 6.3.4, and 6.3.8 in 3GPP TS 23.501 [2]).	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
allowedNfTypes	Type of the NFs allowed to access the NF instance. If not provided, any NF type is allowed to access the NF. allowedValues: See TS 23.501[2] for NF types	type: ENUM multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
allowedNfDomains	Pattern (regular expression according to the ECMA-262 dialect [75]) representing the NF domain names within the PLMN of the NRF allowed to access the NF instance. If not provided, any NF domain is allowed to access the NF.	type: String multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
allowedNSSAIs	S-NSSAI of the allowed slices to access the NF instance. If not provided, any slice is allowed to access the NF.	type: S-NSSAI multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
locality	The parameter defines information about the location of the NF instance (e.g. geographic location, data center) defined by operator (See TS 29.510[23]). allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
capacity	This parameter defines static capacity information in the range of 0-65535, expressed as a weight relative to other NF instances of the same type; if capacity is also present in the nfServiceList parameters, those will have precedence over this value (See TS 29.510[23]) allowedValues: 0-65535	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None allowedValues: N/A isNullable: False
recoveryTime	Timestamp when the NF was (re)started. The NRF shall notify NFs subscribed to receiving notifications of changes of the NF profile, if the NF recoveryTime is changed.	type: DateTime multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None allowedValues: N/A isNullable: False

nfServicePersistence	This parameter indicates whether the different service instances of a same NF Service in the NF instance, supporting a same API version, are capable to persist their resource state in shared storage and therefore these resources are available after a new NF service instance supporting the same API version is selected by a NF Service Consumer (see TS 29.510 [23]).	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

nfSetIdList	A NF Set Identifier is a globally unique identifier of a set of equivalent and interchangeable CP NFs from a given network that provide distribution, redundancy and scalability (see clause 5.21.3 of 3GPP TS 23.501 [2]).
	
	An NF Set Identifier shall be constructed from the MCC, MNC, NID (for SNPN), NF type and a Set ID. A NF Set Identifier shall be formatted as the following string:
	
	    set\<Set ID>.\<nftype>set.5gc.mnc\<MNC>.mcc\<MCC> for a NF Set in a PLMN, or
	
	    set\<Set ID>.\<nftype>set.5gc.nid\<NID>.mnc\<MNC>.mcc\<MCC> for a NF Set in a SNPN.
	
	At most one NF Set ID shall be indicated per PLMN-ID or SNPN of the NF.
		type: String
		multiplicity: 1..*
		isOrdered: False
		isUnique: True
		defaultValue: None
		isNullable: False

nfProfileChangesSupportInd	This parameter indicates if the NF Service Consumer supports or does not support receiving NF Profile Changes. It may be present in the NFRegister or NFUpdate (NF Profile Complete Replacement) request and shall be absent in the response (see Annex B 3GPP TS 29.510 [23]).	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
defaultNotificationSubscriptions	Notification endpoints for different notification types. This attribute may contain multiple default subscriptions for a same notification type; in that case, those default subscriptions are used as alternative notification endpoints.	type: DefaultNotificationSubscription multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
notificationType	This parameter indicates the types of notifications used in Default Notification URIs in the NF Profile of an NF Instance. allowedValues: "N1_MESSAGES", "N2_INFORMATION", "LOCATION_NOTIFICATION", "DATA_REMOVAL_NOTIFICATION", "DATA_CHANGE_NOTIFICATION", "LOCATION_UPDATE_NOTIFICATION", "NSSAA_REAUTH_NOTIFICATION", "NSSAA_REVOC_NOTIFICATION"	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
callbackURI	This attribute contains a default notification endpoint to be used by a NF Service Producer towards an NF Service Consumer that has not registered explicitly a callback URI in the NF Service Producer (e.g. as a result of an implicit subscription).	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

n1MessageClass	This attribute (if it is present) identifies that class of N1 messages shall be notified as per TS 29.518 [80].	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
n2InformationClass	This attribute (if it is present) identifies that class of N2 messages shall be notified as per TS 29.518 [80].	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
versions	This attribute identifies the API versions (e.g. "v1") supported for the default notification type.	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
binding	This attribute shall contain the value of the Binding Indication for the default subscription notification (i.e. the value part of "3gpp-Sbi-Binding" header), as specified in clause 6.12.4 of 3GPP TS 29.500 [76].	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
servingScope	This parameter indicates the served geographical areas of a NF instance.	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
lcHSupportInd	This parameter indicates whether the NF supports or does not support Load Control based on LCI Header (see clause 6.3 of 3GPP TS 29.500 [76]).	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
olcHSupportInd	This parameter indicates whether the NF supports or does not support Overload Control based on OCI Header (see clause 6.4 of 3GPP TS 29.500 [76]).	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
nfSetRecoveryTimeList	This parameter contains the recovery time of NF Set(s) indicated by the NfSetId, where the NF instance belongs.	type: DateTime multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
serviceSetRecoveryTimeList	This parameter contains the recovery time of NF Service Set(s) configured in the NF instance, which are indicated by the NfServiceSetId.	type: DateTime multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
scpDomains	This parameter shall carry the list of SCP domains the SCP belongs to, or the SCP domain the NF (other than SCP) or the SEPP belongs to.	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
vendorId	Vendor ID of the NF instance, according to the IANA-assigned "SMI Network Management Private Enterprise Codes" [77]. allowedValues: 6 decimal digits; if the SMI code has less than 6 digits, it shall be padded with leading digits "0" to complete a 6-digit string value.	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None 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 isNullable: False
`priority`	This parameter defines Priority (relative to other NFs of the same type) in the range of 0-65535, to be used for NF selection; lower values indicate a higher priority. If priority is also present in the nfServiceList parameters, those will have precedence over this value (See TS 29.510[23]). allowedValues: 0-65535	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`supportedDataSets`	This parameter defines list of supported data sets in the UDR instance (See TS 29.510[23]). allowedValues: "SUBSCRIPTION", "POLICY", EXPOSURE", "APPLICATION", "A_PFD", "A_AFTI", "A_IPTV", "A_BDT", "A_SPD", "A_EASD", "A_AMI", "P_UE", "P_SCD", "P_BDT", "P_PLMNUE", "P_NSSCD".	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 TS 29.510[23]). allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`smfServingArea`	This parameter defines the SMF service area(s) the UPF can serve (See TS 29.510[23]). If not provided, the UPF can serve any SMF service area. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`interfaceUpfInfoList`	List of User Plane interfaces configured on the UPF. When this parameter is provided in the NF Discovery response, the NF Service Consumer (e.g., SMF) may use this information for UPF selection.	type: InterfaceUpfInfoItem multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`interfaceType`	This parameter defines the type of User Plane (UP) interface. allowedValues: "N3" "N6" "N9" "DATA_FORWARDING" "N6MB" "N19MB" "N3MB" "NMB9"	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`ipv4EndpointAddresses`	Available endpoint IPv4 address(es) of the User Plane interface.	type: Ipv4Addr multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`ipv6EndpointAddresses`	Available endpoint IPv6 address(es) of the User Plane interface.	type: Ipv6Addr multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False

networkInstance	Network Instance (See TS 29.244 [56]) associated to the User Plane interface	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
iwkEpsInd	Indicates whether interworking with EPS is supported by the UPF. allowedValues: True: Supported False: Not Supported	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
pduSessionTypes	Indicates the type(s) of a PDU session. allowedValues: "IPV4" "IPV6" "IPV4V6" as per clause 5.8.2.2.1 TS 23.501 [2] "UNSTRUCTURED" "ETHERNET"	type: ENUM multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
atsssCapability	Indicate the ATSSS capability of the UPF.	type: AtsssCapability multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
atsssLL	Indicates the ATSSS-LL capability to support procedures related to Access Traffic Steering, Switching, Splitting (see clauses 4.2.10, 5.32 of TS 23.501 [2]). allowedValues: True: Supported False: Not Supported	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
mptcp	Indicates the MPTCP capability to support procedures related to Access Traffic Steering, Switching, Splitting (see clauses 4.2.10, 5.32 of TS 23.501 [2]). allowedValues: True: Supported False: Not Supported	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
rttWithoutPmf	Indicates whether the UPF supports RTT measurement without PMF (see clauses 5.32.2, 6.3.3.3 of TS 23.501 [2]). allowedValues: True: Supported False: Not Supported.	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
ueIpAddrInd	Indicates whether the UPF supports allocating UE IP addresses/prefixes. allowedValues: True: supported False: not supported	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
wAgfInfo	Indicate that the UPF is collocated with W-AGF. If not present, the UPF is not collocated with Wireline Access Gateway Function (W-AGF).	type: IpInterface multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
tngfInfo	Indicate that the UPF is collocated with TNGF. If not present, the UPF is not collocated with Trusted Non-3GPP Gateway Function (TNGF).	type: IpInterface multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`twifInfo`	Indicate that the UPF is collocated with TWIF. If not present, the UPF is not collocated with Trusted WLAN Interworking Function (TWIF).	type: IpInterface multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`redundantGtpu`	Indicates whether the UPF supports redundant GTP-U path. allowedValues: True: supported False: not supported	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
`ipups`	Indicates whether the UPF is configured for Inter-PLMN User Plane Security (IPUPS). Any UPF can support the IPUPS functionality. In network deployments where specific UPFs are used to provide IPUPS, UPFs configured for providing IPUPS services shall be selected. allowedValues: True: The UPF is configured for IPUPS. False: The UPF is not configured for IPUPS	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
`dataForwarding`	Indicates whether the UPF is configured for data forwarding. Based on operator policies, if dedicated UPFs are preferred to be used for indirect data forwarding during handover scenarios, when setting up the indirect data forwarding tunnel, the SMF should preferably select a UPF configured for data forwarding and use the network instance indicated in the Network Instance ID associated to the DATA_FORWARDING interface type in the `interfaceUpfInfoList` attribute. allowedValues: True: the UPF is configured for data forwarding False: the UPF is not configured for data forwarding If the UPF is configured for data forwarding, it shall support UP network interface with type "DATA_FORWARDING".	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
`supportedPfcpFeatures`	Supported Packet Forwarding Control Protocol (PFCP) Features. A string used to indicate the PFCP features supported by the UPF, which encodes the "UP Function Features" as specified in Table 8.2.25-1 of TS 29.244 [56] (starting from Octet 5), in hexadecimal representation. Each character in the string shall take a value of "0" to "9", "a" to "f" or "A" to "F" and each two characters shall represent one octet of "UP Function Features" (starting from Octet 5, to higher octets). For each two characters representing one octet, the first character representing the 4 most significant bits of the octet and the second character the 4 least significant bits of the octet. The supported PFCP features shall be provisioned in addition and be consistent with the existing UPF features (`atsssCapability`, `ueIpAddrInd`, `redundantGtpu` and `ipups`), e.g., if the ueIpAddrInd is set to "true", then the UEIP flag shall also be set to "1" in the supported PFCP features.	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A 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 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 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 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 isNullable: False
supportedFuncList	This parameter lists functionalities supported by a SCP. Refer to 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 RFC 2373 [38])) or FQDN (See TS 23.003 [13]).	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

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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 isNullable: False
capabilityList	This parameter lists capabilities supported by a NEF. Refer to TS 23.501 [2]. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: 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 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 isNullable: False
remotePlmnId	This parameter defines PLMNId of the remote SEPP. allowedValues: N/A	Type: PLMNId multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
remoteSeppAddress	This parameter defines address of the remote SEPP. It can be IP address (either IPv4 address (See RFC 791 [37]) or IPv6 address (See RFC 2373 [38])) or FQDN(See TS 23.003 [13]). 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 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 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: DN multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
dynamic5QISetRef	This is the DN of `Dynamic5QISet` MOI. allowedValues: DN of the `Dynamic5QISet` MOI.	type: DN multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
fiveQIValue	It identifies the 5QI value. allowedValues: $0 - 255$	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
resourceType	It indicates the Resource Type of a 5QI, as specified in TS 23.501 [2]. allowedValues: "GBR", NON_GBR", "DELAY_CRITICAL_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 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 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 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 TS 23.501 [2]. allowedValues: 0 - 4095	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
maximumDataBurstVolume	It indicates the Maximum Data Burst Volume (in unit of Byte) of a 5QI, as specified in TS 23.501 [2]. allowedValues: 0 - 4095	type: Integer multiplicity: 1 isOrdered: N/A isUnique: 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: N/A 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: "TRUE", "FALSE".	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: TRUE isNullable: False
isPeriodicGtpUMonitoringSupported	It indicates whether the periodic GTP-U path QoS monitoring reporting is supported, see 3GPP TS 29.244 [56]. allowedValues: "TRUE", "FALSE".	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: TRUE isNullable: False
isImmediateGtpUMonitoringSupported	It indicates whether the immediate GTP-U path QoS monitoring reporting is supported, see 3GPP TS 29.244 [56]. allowedValues: "TRUE", "FALSE".	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: TRUE 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 maximum 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: "TRUE", "FALSE".	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: TRUE 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: "TRUE", "FALSE".	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: TRUE 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: "TRUE", "FALSE".	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: TRUE 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 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: String 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: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
appDescriptor	It is the ATSSS rule application descriptor. allowedValues: see 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. allowedValues: "NO_INFORMATION", "SIP".	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: "NO_INFORMATIO N" isNullable: False
isAppRelocatable	It indicates the application relocation possibility.allowedValues: "TRUE", "FALSE".	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
isUeAddrPreserved	It Indicates whether UE IP address should be preserved. 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: True 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 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 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})$'. allowedValues: N/A.	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ethType	A two-octet string that represents the Ethertype, as described in IEEE 802.3 [64] and IETF RFC 7042 [63] in hexadecimal representation. Each character in the string shall take a value of "0" to "9" or "A" to "F" and shall represent 4 bits. The most significant character representing the 4 most significant bits of the ethType shall appear first in the string, and the character representing the 4 least significant bits of the ethType shall appear last in the string. allowedValues: see IEEE 802.3 [64] and IETF RFC 7042 [63].	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
fDesc	It contains the flow description for the Uplink or Downlink IP flow. It shall be present when the ethtype is IP. allowedValues: see flowDescription in TS 29.214 [62].	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
fDir	It indicates the packet filter direction. allowedValues: "DOWNLINK", "UPLINK".	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
sourceMacAddr	It specifies the source MAC address formatted in the hexadecimal notation according to clause 1.1 and clause 2.1 of IETF RFC 7042 [63]. Pattern: '^([0-9a-fA-F]{2})((-[0-9a-fA-F]{2}){5})$'. 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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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. 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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

flowLabel	It specifies the Ipv6 flow label header field. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
flowDirection	It indicates the direction/directions that a filter is applicable. allowedValues: "DOWNLINK", "UPLINK", "BIDIRECTIONAL", "UNSPECIFIED".	type: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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)$', see TS 29.512 [60]. Examples: "125 Mbps", "0.125 Gbps", "125000 Kbps" allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
maxbrDl	It represents the maximum downlink bandwidth formatted as follows: Pattern: '^\d+(\.\d+)? (bps|Kbps|Mbps|Gbps|Tbps)$', see TS 29.512 [60]. Examples: "125 Mbps", "0.125 Gbps", "125000 Kbps". allowedValues: N/A.	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
gbrUl	It represents the guaranteed uplink bandwidth formatted as follows: Pattern: '^\d+(\.\d+)? (bps|Kbps|Mbps|Gbps|Tbps)$', see TS 29.512 [60]. Examples: "125 Mbps", "0.125 Gbps", "125000 Kbps". allowedValues: N/A.	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
gbrDl	It represents the guaranteed downlink bandwidth formatted as follows: Pattern: '^\d+(\.\d+)? (bps|Kbps|Mbps|Gbps|Tbps)$', see TS 29.512 [60]. Examples: "125 Mbps", "0.125 Gbps", "125000 Kbps". allowedValues: N/A.	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

extMaxDataBurstVol	It denotes the largest amount of data that is required to be transferred within a period of 5G-AN PDB, see TS 29.512 [60]. allowedValues: 4096..2000000.	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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. 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. 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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
sharingKeyUl	It indicates, by containing the same value, what PCC rules may share resource in uplink direction. allowedValues: N/A.	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

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. See 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: None 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: None 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 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. 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 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 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}([^:]+))\|((([^:]+:)*[^:]+)?::(([^:]+:)*[^:]+)?))$'. allowedValues: N/A.	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ipv6AddrPrefix	String identifying an IPv6 address prefix formatted according to clause 4 of IETF RFC 5952 [82]. IPv6Prefix data type may contain an individual /128 IPv6 address. Pattern: '^((:|(0?|([1-9a-f][0-9a-f]{0,3}))):)((0?|([1-9a-f][0-9a-f]{0,3})):){0,6}(:|(0?|([1-9a-f][0-9a-f]{0,3})))(\/(([0-9])|([0-9]{2})|(1[0-1][0-9])|(12[0-8])))$' and Pattern: '^((([^:]+:){7}([^:]+))\|((([^:]+:)*[^:]+)?::(([^:]+:)*[^:]+)?))(\/.+)$'	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 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 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 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. 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 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. 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 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 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 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 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 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 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 TS 29.512 [60]. If this attribute is included in SmfInfo, it shall contain the access type (3GPP_ACCESS and/or NON_3GPP_ACCESS) supported by the SMF. If not included, it shall be assumed the both access types are supported. allowedValues: "3GPP_ACCESS", "NON_3GPP_ACCESS".	type: ENUM multiplicity: 1..2 isOrdered: False isUnique: True defaultValue: None isNullable: False

ratType	It provides the condition of RAT type of the UE when the session AMBR shall be enforced, see 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 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 TS 29.571 [61].	type: DateTime multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
nsacfInfoSnssaiList	It represents a list of NSACF information per S-NSSAI. allowedValues: N/A	type: NsacfInfoSnssai multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
snssaiInfo	It defines generic information for a S-NSSAI. The information includes global unique identifier of a Network Slice (see [2] for definition of Network Slice) and adminstrativeState of the Network Slice allowedValues: N/A.	type: SnssaiInfo multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
isSubjectToNsac	It defines if the Network Slice subjects to network slice admission control. The value is set to False if the maxNumberofUEs attribute in corresponding SliceProfile is absent. allowedValues: True, False	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
NsacfInfoSnssai.maxNumberofUEs	It defines the maximum number of UEs which are allowed to be served by the Network Slice that is subject to network slice admission control. This number could be derived from maxNumberofUEs defined in corresponding SliceProfile. allowedValues: 0 - 65535	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False
eACMode	It represents if early admission control (EAC) mode is activated. allowedValues: ACTIVE, INACTIVE	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: INACTIVE isNullable: False
activeEacThreshold	It defines threshold in percentage value of the number of the UEs registered with the network slice to the maximum number of UEs allowed to register with the network slice. The eACMode is set to active when the number of the UEs registered with the network slice is above this threshold. allowedValues: 0 - 100	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: 0 isNullable: False

deactiveEacThreshold	It defines threshold in percentage value of the number of the UEs registered with the network slice to the maximum number of UEs allowed to register with the network slice. The eACMode is set to inactive when the number of the UEs registered with the network slice is below this threshold. allowedValues: 0 - 100 Note: If this attribute is absent, activeEacThreshhold is used to trigger deactivation of eACMode.	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: 100 isNullable: False
numberofUEs	It represents the number of the UEs registered with the network slice. This attribute is updated by NSACF. allowedValues: 0 - 65535	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
uEIdList	It represents the UEs registered with the network slice. This attribute is updated by NSACF. allowedValues: N/A	type: String multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
networkSliceInfoList	The attribute specifies a list of NetworkSliceInfo which is defined as a datatype (see clause 5.3.95). It is used by an authorized consumer, e.g. NWDAF, to facilitate the data collection from OAM. allowedValues: N/A	type: NetworkSliceInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
networkSliceRef	This holds a DN of the NetworkSlice managed object relating to the NetworkSlice instance differentiated by sNSSAI and optional cNSIId.	type: DN multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
sNSSAI	It represents the S-NSSAI the NetworkSlice managed object is supporting. The S-NSSAI is defined in TS 23.003 [13]. allowedValues: See TS 23.003 [13]	type: S-NSSAI multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
cNSIId	It represents NSI ID which 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 TS 23.501 [2] and subclause 6.1.6.2.7 of TS 29.531 [24].	type: String multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
eCSAddrConfigInfo	It represents one or more FQDN(s) and/or IP address(es) of Edge Configuration Server(s), and of an ECS Provider ID.	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
aMFSet.aMFRegionRef	This 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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

aMFSetRef	This is the DN of AMFSet. allowedValues: N/A	type: DN multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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: False
serverAddr	This attribute indicates the DNS server address for the PDU Session (see clause 6.2.2.2 in TS 23.548 [78]) allowedValues: Not applicable.	Type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
NsacfInfoSnssai.maxNumberofPDUSessions	It defines the maximum number of concurrent PDU sessions supported by the network slic. This number could be derived from maxNumberofPDUSessions defined in corresponding SliceProfile.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
eASServiceArea	This parameter defines the EAS service area (see clause 7.3.3.6 in TS 23.558 [81]). allowedValues: N/A	type: ServingLocation multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
eESServiceArea	This parameter defines the EES service area (see clause 7.3.3.5 in TS 23.558 [81]). allowedValues: N/A	type: ServingLocation multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
eDNServiceArea	This parameter defines the EDN service area (see clause 7.3.3.4 in TS 23.558 [81]). allowedValues: N/A	type: ServingLocation multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
5GCNfConnEcmInfoList	The attribute specifies a list of 5GCNfConnInfo which is defined as a datatype (see clause 5.3.120). It is used to provide 5GC NFs, such as PCF, NEF, SCEF, that are connected EDN NFs, such as EAS, EES, and ECS. allowedValues: N/A	type: 5GCNfConnEcmInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
5GCNFType	It indicates the type of a NF instance. allowedValues:"PCF", "NEF", "SCEF".	type: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
5GCNFIpAddress	This parameter defines address of a NF instance, It can be IP address (either IPv4 address (See RFC 791 [37]) or IPv6 address (See RFC 2373 [38])) or FQDN (See TS 23.003 [13]). allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

5GCNFRef	This attribute holds the DN of a NF instance. allowedValues: N/A	type: DN multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ednIdentifier	The identifier of the edge data network (See TS 23.558 [81]). allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
eASIpAddress	This parameter defines address of an EAS instance. It can be IP address (either IPv4 address (See RFC 791 [37]) or IPv6 address (See RFC 2373 [38]). allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
eESIpAddress	This parameter defines address of an EES instance. It can be IP address (either IPv4 address (See RFC 791 [37]) or IPv6 address (See RFC 2373 [38])). allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
eCSIpAddress	This parameter defines address of an ECS instance. It can be IP address (either IPv4 address (See RFC 791 [37]) or IPv6 address (See RFC 2373 [38])). allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
uPFConnectionInfo	The attribute is defined as a datatype UPFConnInfo (see clause 5.3.121). It is used to provide the UPF IP address and UPF DN. allowedValues: N/A	type: UPFConnInfo multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
uPFRef	This attribute holds the DN of an UPF instance. allowedValues: N/A	type: DN multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
uPFIpAddress	This parameter defines address of an UPF instance, It can be IP address (either IPv4 address (See RFC 791 [37]) or IPv6 address (See RFC 2373 [38])) or FQDN (See TS 23.003 [13]). allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ecmConnectionType	It indicates the type of ECM connection (i.e., user plane connection via UPF, control plane connection via PCF or NEF. allowedValues: "USERPLANE", "CONTROLPLANE", "BOTH".	type: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

nwdafEvents	This attribute represents the Analytic functionalities (identified by nwdafEvent defined in TS 29.520 [85]) of the NWDAF instance. MnS consumer can configure this attribute to specify which Analytic functionalities (identified by nwdafEvent) can be performed the NWDAF instance. If the value of this attribute is not present, the NWDAF instance can perform any NWDAFEvents allowedValues: the detailed ENUM value for NwdafEvent see the Table 5.1.6.3.4-1 in TS 29.520[85].	type: NwdafEvent multiplicity: * isOrdered: True isUnique: True defaultValue: None isNullable: False
administrativeState	This attribute determines whether the NWDAF is enabled or disabled. MnS consumer can configure this attribute to activate or de-activate the analytic functionalities (identified by nwdafEvent defined in TS 29.520 [85]) of the NWDAF instance. allowedValues: LOCKED, UNLOCKED.	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
PCFFunction.groupId	It indicates the identity of the PCF group that is served by the PCF instance. If not provided, the PCF instance does not pertain to any PCF group. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
dnnList	It represents the DNNs supported by the PCF. The DNN, as defined in clause 9A of TS 23.003 [13], shall contain the Network Identifier and it may additionally contain an Operator Identifier, as specified in TS 23.003 [13] clause 9.1.1 and 9.1.2. If the Operator Identifier is not included, the DNN is supported for all the PLMNs in the plmnList of the NF Profile. If not provided, the PCF can serve any DNN. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
supiRanges	It represents list of ranges of SUPIs that can be served by the PCF instance. allowedValues: N/A	type: SupiRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
PcfInfo.gpsiRanges	It represents list of ranges of GPSIs that can be served by the PCF instance. allowedValues: N/A	type: IdentityRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
SupiRange.start	It indicates the first value identifying the start of a SUPI range, to be used when the range of SUPI's can be represented as a numeric range (e.g., IMSI ranges). This string shall consist only of digits. Pattern: "^[0-9]+$" allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
SupiRange.end	It indicates the last value identifying the end of a SUPI range, to be used when the range of SUPI's can be represented as a numeric range (e.g. IMSI ranges). This string shall consist only of digits. Pattern: "^[0-9]+$" allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`SupiRange.pattern`	It indicates the pattern (regular expression according to the ECMA-262 dialect [75]) representing the set of SUPI's belonging to this range. A SUPI value is considered part of the range if and only if the SUPI string fully matches the regular expression. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`IdentityRange.start`	It indicates the first value identifying the start of an identity range, to be used when the range of identities can be represented as a numeric range (e.g., MSISDN ranges). This string shall consist only of digits. Pattern: "^[0-9]+$" allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`IdentityRange.end`	It indicates the last value identifying the end of an identity range, to be used when the range of identities can be represented as a numeric range (e.g. MSISDN ranges). This string shall consist only of digits. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`IdentityRange.pattern`	It indicates the pattern (regular expression according to the ECMA-262 dialect [75]) representing the set of identities belonging to this range. An identity value is considered part of the range if and only if the identity string fully matches the regular expression. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`rxDiamHost`	It indicates the Diameter host of the Rx interface for the PCF. See TS 29.571 [61]. String contains a Diameter Identity (FQDN). allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`rxDiamRealm`	It indicates the Diameter realm of the Rx interface for the PCF. See TS 29.571 [61]. String contains a Diameter Identity (FQDN). allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`v2xSupportInd`	It indicates whether V2X Policy/Parameter provisioning is supported by the PCF. TRUE: Supported FALSE: Not Supported allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
`proseSupportInd`	It indicates whether ProSe capability is supported by the PCF. TRUE: Supported FALSE: Not Supported allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
`proseCapability`	It indicates the supported ProSe Capability by the PCF.	type: ProSeCapability multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`v2xCapability`	It indicates the supported V2X Capability by the PCF.	type: V2xCapability multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`proseDirectDiscovery`	It indicates whether the PCF supports ProSe Direct Discovery: - TRUE: ProSe Direct Discovery is supported by the PCF - FALSE: ProSe Direct Discovery is not supported by the PCF. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
`proseDirectCommunication`	It indicates whether the PCF supports ProSe Direct Communication: - TRUE: ProSe Direct Communication is supported by the PCF - FALSE: ProSe Direct Communication is not supported by the PCF. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
`proseL2UetoNetworkRelay`	It indicates whether the PCF supports ProSe Layer-2 UE-to-Network Relay: - TRUE: ProSe Layer-2 UE-to-Network Relay is supported by the PCF - FALSE: ProSe Layer-2 UE-to-Network Relay is not supported by the PCF. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
`proseL3UetoNetworkRelay`	It indicates whether the PCF supports ProSe Layer-3 UE-to-Network Relay: - TRUE: ProSe Layer-3 UE-to-Network Relay is supported by the PCF - FALSE: ProSe Layer-3 UE-to-Network Relay is not supported by the PCF. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
`proseL2RemoteUe`	It indicates whether the PCF supports ProSe Layer-2 Remote UE: - TRUE: ProSe Layer-2 Remote UE is supported by the PCF - FALSE: ProSe Layer-2 Remote UE is not supported by the PCF. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
`proseL3RemoteUe`	It indicates whether the PCF supports ProSe Layer-3 Remote UE: - TRUE: ProSe Layer-3 Remote UE is supported by the PCF - FALSE: ProSe Layer-3 Remote UE is not supported by the PCF. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False

`V2xCapability.lteV2x`	It indicates whether the PCF supports LTE V2X capability: - TRUE: LTE V2X capability is supported by the PCF - FALSE (default): LTE V2X capability is not supported by the PCF. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
`V2xCapability.nrV2x`	It indicates whether the PCF supports NR V2X capability: - TRUE: NR V2X capability is supported by the PCF - FALSE (default): NR V2X capability is not supported by the PCF. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
`UDMFunction.groupId`	It indicates the identity of the UDM group that is served by the UDM instance. If not provided, the UDM instance does not pertain to any UDM group. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: NA defaultValue: None isNullable: False
`supiRanges`	It represents list of ranges of SUPIs whose profile data is available in the UDM instance. allowedValues: N/A	type: SupiRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`UdmInfo.gpsiRanges`	It represents list of ranges of GPSIs whose profile data is available in the UDM instance. allowedValues: N/A	type: IdentityRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`UdmInfo.externalGroupIdentifiersRanges`	It represents list of ranges of external groups whose profile data is available in the UDM instance. allowedValues: N/A	type: IdentityRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`routingIndicators`	It represents list of Routing Indicator information that allows to route network signalling with SUCI (see TS 23.003 [13]) to the UDM instance. If not provided, the UDM can serve any Routing Indicator. Pattern: '^[0-9]{1,4}$' allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`UdmInfo.internalGroupIdentifiersRanges`	It represents list of ranges of Internal Group Identifiers whose profile data is available in the UDM instance. If not provided, it does not imply that the UDM supports all internal groups. allowedValues: N/A	type: InternalGroupIdRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`InternalGroupIdRange.start`	It indicates first value identifying the start of an identity range, to be used when the range of identities can be represented as a consecutive numeric range. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: NA defaultValue: None isNullable: False

`InternalGroupIdRange.end`	It indicates last value identifying the end of an identity range, to be used when the range of identities can be represented as a consecutive numeric range. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: NA defaultValue: None isNullable: False
`InternalGroupIdRange.pattern`	It indicates pattern (regular expression according to the ECMA-262 dialect [75]) representing the set of identities belonging to this range. An identity value is considered part of the range if and only if the identity string fully matches the regular expression. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: NA defaultValue: None isNullable: False
`suciInfos`	It represents list of SuciInfo. A SUCI that matches this information can be served by the UDM . A SUCI that matches all attributes of at least one entry in this array shall be considered as a match of this information. allowedValues: N/A	type: SuciInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`routingInds`	It indicates served Routing Indicator (see TS 23.003 [13], clause 2.2B). If not provided, the AUSF/UDM can serve any Routing Indicator. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`hNwPubKeyIds`	It indicating served Home Network Public Key (see TS 23.003 [13], clause 2.2B). If not provided, the AUSF/UDM can serve any public key. allowedValues: N/A	type: Integer multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`UDRFunction.groupId`	It indicates the identity of the UDR group that is served by the UDR instance. If not provided, the UDR instance does not pertain to any UDR group. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: NA defaultValue: None isNullable: False
`supiRanges`	It represents list of ranges of SUPI's whose profile data is available in the UDR instance. allowedValues: N/A	type: SupiRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`UdrInfo.gpsiRanges`	It represents list of ranges of GPSIs whose profile data is available in the UDR instance. allowedValues: N/A	type: IdentityRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`externalGroupIdentifiersRanges`	It represents list of ranges of external groups whose profile data is available in the UDR instance. allowedValues: N/A	type: IdentityRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`sharedDataIdRanges`	It represents list of ranges of Shared Data IDs that identify shared data available in the UDR instance. allowedValues: N/A	type: SharedDataIdRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False

SharedDataIdRange.pattern	It indicates the pattern (regular expression according to the ECMA-262 dialect [75]) representing the set of SharedDataIds belonging to this range. A SharedDataId value is considered part of the range if and only if the SharedDataId string fully matches the regular expression. EXAMPLE: sharedDataId range. "123456-sharedAmData{localID}" where "123456" is the HPLMN id (i.e. MCC followed by MNC) and "{localID}" can be any string. JSON: { "pattern": "^123456-sharedAmData.+$" } allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: NA defaultValue: None isNullable: False
udsfInfo	This attribute represents information related to UDSF, as described in clause 6.1.6.2.63 of TS 29.510 [23]. allowedValues: N/A	type: UdsFInfo multiplicity: 0..1 isOrdered: N/A isUnique: NA defaultValue: None isNullable: False
UdsfInfo.grouId	This attribute represents the identity of the UDSF group that is served by the UDSF instance. If not provided, the UDSF instance does not pertain to any UDSF group. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: NA defaultValue: None isNullable: False
UdsfInfo.supiRanges	This attribute represents a list of ranges of SUPIs whose profile data is available in the UDSF instance If not provided, then the UDSF can serve any SUPI range. allowedValues: N/A	type: SupiRange multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
UdsfInfo.storageIdRanges	It represents a map (list of key-value pairs) where realmId serves as key and each value in the map is an array of IdentityRanges. Each IdentityRange is a range of storageIds. A UDSF complying with this version of the specification shall include this IE. Absence indicates that the UDSF's supported realms and storages are determined by the UDSF's consumer by other means such as local provisioning. allowedValues: N/A	type: IdentityRange multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
seppInfo	This attributes represents information of a SEPP Instance, as described in clause 6.1.6.2.72 of TS 29.510 [23]. allowedValues: N/A	type: SeppInfo multiplicity: 0..1 isOrdered: N/A isUnique: NA defaultValue: None isNullable: False
seppPrefix	This attributes represents optional deployment specific string used to construct the apiRoot of the next hop SEPP, as described in clause 6.10 of TS 29.500 [76]. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: NA defaultValue: None isNullable: False

seppPorts	This attributes represents SEPP port number(s) for HTTP and/or HTTPS. This attribute shall be present if the SEPP uses non-default HTTP and/or HTTPS ports. When present, it shall contain the HTTP and/or HTTPS ports. The key of the map shall be "http" or "https". The value shall indicate the port number for HTTP or HTTPS respectively. Minimum: 0 Maximum: 65535 allowedValues: N/A	type: Integer multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
remotePlmnList	It represents a list of remote PLMNs reachable through the SEPP. The absence of this attribute indicates that any PLMN is reachable through the SEPP. allowedValues: N/A	type: PlmnId multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
remoteSnpnList	This attributes represents list of remote SNPNs reachable through the SEPP. The absence of this attribute indicates that no SNPN is reachable through the SEPP. allowedValues: N/A	type: PlmnIdNid multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
scpDomainInfoList	This attributes represents SCP domain specific information of the SCP that differs from the common information in NFProfile data type. The key of the map shall be the string identifying an SCP domain. allowedValues: N/A	type: ScpDomainInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
scpPrefix	Optional deployment specific string used to construct the apiRoot of the next hop SCP, as described in clause 6.10 of TS 29.500 [76]. allowedValues: N/A	type: String multiplicity: 0..1 Ordered: N/A isUnique: N/A defaultValue: None isNullable: False
scpPorts	This attributes represents SCP port number(s) for HTTP and/or HTTPS. This attribute shall be present if the SCP uses non-default HTTP and/or HTTPS ports and if the SCP does not provision port information within ScpDomainInfo for each SCP domain it belongs to. allowedValues: 0 - 65535	type: Integer multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
addressDomains	Pattern (regular expression according to the ECMA-262 dialect [75]) representing the address domain names reachable through the SCP. Absence of this IE indicates the SCP can reach any address domain names in the SCP domain(s) it belongs to. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ScpInfo.ipv4Addresses	This attributes represents list of IPv4 addresses reachable through the SCP. This IE may be present if IPv4 addresses are reachable via the SCP. If IPv4 addresses are reachable via the SCP, absence of both this IE and ipv4AddrRanges IE indicates the SCP can reach any IPv4 addresses in the SCP domain(s) it belongs to.	type: Ipv4Addr multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False

`ScpInfo.ipv6Prefixes`	List of IPv6 prefixes reachable through the SCP. This IE may be present if IPv6 addresses are reachable via the SCP. If IPv6 addresses are reachable via the SCP, absence of both this IE and ipv6PrefixRanges IE indicates the SCP can reach any IPv6 prefixes in the SCP domain(s) it belongs to.	type: Ipv6Addr multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`ScpInfo.ipv4AddrRanges`	List of IPv4 addresses ranges reachable through the SCP. This IE may be present if IPv4 addresses are reachable via the SCP. If IPv4 addresses are reachable via the SCP, absence of both this IE and ipv4Addresses IE indicates the SCP can reach any IPv4 addresses in the SCP domain(s) it belongs to.	type: Ipv4AddressRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`ScpInfo.ipv6PrefixRanges`	List of IPv6 prefixes ranges reachable through the SCP. This IE may be present if IPv6 addresses are reachable via the SCP. If IPv6 addresses are reachable via the SCP, absence of both this IE and ipv6Prefixes IE indicates the SCP can reach any IPv6 prefixes in the SCP domain(s) it belongs to.	type: Ipv6PrefixRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedNfSetIdList`	List of NF set ID of NFs served by the SCP. Absence of this IE indicates the SCP can reach any NF set in the SCP domain(s) it belongs to. NF Set Identifier (see clause 28.12 of TS 23.003 [13]), formatted as the following string: "set<Set ID>.<nftype>set.5gc.mnc<MNC>.mcc<MCC>", or "set<SetID>.<NFType>set.5gc.nid<NID>.mnc<MNC>.mcc<MCC>" with <MCC> encoded as defined in clause 5.4.2 ("Mcc" data type definition) <MNC> encoding the Mobile Network Code part of the PLMN, comprising 3 digits. If there are only 2 significant digits in the MNC, one "0" digit shall be inserted at the left side to fill the 3 digits coding of MNC. Pattern: '^[0-9]{3}$' <NFType> encoded as a value defined in Table 6.1.6.3.3-1 of 3GPP TS 29.510 [23] but with lower case characters <Set ID> encoded as a string of characters consisting of alphabetic characters (A-Z and a-z), digits (0-9) and/or the hyphen (-) and that shall end with either an alphabetic character or a digit. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`remotePlmnList`	List of remote PLMNs reachable through the SCP. Absence of this IE indicates that no remote PLMN is reachable through the SCP. allowedValues: N/A	type: PlmnId multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False

`remoteSnpnList`	This attribute represents the List of remote PLMNs reachable through the SCP. Absence of this IE indicates that no remote PLMN is reachable through the SCP. allowedValues: N/A	type: PlmnIdNid multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`ipReachability`	This attribute indicates the type(s) of IP addresses reachable via the SCP in the SCP domain(s) it belongs to. Absence of this IE indicates that the SCP can be used to reach both IPv4 addresses and IPv6 addresses in the SCP domain(s) it belongs to. allowedValues: "IPV4": Only IPv4 addresses are reachable. "IPV6": Only IPv6 addresses are reachable. "IPV4V6": Both IPv4 addresses and IPv6 addresses are reachable.	type: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`scpCapabilities`	List of SCP capabilities supported by the SCP. This IE shall be present if the SCP supports at least one SCP capability. It may be present otherwise, with an empty array, to indicate that the SCP does not support any capability of the ScpCapability data type. The absence of this attribute shall not be interpreted as an SCP that does not support any capability; this only means that the SCP (e.g. pre-Rel-17 SCP) did not register the capabilities it may support. allowedValues: "INDIRECT_COM_WITH_DELEG_DISC", which indicating Indirect communication with delegated discovery supported	type: ENUM multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`PlmnIdNid.nid`	This attribute represents network Identity; Shall be present if PlmnIdNid identifies an SNPN. (see clauses 5.30.2.3, 5.30.2.9, 6.3.4, and 6.3.8 in TS 23.501 [2]). allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: False isUnique: True defaultValue: None isNullable: False
`nwdafInfo`	It represents specific data for the NWDAF. allowedValues: N/A	type: NwdafInfo multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`eventIds`	It represents the EventId(s) supported by the Nnwdaf_AnalyticsInfo service, if none are provided the NWDAF can serve any eventId. (see clause TS 29.520) allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`nwdafCapability`	This attribute indicates the capability of the NWDAF. If not present, the NWDAF shall be regarded with no capability. allowedValues: N/A	type: NwdafCapability multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`analyticsDelay`	It represents the supported Analytics Delay related to the eventIds and nwdafEvents. It is an unsigned integer identifying a period of time in units of seconds.(see clause 5.2.2 TS 29.571 [61]). allowedValues: N/A	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NwdafInfo.servingNfTypeList`	It contains the list of NF type(s) from which the NWDAF NF can collect data. The absence of this attribute indicates that the NWDAF can collect data from any NF type. allowedValues: N/A	type: NFType multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`NwdafInfo.servingNfSetIdList`	It contains the list of NF type(s) from which the NWDAF NF can collect data. The absence of this attribute indicates that the NWDAF can collect data from any NF type. (see clause 5.4.2 NfSetId in TS 29.571 [61]) allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`NwdafInfo.taiList`	This attribute represents a List of TAIs the NWDAF can serve. It may contain one or more non-3GPP access TAIs. The absence of both this attribute and the taiRangeList attribute indicates that the NWDAF can be selected for any TAI in the serving network. allowedValues: N/A	type: Tai multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`NwdafInfo.taiRangeList`	This attribute represents the range of TAIs the NWDAF can serve. It may contain one or more non-3GPP access TAI ranges. The absence of both this attribute and the taiList attribute indicates that the NWDAF can be selected for any TAI in the serving network. allowedValues: N/A	type: TaiRange multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`mlAnalyticsList`	It represents ML Analytics Filter information supported by the Nnwdaf_MLModelProvision service. allowedValues: N/A	type: MlAnalyticsInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`analyticsAggregation`	It indicates whether the NWDAF supports analytics aggregation: - TRUE: analytics aggregation capability is supported by the NWDAF - FALSE: analytics aggregation capability is not supported by the NWDAF.	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
`analyticsMetadataProvisioning`	It indicate whether the NWDAF supports analytics metadata provisioning: - TRUE: analytics metadata provisioning capability is supported by the NWDAF - FALSE: analytics metadata provisioning capability is not supported by the NWDAF.	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False

`mlAnalyticsIds`	This attribute represents the Analytic functionalities (identified by nwdafEvent defined in TS 29.520 [85]) of the NWDAF instance. MnS consumer can configure this attribute to specify which Analytic functionalities (identified by nwdafEvent) can be performed the NWDAF instance. If the value of this attribute is not present, the NWDAF instance can perform any NWDAFEvents Analytics Id(s) supported by the Nnwdaf_MLModelProvision service, if none are provided the NWDAF can serve any mlAnalyticsId. allowedValues: the detailed ENUM value for NwdafEvent see the Table 5.1.6.3.4-1 in TS 29.520 [85].	type: NwdafEvent multiplicity: * isOrdered: True isUnique: True defaultValue: None isNullable: False
`trackingAreaList`	This attribute represents area of Interest of the ML model, if none are provided the ML model for the analytics can apply to any TAIs. If present, it represents the list of TAIs, it may contain one or more non-3GPP access TAIs. allowedValues: N/A	type: Tai multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`nsacfInfo`	This attribute represents the information of an NSACF NF Instance. (see TS 29.510 [23]). allowedValues: N/A	type: NsacfInfo multiplicity: 0..1 isOrdered: N/A isUnique: NA defaultValue: None isNullable: False
`nsacfCapability`	It represents NSACF service capability. allowedValues: N/A	type: NsacfCapability multiplicity: 0..1 isOrdered: N/A isUnique: NA defaultValue: None isNullable: False
`NSACFFunction.taiList`	This attribute represents the list of TAIs the NSACF can serve. It may contain one or more non-3GPP access TAIs. The absence of this attribute and the taiRangeList attribute indicate that the NSACF can be selected for any TAI in the serving network. allowedValues: N/A	type: Tai multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`NSACFFunction.taiRangeList`	This attribute represents the range of TAIs the NSACF can serve. It may contain non-3GPP access TAIs. The absence of this attribute and the taiList attribute indicate that the NSACF can be selected for any TAI in the serving network. allowedValues: N/A	type: TaiRange multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`supportUeSAC`	This attribute indicates the service capability of the NSACF to monitor and control the number of registered UEs per network slice for the network slice that is subject to NSAC. allowedValues: TRUE: Supported FALSE: Not Supported	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False

supportPduSAC	This attribute indicates the service capability of the NSACF to monitor and control the number of established PDU sessions per network slice for the network slice that is subject to NSAC. allowedValues: TRUE: Supported FALSE: Not Supported	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
nefId	It represents the NEF ID. (see clause 6.1.6.3.2 of TS 29.510 [23]) allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
appIds	It represents list of internal application identifiers of the managed PFDs. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
afIds	It represents list of application function identifiers of the managed PFDs. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
pfdData	It represents PFD data, containing the list of internal application identifiers and/or the list of application function identifiers for which the PFDs can be provided. Absence of this attribute indicates that the PFDs for any internal application identifier and for any application function identifier can be provided. allowedValues: N/A	type: PfdData multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
AfEventExposureData.afEvents	It represents AF Event(s) exposed by the NEF after registration of the AF(s) at the NEF. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
afEeData	It represents the AF provided event exposure data. The NEF registers such information in the NRF on behalf of the AF. allowedValues: N/A	type: AfEventExposureData multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedFqdnList	It represents pattern (regular expression according to the ECMA-262 dialect [75]) representing the Domain names served by the NEF. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
dnaiList	It represents list of Data network access identifiers supported by the NEF. The absence of this attribute indicates that the NEF can be selected for any DNAI. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False

`unTrustAfInfoList`	It represents list of information corresponding to the AFs. allowedValues: N/A	type: UnTrustAfInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`UnTrustAfInfo.afId`	It represents associated AF id. allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`UnTrustAfInfo. sNssaiInfoList`	It represents S-NSSAIs and DNNs supported by the untrust AF. allowedValues: N/A	type: SnssaiInfoItem multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`UnTrustAfInfo. mappingInd`	When present, this attribute indicates whether the AF supports mapping between UE IP address (IPv4 address or IPv6 prefix) and UE ID (i.e. GPSI). allowedValues: True, False True: the AF supports mapping between UE IP address and UE ID; False: the AF does not support mapping between UE IP address and UE ID.	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
`SnssaiInfoItem.sNssai`	It represents supported S-NSSAI. allowedValues: N/A	type: ExtSnssai multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`SnssaiInfoItem.dnnInfoList`	It represents list of parameters supported by the NF per DNN. allowedValues: N/A	type: DnnInfoItem multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`snssaiExtension`	It represents extensions to the Snssai. allowedValues: N/A	type: SnssaiExtension multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`SnssaiExtension.sdRanges`	It shall contain the range(s) of Slice Differentiator values supported for the Slice/Service Type value indicated in the sst attribute of the Snssai data type (see clause 5.4.4.2 in TS 29.571[61]).	type: SdRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`SnssaiExtension.wildcardSd`	It indicates that all SD values are supported for the Slice/Service Type value indicated in the sst attribute of the Snssai data type (see clause 5.4.4.2 in TS 29.571[61]). allowedValues: True, False	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
`SdRange.start`	First value identifying the start of an SD range. This string shall be formatted as specified for the sd attribute of the Snssai data type in clause 5.4.4.2 of TS 29.571 [61]. allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`SdRange.end`	Last value identifying the end of an SD range. This string shall be formatted as specified for the sd attribute of the Snssai data type in clause 5.4.4.2 in TS 29.571 [61]. allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`DnnInfoItem.dnn`	It represents supported DNN or Wildcard DNN if the NF supports all DNNs for the related S-NSSAI. The DNN shall contain the Network Identifier and it may additionally contain an Operator Identifier. If the Operator Identifier is not included, the DNN is supported for all the PLMNs in the plmnList of the NF Profile. allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`uasNfFunctionalityInd`	When present, this attribute shall indicate whether the NEF supports UAS NF functionality: allowedValues: True, False - True: UAS NF functionality is supported by the NEF. - False: UAS NF functionality is not supported by the NEF.	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: False isNullable: False
`ausfInfo`	It represents the information of an AUSF NF Instance (see TS 29.510 [23]). allowedValues: N/A	type: AusfInfo multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`AUSFFunction.supiRanges`	This attribute represents a list of ranges of SUPIs that can be served by the AUSF instance. (NOTE 1) allowedValues: N/A	type: SupiRange multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`AUSFFunction.routingIndicators`	This attribute represents a list of Routing Indicator information that allows to route network signalling with SUCI (see TS 23.003 [13]) to the AUSF instance. If not provided, the AUSF can serve any Routing Indicator. Pattern: '^[0-9]{1,4}$' allowedValues: N/A	type: String multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`AUSFFunction.suciInfos`	This attribute represents a list of SuciInfo. A SUCI that matches this information can be served by the AUSF. (NOTE 2, NOTE 3) A SUCI that matches all attributes of at least one entry in this array shall be considered as a match of this information. allowedValues: N/A	type: SuciInfo multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`smsfInfo`	This attribute represents specific data for a SMSF. allowedValues: N/A	type: SmsfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

roamingUeInd	This attribute indicates whether the SMSF can serve roaming UE: - TRUE: the SMSF can support roaming UEs. - FALSE: the SMSF can not support roaming UEs. Absence of this IE indicates whether the SMSF can serve roaming UEs is not specified. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
remotePlmnRangeList	This attribute indicates the list of ranges of remote PLMNs served by the SMSF, i.e. the SMSF can serve the roaming UEs which belong to the indicated remote PLMNs. If the roamingUeInd attribute is present with the value "true", absence of remotePlmnRangeList indicates that the SMSF can serve roaming UEs from any remote PLMN. allowedValues: N/A	type: PlmnRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
PlmnRange.start	This attribute indicates the first value identifying the start of a PLMN range. The string shall be encoded as follows: <MCC><MNC> Pattern: '^[0-9]{3}[0-9]{2,3}$' allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
PlmnRange.end	This attribute indicates the last value identifying the end of a PLMN range. The string shall be encoded as follows: <MCC><MNC> Pattern: '^[0-9]{3}[0-9]{2,3}$' allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
PlmnRange.pattern	This attribute indicates pattern (regular expression according to the ECMA-262 dialect [75]) representing the set of PLMNs belonging to this range. A PLMN value is considered part of the range if and only if the PLMN string (formatted as <MCC><MNC>) fully matches the regular expression. To be noted, either the start and end attributes, or the pattern attribute, shall be present. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
udrInfo	This attribute represents the information of an UDR NF Instance (see TS 29.510 [23]). allowedValues: N/A	type: UdrInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
udmInfo	This attribute represents the information of an UDM NF Instance (see TS 29.510 [23]). allowedValues: N/A	type: UdmInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
lmfInfo	This attribute represents information of an LMF NF Instance allowedValues: N/A	type: LmfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`servingClientTypes`	This attribute represents a list of external client type(s), e.g. emergency client. The NRF should only include this LMF instance to NF discovery with "client-type" query parameter indicating one of the external client types in the list. Absence of this attribute means the LMF is not dedicated to serve specific client types. allowedValues: see clause 6.1.6.3.3 of TS 29.572 [86] "EMERGENCY_SERVICES": External client for emergency services "VALUE_ADDED_SERVICES": External client for value added services "PLMN_OPERATOR_SERVICES": External client for PLMN operator services "LAWFUL_INTERCEPT_SERVICES": External client for Lawful Intercept services "PLMN_OPERATOR_BROADCAST_SERVICES": External client for PLMN Operator Broadcast services "PLMN_OPERATOR_OM": External client for PLMN Operator O&M "PLMN_OPERATOR_ANONYMOUS_STATISTICS": External client for PLMN Operator anonymous statistics "PLMN_OPERATOR_TARGET_MS_SERVICE_SUPPORT": External client for PLMN Operator target MS service support	type: ENUM multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`lmfId`	This attribute represents the LMF identification. See clause 6.1.6.3.6 TS 29.572 [86] allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`servingAccessTypes`	This attribute contains the access type (3GPP_ACCESS and/or NON_3GPP_ACCESS) supported by the SMF. If not included, it shall be assumed the both access types are supported. allowedValues: "3GPP_ACCESS", "NON_3GPP_ACCESS".	type: ENUM multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servingAnNodeTypes`	This attribute contains the AN node type (i.e. gNB or NG-eNB) supported by the LMF. If not included, it shall be assumed that all AN node types are supported. allowedValues: "GNB","NG_ENB"	type: ENUM multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servingRatTypes`	This attribute contains the RAT type (e.g. 5G NR, eLTE or any of the RAT Types specified for NR satellite access) supported by the LMF. If not included, it shall be assumed that all RAT types are supported allowedValues: see clause 5.4.3.2 of TS 29.571 [61].	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False

`LmfInfo.taiList`	This attribute contains TAI list that the LMF can serve. It may contain one or more non-3GPP access TAIs. The absence of both this attribute and the taiRangeList attribute indicates that the LMF can be selected for any TAI in the serving network. allowedValues: N/A	type: TAI multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`LmfInfo.taiRangeList`	This attribute contains TAI range list that the LMF can serve. It may contain one or more non-3GPP access TAI ranges. The absence of both this attribute and the taiList attribute indicates that the LMF can be selected for any TAI in the serving network. allowedValues: N/A	type: TAIRange multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`supportedGADShapes`	This attribute contains the GAD shapes supported by the LMF. If not included, it doesn't indicate that the LMF doesn't support any GAD shapes. allowedValues: see clause 6.1.6.3.4 of TS 29.572 [86] "POINT" indicates Ellipsoid Point "POINT_UNCERTAINTY_CIRCLE"indicates Ellipsoid point with uncertainty circle "POINT_UNCERTAINTY_ELLIPSE" indicates Ellipsoid point with uncertainty ellipse "POLYGON" indicates Polygon "POINT_ALTITUDE" indicates Ellipsoid point with altitude "POINT_ALTITUDE_UNCERTAINTY" indicates Ellipsoid point with altitude and uncertainty ellipsoid "ELLIPSOID_ARC" indicates Ellipsoid Arc "LOCAL_2D_POINT_UNCERTAINTY_ELLIPSE" indicates Local 2D point with uncertainty ellipse "LOCAL_3D_POINT_UNCERTAINTY_ELLIPSOID" indicates Local 3D point with uncertainty ellipsoid	type: ENUM multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`SnssaiInfoItem`	This attribute represents a list of S-NSSAIs and DNNs supported by the trusted AF. allowedValues: N/A	type: SnssaiInfoItem multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`TrustAfInfo.afEvents`	This attribute represents list of AF Event(s) supported by the trusted AF. allowedValues: "SVC_EXPERIENCE","UE_MOBILITY", "UE_COMM", "EXCEPTIONS", "USER_DATA_CONGESTION", "PERF_DATA", "COLLECTIVE_BEHAVIOUR", "DISPERSION", "MS_QOE_METRICS", "MS_CONSUMPTION", "MS_NET_ASSIST_INVOCATION", "MS_DYN_POLICY_INVOCATION", "MS_ACCESS_ACTIVITY" See clause 5.6.3.3 TS 29.517 [87].	type: ENUM multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`TrustAfInfo.appIds`	This attribute represents a list of Application ID(s) supported by the trusted AF. The absence of this attribute indicate that the AF can be selected for any Application. allowedValues: N/A	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False

internalGroupId	This attribute represents a list of Internal Group Identifiers supported by the trusted AF. If not provided, it does not imply that the AF supports all internal groups. String pattern: '^[A-Fa-f0-9]{8}-[0-9]{3}-[0-9]{2,3}-([A-Fa-f0-9][A-Fa-f0-9]){1,10}$'. allowedValues: N/A	type: String multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
mappingInd	This attribute indicates whether the trusted AF supports mapping between UE IP address (IPv4 address or IPv6 prefix) and UE ID (i.e. SUPI). TRUE: the trusted AF supports mapping between UE IP address and UE ID; FALSE: the trusted AF does not support mapping between UE IP address and UE ID. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
sNssaiEasdfInfoList	This attribute represents a list of parameters supported by the EASDF per S-NSSAI. allowedValues: N/A	type: SnssaiEasdfInfoItem multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
easdfN6IpAddressList	This attribute represents N6 IP addresses of the EASDF. allowedValues: N/A	type: IpAddr multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
upfN6IpAddressList	This attribute represents N6 IP addresses of PSA UPFs. allowedValues: N/A	type: IpAddr multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
SnssaiEasdfInfoItem.sNssai	This attribute represents a S-NSSAI. allowedValues: N/A	type: SnssaiExtension multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
SnssaiEasdfInfoItem.dnnEasdfInfoList	This attribute represents a list of parameters supported by the EASDF per DNN. allowedValues: N/A	type: DnnEasdfInfoItem multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
DnnEasdfInfoItem.dnn	This attribute represents a supported DNN or Wildcard DNN if the EASDF supports all DNNs for the related S-NSSAI. The DNN shall contain the Network Identifier and it may additionally contain an Operator Identifier. If the Operator Identifier is not included, the DNN is supported for all the PLMNs in the plmnList of the NF Profile. allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
NssafInfo.supiRanges	This attribute represents a List of ranges of SUPIs that can be served by the NSSAAF instance. allowedValues: N/A	type: SupiRange multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False

`NssafInfo.internalGroupIden tifiersRanges`	This attribute represents a List of ranges of Internal Group Identifiers that can be served by the NSSAAF instance. If not provided, it does not imply that the NSSAAF supports all internal groups. allowedValues: N/A	type: InternalGroupIdRange multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedUdrInfo`	This attribute contains all the udrInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the udrInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedUdmInfo`	This attribute contains all the udmInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the udmInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedAusfInfo`	This attribute contains all the ausfInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the ausfInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedNwdafInfo`	This attribute contains all the nwdafInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the nwdafInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedLmfInfo`	This attribute contains all the lmfInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the lmfInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedUdsfInfo`	This attribute contains all the udsfInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedTrustAfInfo`	This attribute contains the trustAfInfo attribute locally configured in the NRF or that the NRF received during AF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedNssaafInfo`	This attribute contains all the nssaafInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the nssaafInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False

chfInfo	It represents the information of an AUSF NF Instance (see TS 29.510 [23]). allowedValues: N/A	type: ChfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ChfInfo.supiRangeList	This attribute represents the list of ranges of SUPIs that can be served by the CHF instance. allowedValues: N/A	type: SupiRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
ChfInfo.gpsiRangeList	This attribute represents the list of ranges of GPSI that can be served by the CHF instance. allowedValues: N/A	type: IdentityRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
ChfInfo.plmnRangeList	This attribute represents the list of ranges of PLMNs (including the PLMN IDs of the CHF instance) that can be served by the CHF instance. If not provided, the CHF can serve any PLMN. allowedValues: N/A	type: PlmnRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
ChfInfo.groupId	This attribute represents the identity of the CHF group that is served by the CHF instance. If not provided, the CHF instance does not pertain to any CHF group. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ChfInfo.primaryChfInstance	This attribute represents the NF Instance Id of the primary CHF instance. This attribute shall be absent if the secondaryChfInstance is present. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ChfInfo.secondaryChfInstance	This attribute represents the NF Instance Id of the secondary CHF instance. This attribute shall be absent if the primaryChfInstance is present. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
mfafInfo	This attribute represents information of an MFAF NF Instance. allowedValues: N/A	type: MfafInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
MfafInfo.servingNfTypeList	This attribute represents a List of NF type(s) served by MFAF NF. The absence of this attribute indicates that the MFAF can be selected for any NF type allowedValues: N/A	type: NFType multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
MfafInfo.servingNfSetIdList	This attribute represents a List of NF Set Id(s) served by MFAF NF. The absence of this attribute indicates that the MFAF can be selected for any NF Set Id. allowedValues: N/A	type: String multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False

MfafInfo.taiList	This attribute represents a List of TAIs the MFAF can serve. It may contain one or more non-3GPP access TAIs. The absence of both this attribute and the taiRangeList attribute indicates that the MFAF can be selected for any TAI in the serving network. allowedValues: N/A	type: Tai multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
MfafInfo.taiRangeList	This attribute represents the range of TAIs the MFAF can serve. It may contain one or more non-3GPP access TAI ranges. The absence of both this attribute and the taiList attribute indicates that the MFAF can be selected for any TAI in the serving network. allowedValues: N/A	type: TaiRange multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
dccfInfo	This attribute represents information of an DCCF NF Instance allowedValues: N/A	type: DccfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
DccfInfo.servingNfTypeList	This attribute represents the list of NF type(s) from which the DCCF NF can collect data. The absence of this attribute indicates that the DCCF can collect data from any NF type. allowedValues: N/A	type: NFType multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
DccfInfo.servingNfSetIdList	This attribute represents the list of NF Set Id(s) from which the DCCF NF can collect data. The absence of this attribute indicates that the DCCF can collect data from any NF Set. allowedValues: N/A	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
DccfInfo.taiList	This attribute represents the list of TAIs the DCCF can serve. It may contain one or more non-3GPP access TAIs. The absence of both this attribute and the taiRangeList attribute indicates that the DCCF can be selected for any TAI in the serving network. allowedValues: N/A	type: TAI multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
DccfInfo.taiRangeList	This attribute represents the range of TAIs the DCCF can serve. It may contain one or more non-3GPP access TAI ranges. The absence of both this attribute and the taiList attribute indicates that the DCCF can be selected for any TAI in the serving network. allowedValues: N/A	type: TAIRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
amfInfo	This attribute represents information of an AMF NF Instance. allowedValues: N/A	type: AmfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
smfInfo	This attribute represents information of an SMF NF Instance. allowedValues: N/A	type: SmfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
upfInfo	This attribute represents information of an UPF NF Instance. allowedValues: N/A	type: UpfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

pcfInfo	This attribute represents information of a PCF NF Instance. allowedValues: N/A	type: PcfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
nefInfo	This attribute represents information of an NEF NF Instance. allowedValues: N/A	type: NefInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
servedUdrInfoList	This attribute contains list of UdrInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedUdmInfoList	This attribute contains list of UdmInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedAusfInfoList	This attribute contains list of AusfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedAmfInfo	This attribute contains all the amfInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the amfInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedAmfInfoList	This attribute contains list of AmfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedSmfInfo	This attribute contains all the smfInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the smfInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedSmfInfoList	This attribute contains list of SmfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedUpfInfo	This attribute contains all the upfInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the upfInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False

servedUpfInfoList	This attribute contains list of UpfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedPcfInfo	This attribute contains all the pcfInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the pcfInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedPcfInfoList	This attribute contains list of PcfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedBsfInfo	This attribute contains all the bsfInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the bsfInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedBsfInfoList	This attribute contains list of BsfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedChfInfo	This attribute contains all the chfInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the chfInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedChfInfoList	This attribute contains list of ChfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedNefInfo	This attribute contains all the nefInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the nefInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedNwdafInfoList	This attribute contains list of nwdafInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False

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servedGmlcInfo	This attribute contains all the gmlcInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of which the nefInfo belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedUdsfInfoList	This attribute contains list of UdsfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedScpInfoList	This attribute contains list of ScpInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedSeppInfoList	This attribute contains list of SeppInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
AanfInfo.routingIndicators	This attribute represents the List of Routing Indicators supported by the AAnf instance. If not provided, the AAnf can serve any Routing Indicator. Pattern: '^[0-9]{1,4}$' allowedValues: N/A	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
aanfInfo	This attribute represents information of an AANF NF Instance. allowedValues: N/A	type: AanfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
tsctsfInfo	This attribute represents information of an TSCTSF NF Instance. allowedValues: N/A	type: TsctsfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
TsctsfInfo.sNssaiInfoList	This attribute represents the S-NSSAIs and DNNs supported by the TSCTSF. The key of the map shall be a (unique) valid JSON string per clause 7 of IETF RFC 8259 [92], with a maximum of 32 characters. allowedValues: N/A	type: SnssaiTsctsfInfoItem multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
TsctsfInfo.externalGroupIdentifiersRanges	This attribute represents the ranges of External Group Identifiers that can be served by the TSCTSF. The absence of this IE indicates that the TSCTSF can serve any external group managed by the PLMN (or SNPN) of the TSCTSF instance. allowedValues: N/A	type: IdentityRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False

`TsctsfInfo.supiRanges`	This attribute represents the ranges of SUPIs that can be served by the TSCTSF instance. allowedValues: N/A	type: SupiRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`TsctsfInfo.gpsiRanges`	This attribute represents the ranges of GPSIs that can be served by the TSCTSF instance. allowedValues: N/A	type: IdentityRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`TsctsfInfo.internalGroupIdentifiersRanges`	This attribute represents the ranges of Internal Group Identifiers that can be served by the TSCTSF instance. The absence of this IE indicates that the TSCTSF can serve any internal group managed by the PLMN (or SNPN) of the TSCTSF instance. allowedValues: N/A	type: InternalGroupIdRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servingClientTypes`	This attribute shall be present if the GMLC is dedicated to serve the listed external client type(s), e.g. emergency client. Absence of this attribute means the GMLC is not dedicated to serve specific client types. See clause 6.1.6.3.3 TS 29.572 [86]. allowedValues: "EMERGENCY_SERVICES": External client for emergency services "VALUE_ADDED_SERVICES": External client for value added services "PLMN_OPERATOR_SERVICES": External client for PLMN operator services "LAWFUL_INTERCEPT_SERVICES": External client for Lawful Intercept services "PLMN_OPERATOR_BROADCAST_SERVICES": External client for PLMN Operator Broadcast services "PLMN_OPERATOR_OM": External client for PLMN Operator O&M "PLMN_OPERATOR_ANONYMOUS_STATISTICS": External client for PLMN Operator anonymous statistics "PLMN_OPERATOR_TARGET_MS_SERVICE_SUPPORT": External client for PLMN Operator target MS service support	type: <<enumeration>> multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`gmlcNumbers`	This attribute represents each item of the array shall carry an OctetString indicating the ISDN number of the GMLC in international number format as described in ITU-T Rec. E.164 [94] and shall be encoded as a TBCD-string. Pattern for string: "^[0-9]{5,15}$" allowedValues: N/A	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`gmlcInfo`	This attribute represents information of an GMLC NF Instance. allowedValues: N/A	type: `GmlcfInfo` multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

nTNPLMNRestrictionsList	This attribute defines the location restrictions per PLMN that relates to non-terrestrial network access.	type: NTNPLMNRestrictionsInfo multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
blockedLocationInfoList	This defines the information related with the location for which the access restrictions are to be applied in case of NTN.	type: BlockedLocationInfo multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
blockedLocation	This provides the geographical location at which the PLMN are not allowed in case of NTN.	type: PLMNId multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
blockedDurWindow	This provides the time durations for which the PLMN are not allowed at a given location in case of NTN	type: TimeWindow multiplicity: * isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
blockedSlice	This provides the slice for which the access is not allowed at a given location in case of NTN.	type: S-NSSAI multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
nwdafLogicalFuncSupported	It represents the logical functions supported by the NWDAF. If not present, the NWDAF shall be regarded with no logical decomposition, in that case the NWDAF only supports the analytics services. allowedValues: "NWDAF_WITH_ANLF" indicates the NWDAF containing Analytics logical function (AnLF), "NWDAF_WITH_MTLF" indicates the NWDAF containing Model Training logical function (MTLF), "NWDAF_WITH_ANLF_MTLF" indicates the NWDAF containing both Analytics logical function (AnLF) and Model Training logical function (MTLF).	type: ENUM multiplicity: 0..1 isOrdered: False isUnique: True defaultValue: None isNullable: False
satelliteCoverageInfoList	This attribute defines the information related to NR Satellite RAT type and corresponding information of satellite coverage	type: SatelliteCoverageInfo multiplicity: * isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
nRSatelliteRATtype	This attribute defines the RAT Type for NR satellite access. allowedValues: "NRLEO" "NRMEO" "NRGEO" "NROTHERSAT"	type: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

locationInfo	This attribute defines the information about location and corresponding time windows for which the satellite coverage will be available or unavailable.	type: NtnLocationInfo multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
location	This defines the Location (geographical area) under consideration to which the satellite coverage info belongs	type: GeoArea multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
availabilityWindows	This attribute defines the list of time windows at which the satellite coverage will be available for this location. Either availabilityWindows or nonAvailabilityWindows shall be present.	type: TimeWindow multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
nonAvailabilityWindows	This attribute defines the list of time windows at which the satellite coverage will not be available for this location. Either availabilityWindows or nonAvailabilityWindows shall be present.	type: TimeWindow multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
n2InterfaceAmfInfo	This attribute represents the N2 interface information of the AMF. allowedValues: N/A	type: n2InterfaceAmfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
N2InterfaceAmfInfo.ipv4EndpointAddress	This attribute represents available AMF endpoint IPv4 address(es) for N2. allowedValues: N/A	type: Ipv4Addr multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
N2InterfaceAmfInfo.ipv6EndpointAddress	This attribute represents available AMF endpoint IPv6 address(es) for N2. allowedValues: N/A	type: Ipv6Addr multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
N2InterfaceAmfInfo.amfName	This attribute represents AMF Name FQDN as defined in clause 28.3.2.5 of TS 23.003 [13] allowedValues: N/A	type: Fqdn multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
amfOnboardingCapability	This attribute indicates the AMF supports SNPN Onboarding capability. This is used for the case of Onboarding of UEs for SNPNs (see TS 23.501 [2], clause 5.30.2.10). - FALSE: AMF does not support SNPN Onboarding; - TRUE: AMF supports SNPN Onboarding. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False

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highLatencyCom	This attribute indicates whether the AMF supports High Latency communication (e.g. for NR RedCap UE). This is used for CP NF to discover AMF supporting High Latency communication (see TS 23.501 [2], clause 6.3.5). - FALSE: AMF does not support High Latency communication e.g. for NR RedCap UE; - TRUE: AMF supports High Latency communication e.g. for NR RedCap UE; allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ismfSupportInd	This attribute may be used by an SMF to explicitly indicate the support of I-SMF capability and its preference to be selected as I-SMF. When present, this attribute shall indicate whether the I-SMF capability are supported by the SMF: - TRUE: I-SMF capability supported by the SMF - FALSE: I-SMF capability not supported by the SMF. Absence of this attribute indicates the I-SMF capability support of the SMF is not specified. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
smfOnboardingCapability	This attribute indicates the SMF supports SNPN Onboarding capability and User Plane Remote Provisioning. This is used for the case of Onboarding of UEs for SNPNs (see TS 23.501 [2], clauses 5.30.2.10 and 6.2.6.2). - FALSE: SMF does not support SNPN Onboarding; - TRUE: SMF supports SNPN Onboarding. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
smfUPRPCapability	This attribute IE indicates the SMF supports User Plane Remote Provisioning (UPRP) capability. This is used for the case of Onboarding of UEs for SNPNs (see TS 23.501 [2], clauses 5.30.2.10 and 6.2.6.2). - FALSE: SMF does not support UPRP; - TRUE: SMF supports UPRP. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
sNssaiUpfInfoList	This attribute represents a list of parameters supported by the UPF per S-NSSAI. allowedValues: N/A	type: SnssaiUpfInfoItem multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
sxaInd	This attribute indicates whether the UPF is configured to support Sxa interface. TRUE: Supported FALSE: Not Supported allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
a2xSupportInd	This attribute indicates whether A2X Policy/Parameter provisioning is supported by the PCF. TRUE: Supported FALSE: Not Supported allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False

a2xCapability	This attribute shall be present if the PCF supports A2X Capability. When present, this attribute shall indicate the supported A2X Capability by the PCF. allowedValues: N/A	type: A2xCapability multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
rangingSlPosSupportInd	Indicates whether ranging and sidelink positioning capability is supported by the PCF. TRUE: Supported FALSE: Not Supported allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
A2xCapability.lteA2x	This attribute indicates whether the PCF supports LTE A2X capability: - TRUE: LTE A2X capability is supported by the PCF - FALSE: LTE A2X capability is not supported by the PCF. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
A2xCapability.nrA2x	This attribute indicates whether the PCF supports NR A2X capability: - TRUE: NR A2X capability is supported by the PCF - FALSE: NR A2X capability is not supported by the PCF. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
multiMemAfSessQosInd	This attribute indicates whether the NEF supports Multi-member AF session with required QoS functionality: - TRUE: Multi-member AF session with required QoS functionality is supported by the NEF - FALSE: Multi-member AF session with required QoS functionality is not supported by the NEF. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
memberUESelAssistInd	This attribute indicates whether the NEF supports member UE selection assistance functionality: - TRUE: member UE selection assistance functionality is supported by the NEF - FALSE: member UE selection assistance functionality is not supported by the NEF. allowedValues: TRUE, FALSE	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
mbUpfInfo	This attribute represents information of an MB-UPF NF Instance. allowedValues: N/A	type: MbUpfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
mbUpfInfo.sNssaiMbUpfInfoList	This attribute represents the list of parameters supported by the MB-UPF per S-NSSAI. allowedValues: N/A	type: SnssaiUpfInfoItem multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False

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`mbUpfInfo.mbSmfServingArea`	This attribute represents the MB-SMF service area(s) the MB-UPF can serve. If not provided, the MB-UPF can serve any MB-SMF service area. allowedValues: N/A	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`mbUpfInfo.interfaceMbUpfInfoList`	This attribute represents the list of User Plane interfaces configured on the MB-UPF. When this IE is provided in the NF Discovery response, the NF Service Consumer (e.g. MB-SMF) may use this information for MB-UPF selection. allowedValues: N/A	type: `InterfaceUpfInfoItem` multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`mbUpfInfo.taiList`	This attribute represents the list of TAIs the MB-UPF can serve. The absence of this attribute and the taiRangeList attribute indicates that the MB-UPF can serve the whole MB-SMF service area defined by the MbSmfServingArea attribute. allowedValues: N/A	type: `Tai` multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`mbUpfInfo.taiRangeList`	This attribute represents the range of TAIs the MB-UPF can serve. The absence of this attribute and the taiList attribute indicates that the MB-UPF can serve the whole MB-SMF service area defined by the MbSmfServingArea attribute. allowedValues: N/A	type: `Tairange` multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`mbUpfInfo.priority`	This attribute represents priority (relative to other NFs of the same type) in the range of 0-65535, to be used for NF selection for a service request matching the attributes of the MbUpfInfo; lower values indicate a higher priority. See the precedence rules in the description of the priority attribute in NFProfile, if Priority is also present in NFProfile. The NRF may overwrite the received priority value when exposing an NFProfile with the Nnrf_NFDiscovery service. allowedValues: N/A	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`SnssaiUpfInfoItem.sNssai`	It represents supported S-NSSAI. allowedValues: N/A	type: `ExtSnssai` multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`SnssaiUpfInfoItem.dnnUpfInfoList`	This attribute represents a list of parameters supported by the UPF per DNN. allowedValues: N/A	type: `DnnUpfInfoItem` multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`SnssaiUpfInfoItem.redundantTransport`	This attribute indicates whether the UPF supports redundant transport path on the transport layer in the corresponding network slice. allowedValues: TRUE: supported FALSE: not supported	type: Boolean multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False

DnnUpfInfoItem.dnaiList	This attribute represents a list of Data network access identifiers supported by the UPF for this DNN. The absence of this attribute indicates that the UPF can be selected for this DNN for any DNAI. Each item in the list is the DNAI (Data network access identifier), see TS 23.501 [2]. allowedValues: N/A	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
DnnUpfInfoItem.pduSessionTypes	This attribute represents a list of PDU session type(s) supported by the UPF for a specific DNN. The absence of this attribute indicates that the UPF can be selected for this DNN for any PDU session type supported by the UPF (see clause 6.1.6.2.13). allowedValues: "IPv4" "IPv6" "IPv4v6" as per clause 5.8.2.2.1 TS 23.501 [2] "UNSTRUCTURED" "ETHERNET"	type: <<enumeration>> multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
DnnUpfInfoItem.ipv4AddressRanges	This attribute represents a list of ranges of IPv4 addresses handled by UPF. allowedValues: N/A	type: Ipv4AddressRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
DnnUpfInfoItem.ipv6PrefixRanges	This attribute represents a list of ranges of IPv6 prefixes handled by the UPF. allowedValues: N/A	type: Ipv6PrefixRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
DnnUpfInfoItem.natedIpv4AddressRanges	This attribute represents a list of ranges of NATed IPv4 addresses. allowedValues: N/A	type: Ipv4AddressRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
DnnUpfInfoItem.natedIpv6PrefixRanges	This attribute represents a list of ranges of NATed IPv6 prefixes. allowedValues: N/A	type: Ipv6PrefixRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
DnnUpfInfoItem.ipv4IndexList	This attribute represents a list of Ipv4 Index supported by the UPF. This <<choice>> represents the IP Index to be sent from UDM to the SMF. (See clause 6.1.6.2.77 TS 29.503 [97]) It is a list of non-exclusive alternatives (Integer or String). allowedValues: N/A	type: <<choice>> multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False

`DnnUpfInfoItem.ipv6IndexList`	This attribute represents a list of Ipv6 Index supported by the UPF. This <<choice>> represents the IP Index to be sent from UDM to the SMF. (See clause 6.1.6.2.77 TS 29.503 [97]) It is a list of non-exclusive alternatives (Integer or String). allowedValues: N/A	type: <<choice>> multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`DnnUpfInfoItem.networkInstance`	This attribute represents the N6 Network Instance (See TS 29.244 [56]) associated with the S-NSSAI and DNN. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`DnnUpfInfoItem.dnaiNwInstanceList`	This attribute represents a map of a network instance per DNAI for the DNN, where the key of the map is the DNAI (Data network access identifier), see TS 23.501 [2]. When present, the value of each entry of the map shall contain a N6 network instance that is configured for the DNAI indicated by the key. allowedValues: N/A	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`mbSmfInfo`	This attribute represents information of an MB-SMF NF Instance allowedValues: N/A	type: `MbSmfInfo` multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`MbSmfInfo.sNssaiInfoList`	This attribute represents the list of S-NSSAIs and DNNs supported by the MB-SMF. The key of the map shall be a (unique) valid JSON string per clause 7 of IETF RFC 8259 [92], with a maximum of 32 characters. allowedValues: N/A	type: NFType multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`MbSmfInfo.tmgiRangeList`	This attribute represents the list of TMGI range(s) supported by the MB-SMF The key of the map shall be a (unique) valid JSON string per clause 7 of IETF RFC 8259 [92], with a maximum of 32 characters. allowedValues: N/A	type: `TmgiRange` multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`MbSmfInfo.taiList`	This attribute represents the list of TAIs the MB-SMF can serve. The absence of this attribute and the taiRangeList attribute indicates that the MB-SMF can be selected for any TAI in the serving network. allowedValues: N/A	type: `TAI` multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`MbSmfInfo.taiRangeList`	This attribute represents the range of TAIs the MB-SMF can serve. The absence of this attribute and the taiList attribute indicates that the MB-SMF can be selected for any TAI in the serving network. allowedValues: N/A	type: `TAIRange` multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`MbSmfInfo.mbsSessionList`	This attribute represents the list of MBS sessions currently served by the MB-SMF The key of the map shall be a (unique) valid JSON string per clause 7 of IETF RFC 8259 [92], with a maximum of 32 characters. allowedValues: N/A	type: `MbsSession` multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False

mbsServiceIdStart	This attribute represents the first MBS Service ID value identifying the start of a TMGI range. The value shall be coded as defined for the mbsServiceId attribute of the Tmgi data type defined in 3GPP TS 29.571 [61]. Pattern: '^[A-Fa-f0-9]{6}$'s. allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
mbsServiceIdEnd	This attribute represents the last MBS Service ID value identifying the end of a TMGI range. The value shall be coded as defined for the mbsServiceId attribute of the Tmgi data type defined in 3GPP TS 29.571 [61]. Pattern: '^[A-Fa-f0-9]{6}$' allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
mbsServiceId	This attribute represents MBS Service ID consisting of a 6-digit fixed-length hexadecimal number between 000000 and FFFFFF. Each character in the string shall take a value of "0" to "9", "a" to "f" or "A" to "F" and shall represent 4 bits. The most significant character representing the 4 most significant bits of the MBS Service ID shall appear first in the string, and the character representing the 4 least significant bit of the MBS Service ID shall appear last in the string. Pattern: '^[A-Fa-f0-9]{6}$' allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
Ssm.sourceIpAddr	This attribute represents IP unicast address used as source address in IP packets for identifying the source of the multicast service (e.g. AF/AS). allowedValues: N/A	type: IpAddr multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
Ssm.destIpAddr	This attribute represents IP multicast address used as destination address in related IP packets for identifying the multicast service associated with the source. allowedValues: N/A	type: IpAddr multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
MbsSession.mbsSessionId	This attribute represents the MBS Session Identifier. allowedValues: N/A	type: MbsSessionId multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
MbsSession.mbsAreaSessions	This attribute represents map of Area Session Id and related MBS Service Area information used for MBS session with location dependent content. The Area Session ID together with the mbsSessionId (TMGI) uniquely identifies the MBS session in a specific MBS service area. For an MBS session with location dependent content, one map entry shall be registered for each MBS Service Area served by the MBS session. The key of the map shall be the areaSessionId.	type: MbsServiceAreaInfo multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
MbsServiceAreaInfo.areaSessionId	This attribute represents Area Session Identifier used for MBS session with location dependent content. allowedValues: 0..65535	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

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`MbsServiceAreaInfo.mbsServiceArea`	This attribute represents MBS Service Area for MBS session with location dependent content. allowedValues: N/A	type: `MbsServiceArea` multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`MbsServiceArea.ncgiList`	This attribute represents a list of NR cell ids with their pertaining TAIs. allowedValues: N/A	type: `Ncgi` multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`pLMNId`	This attribute represents a PLMN Identity. allowedValues: N/A	Type: `PLMNId` multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`nrCellId`	This attribute represents NR Cell Identity. It's a 36-bit string identifying an NR Cell Id as specified in clause 9.3.1.7 of TS 38.413 [5], in hexadecimal representation. Each character in the string shall take a value of "0" to "9", "a" to "f" or "A" to "F" and shall represent 4 bits. The most significant character representing the 4 most significant bits of the Cell Id shall appear first in the string, and the character representing the 4 least significant bit of the Cell Id shall appear last in the string. Pattern: '^[A-Fa-f0-9]{9}$' Example: An NR Cell Id 0x225BD6007 shall be encoded as "225BD6007". allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`HssInfo.groupId`	This attribute defines the identity of the HSS group that is served by the HSS instance. If not provided, the HSS instance does not pertain to any HSS group. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`HssInfo.imsiRanges`	This attribute defines the list of ranges of IMSIs whose profile data is available in the HSS instance. allowedValues: N/A	type: `ImsiRange` multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`HssInfo.imsPrivateIdentityRanges`	This attribute defines the list of ranges of IMS Private Identities whose profile data is available in the HSS instance. allowedValues: N/A	type: `IdentityRange` multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`HssInfo.imsPublicIdentityRanges`	This attribute defines the list of ranges of IMS Public Identities whose profile data is available in the HSS instance (NOTE 1) allowedValues: N/A	type: `IdentityRange` multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False

`HssInfo.msisdnRanges`	This attribute defines the list of ranges of MSISDNs whose profile data is available in the HSS instance. allowedValues: N/A	type: `IdentityRange` multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`HssInfo.externalGroupIdentifiersRanges`	This attribute defines the list of ranges of external group IDs that can be served by this HSS instance. If not provided, the HSS instance does not serve any external groups. allowedValues: N/A	type: `IdentityRange` multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`HssInfo.hssDiameterAddress`	This attribute defines the Diameter Address of the HSS allowedValues: N/A	type: `NetworkNodeDiameterAddress` multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`HssInfo.additionalDiamAddresses`	This attribute defines the Additional Diameter Addresses of the HSS; may be present if hssDiameterAddress is present allowedValues: N/A	type: `NetworkNodeDiameterAddress` multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`NetworkNodeDiameterAddress.name`	This attribute indicates the Diameter name of the network node diameter address. See TS 29.571 [61]. String contains a Diameter Identity (FQDN). allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NetworkNodeDiameterAddress.realm`	This attribute indicates the Diameter realm of the network node diameter addres. See TS 29.571 [61]. String contains a Diameter Identity (FQDN). allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`ImsiRange.start`	This attribute indicates the first value identifying the start of a IMSI range. Pattern: "^[0-9]+$" allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`ImsiRange.end`	This attribute indicates the last value identifying the end of a IMSI range. Pattern: "^[0-9]+$" allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`ImsiRange.pattern`	This attribute indicates pattern (regular expression according to the ECMA-262 dialect [75]) representing the set of IMSIs belonging to this range. An IMSI value is considered part of the range if and only if the IMSI string fully matches the regular expression. Either the start and end attributes, or the pattern attribute, shall be present. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`mnpfInfo`	This attribute represents information of an MNPF NF Instance allowedValues: N/A	type: `MnpfInfo` multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`MnpfInfo.msisdnRanges`	This attribute represents the list of ranges of MSISDNs whose portability status is available in the MNPF. allowedValues: N/A	type: `IdentityRange` multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`activationStatus`	It describes the activation status. allowedValues: ACTIVATED, DEACTIVATED.	Type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`mLModelRefList`	This attribute holds a DN list of `MLModel` (See TS 28.105 [105]) .	type: DN multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`aIMLInferenceFunctionRefList`	This attribute holds a DN list of `AIMLInferenceFunction` (See TS 28.105 [105]) .	type: DN multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`TrustAfInfo.sNssaiInfoList`	It represents S-NSSAIs and DNNs supported by the trust AF. allowedValues: N/A	type: SnssaiInfoItem multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`SnssaiTsctsfInfoItem.dnnInfoList`	It represents list of parameters supported by the TSCTSF per DNN. allowedValues: N/A	type: DnnTsctsfInfoItem multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`DnnTsctsfInfoItem.dnn`	It represents supported DNN or Wildcard DNN if the TSCTSF supports all DNNs for the related S-NSSAI. The DNN shall contain the Network Identifier and it may additionally contain an Operator Identifier. If the Operator Identifier is not included, the DNN is supported for all the PLMNs in the plmnList of the NF Profile. allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`mlModelInterInfo`	This attribute defines the list of NWDAF vendors that are allowed to retrieve ML models from the NWDAF containing MTLF. The absence of this attribute indicates that none of the NWDAF vendors can retrieve the ML models. allowedValues: 6 decimal digits; if the SMI code has less than 6 digits, it shall be padded with leading digits "0" to complete a 6-digit string value.	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False

flCapabilityType	This attribute defines the federated learning capability type supported by NWDAF containing MTLF. allowedValues: "FL_SERVER" indicates NWDAF containing MTLF as Federated Learning Server, "FL_CLIENT" indicates NWDAF containing MTLF as Federated Learning Client, "FL_SERVER_AND_CLIENT" indicates NWDAF containing MTLF as Federated Learning Server and Client.	type: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
flTimeInterval	This attribute defines the time window at which the indicated `flCapabilityType` supported by NWDAF MTLF is available. This attribute shall be present only if `flCapabilityType` attribute is present. allowedValues: N/A	type: TimeWindow multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: True
qFMonitoredSatelliteBackhaulCategories	It specifies the satellite backhaul categories for which the QoS monitoring per QoS flow per UE is to be performed. allowedValues: "DYNAMIC_GEO" "DYNAMIC_MEO" "DYNAMIC_LEO" "DYNAMIC_OTHER_SAT"	type: ENUM multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
AMFFunction.sliceExpiryInfo	This provides information related to a network slice validity.	type: `SliceExpiryInfo` multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
expiryTime	This attribute provides information about the time at which the slice is scheduled to be expired as it is not required anymore. This attribute will be set based on the `sliceAvailability` coming as part of ServiceProfile.	type: `DateTime` multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
servedPcscfInfoList	This attribute contains all the pcscfInfo attributes locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedNfInfo	This attribute contains information of other NFs without corresponding NF type specific Info extensions locally configured in the NRF or the NRF received during NF registration. The key of the map is the nfInstanceId of the NF. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedAanfInfoList	This attribute contains the aanfInfoList attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False

PcscfInfo.dnnList	This attribute represents DNNs supported by the P-CSCF. The DNN shall contain the Network Identifier and it may additionally contain an Operator Identifier. If the Operator Identifier is not included, the DNN is supported for all the PLMNs in the plmnList of the NF Profile. If not provided, the P-CSCF can serve any DNN. allowedValues: N/A	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
gmFqdn	This attribute represents FQDN of the P-CSCF for the Gm interface. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
gmIpv4Addresses	This attribute represents list of IPv4 addresses of of the P-CSCF for the Gm interface. allowedValues: N/A	type: Ipv4Addr multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
gmIpv6Addresses	This attribute represents list of IPv6 addresses of of the P-CSCF for the Gm interface. allowedValues: N/A	type: Ipv6Addr multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
mwFqdn	This attribute represents FQDN of the P-CSCF for the Mw interface. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
mwIpv4Addresses	This attribute represents list of IPv4 addresses of of the P-CSCF for the Mw interface. allowedValues: N/A	type: Ipv4Addr multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
mwIpv6Addresses	This attribute represents list of IPv6 addresses of of the P-CSCF for the Mw interface. allowedValues: N/A	type: Ipv6Addr multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedIpv4AddressRanges	This attribute represents list of ranges of UE IPv4 addresses used on the Gm interface, served by P-CSCF. The absence of this attribute does not mean the P-CSCF can serve any IPv4 address. allowedValues: N/A	type: Ipv4AddressRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
servedIpv6PrefixRanges	This attribute represents list of ranges of UE IPv6 prefixes used on the Gm interface, served by P-CSCF. The absence of this attribute does not mean the P-CSCF can serve any IPv6 prefix. allowedValues: N/A	type: Ipv6PrefixRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
AMFFunction.satelliteBackhaulInfoList	This attribute defines the list of satellite backhaul information, including satellite backhaul categoty and corresponding information of (R)AN. allowedValues: N/A	type: SatelliteBackhaulInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False

`SatelliteBackhaulInfo.nTNGl` `obalRanNodeID`	It specifies the unique identifier of a (R)AN node for NTN scenario. It is used to identify which (R)AN node the satellite backhaul type is applicable to. allowedValues: N/A	type: NTNGlobalRanNode ID multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`SatelliteBackhaulInfo.satel` `liteBackhaulCategory`	Define the type of the satellite used in the backhaul. Only a single backhaul category can be indicated. allowedValues: "GEO" "MEO" "LEO" "OTHER_SAT" "DYNAMIC_GEO" "DYNAMIC_MEO" "DYNAMIC_LEO" "DYNAMIC_OTHER_SAT" "NON_SATELLITE"	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`SatelliteBackhaulInfo.geoSa` `telliteId`	Unique identifier of a GEO satellite. See e.g. clause 5.43 in 3GPP TS 23.501 [2]. It shall be formatted as a fixed 5-digit string, padding with leading digits "0" to complete a 5-digit length. Pattern: '^[0-9]{5}$' allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NTNGlobalRanNodeID. pLMNId`	This attribute represents a PLMN Identity. allowedValues: N/A	type: `PLMNId` multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NTNGlobalRanNodeID.n3IwfId`	This represents the identifier of the N3IWF ID. (Ref. clause 9.3.1.57 of 3GPP TS 38.413 [11]) allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NTNGlobalRanNodeID.gNbId`	This represents the identifier of the gNB. (Ref. clause 8.2 of 3GPP TS 38.300 [3]) allowedValues: `0..4294967295`	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NTNGlobalRanNodeID.ngeNbId`	This represents the identifier of the ng-eNB ID. (Ref. clause 9.3.1.8 of 3GPP TS 38.413 [11]) allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NTNGlobalRanNodeID.wagfId`	This represents the identifier of the W-AGF ID. (Ref. clause 9.3.1.162 of 3GPP TS 38.413 [11]) allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NTNGlobalRanNodeID.tngfId`	This represents the identifier of the TNGF ID. (Ref. clause 9.3.1.161 of 3GPP TS 38.413 [11]) allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`NTNGlobalRanNodeID.twifId`	This represents the TWIF identification. (Ref. clause 9.3.1.153 of 3GPP TS 38.413 [11]) allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`SMFFunction.dnaiSatelliteMappingList`	It specifies the mapping relationship between satellite ID and at least one DNAI. allowedValues: N/A	type: DnaiSatelliteMapping multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`DnaiSatelliteMapping.dnaiList`	List of Data network access identifiers supported for this DNN. allowedValues: DNAI (Data network access identifier), see clause 5.6.7 of 3GPP TS 23.501 [2]. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`DnaiSatelliteMapping.geoSatelliteId`	Unique identifier of a GEO satellite. See e.g. clause 5.43 in 3GPP TS 23.501 [2]. allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`mdtUserConsentReqList`	It represents a list of MDT measurement names that are subject to user consent at MDT activation, as defined in clause 4.4.1.	See `mdtUserConsentReqList` in clause 4.4.1.
`mappedCellIdInfoList`	It provides the list of mapping between GEO area and Mapped Cell ID. allowedValues: Not applicable	type: MappedCellIdInfo multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`ephemerisInfos`	This is the list of Ephemeris related information. See clause 4.3.79. allowedValues: N/A	type: Ephemeris multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`trpInfoList`	This is the list of TRP (Transmission-Reception Point) related information on LMF (see TS 38.305 [107] clause 5.4.4). allowedValues: N/A	type: TrpInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`TrpInfo.gNBId`	It identifies a gNB within a PLMN. The gNB ID is part of the NR Cell Identifier (NCI) of the gNB cells. See "gNB Identifier (gNB ID)" of subclause 8.2 of TS 38.300 [3]. See "Global gNB ID" in subclause 9.3.1.6 of TS 38.413 [5]. allowedValues: `0..4294967295`	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`TrpInfo.trpMappingInfoList`	This is the list of TRP mapping between satellite and TRPs. allowedValues: N/A	type: TrpMappingInfo multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False

`TrpMappingInfo.satelliteId`	This attribute indicates satellite Id. It shall be formatted as a fixed 5-digit string, padding with leading digits "0" to complete a 5-digit length. allowedValues: Follow the pattern: '^[0-9]{5}$'	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`TrpMappingInfo.trpIds`	This attribute indicates TRPs uniquely within an NG-RAN node (see TS 38.455 [108] clause 9.2.24). A gNB may serve several TRPs. For NTN, a TRP may be located on board the satellite. allowedValues: `1..65535`	type: Integer multiplicity: * isOrdered: false isUnique: True defaultValue: None isNullable: False
`servedHssInfoList`	This attribute contains list of HssInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`served5gDdnmfInfo`	This attribute contains all the 5gDdnmfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedMfafInfoList`	This attribute contains list of MfafInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedEasdfInfoList`	This attribute contains list of EasdfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedDccfInfoList`	This attribute contains list of DccfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedMbSmfInfoList`	This attribute contains list of MbSmfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`servedTsctsfInfoList`	This attribute contains list of TsctsfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False

servedMbUpfInfoList	This attribute contains list of MbUpfInfo attribute locally configured in the NRF or that the NRF received during NF registration. The key of the map is the nfInstanceId to which the map entry belongs to. allowedValues: N/A	type: AttributeValuePair multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
BsfInfo	This attribute represents information of a BSF NF Instance. allowedValues: N/A	type: BsfInfo multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
BsfInfo.ipv4AddressRanges	This attribute represents the list of ranges of IPv4 addresses handled by BSF. If not provided, the BSF can serve any IPv4 address. allowedValues: N/A	type: Ipv4AddressRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
BsfInfo.dnnList	This attribute represents the list of DNNs handled by the BSF. The DNN shall contain the Network Identifier and it may additionally contain an Operator Identifier. If the Operator Identifier is not included, the DNN is supported for all the PLMNs in the plmnList of the NF Profile. If not provided, the BSF can serve any DNN. allowedValues: N/A	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
BsfInfo.ipDomainList	This attribute represents the list of IPv4 address domains, as described in clause 6.2 of 3GPP TS 29.513 [28], handled by the BSF. If not provided, the BSF can serve any IP domain. allowedValues: N/A	type: TAIRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
BsfInfo.ipv6PrefixRanges	This attribute represents the list of ranges of IPv6 prefixes handled by the BSF. If not provided, the BSF can serve any IPv6 prefix. allowedValues: N/A	type: Ipv6PrefixRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
BsfInfo.rxDiamHost	This attribute represents the Diameter host of the Rx interface for the BSF. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
BsfInfo.rxDiamRealm	This attribute represents the Diameter realm of the Rx interface for the BSF. See TS 29.571 [61]. String contains a Diameter Identity (FQDN). allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
BsfInfo.groupId	This attribute represents the identity of the BSF group that is served by the BSF instance. If not provided, the BSF instance does not pertain to any BSF group. allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
BsfInfo.supiRanges	This attribute represents list of ranges of SUPI's served by the BSF instance allowedValues: N/A	type: SupiRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False

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`BsfInfo.gpsiRanges`	This attribute represents list of ranges of GPSI's served by the BSF instance allowedValues: N/A	type: IdentityRange multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`predefinedPccRuleSetRefs`	This holds a list of DN of `PredefinedPccRuleSet` instance. allowedValues: N/A	type: DN multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`nfStatus`	It represents status of the NF Instance. allowedValues: refer to TS 29.510[23] clause 6.1.6.3.7	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`plmnList`	It represents list of PLMN(s) of the Network Function. It shall be present if this information is available for the NF. allowedValues: N/A	type: PlmnId multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`sNssais`	It indicates S-NSSAIs of the Network Function. allowedValues: N/A	type: S-NSSAI multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`nfServices`	It indicates a list of NF Service Instances. allowedValues: N/A	type: NFService multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`serviceInstanceId`	It indicates the unique ID of the service instance within a given NF Instance. allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`serviceName`	It indicates name of the service instance. allowedValues:refer to TS 29.510[23] clause 6.1.6.3.11	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NFService.versions`	This attribute identifies the API versions (supported by the NF Service and if available, the corresponding retirement date of the NF Service. allowedValues: N/A	type: String multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`schema`	It indicates URI scheme (e.g. "http", "https"). allowedValues: "http", "https"	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`ipEndPoints`	It indicates IP address(es) and port information of the Network Function (including IPv4 and/or IPv6 address) where the service is listening for incoming service requests. allowedValues: N/A	type: IpEndPoint multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False

apiPrefix	It indicates an optional path segment(s) used to construct the {apiRoot} variable of the different API URIs allowedValues: N/A	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
NOTE 1:	If none of these parameters are provided, the AUSF can serve any SUPI managed by the PLMN of the AUSF instance. If "supiRanges" attribute is absent, and "groupId" is present, the SUPIs served by this AUSF instance is determined by the NRF (see TS 23.501 [2], clause 6.2.6.2).	
NOTE 2:	The combination of SUCI informations, e.g. Routing Indicator and Home Network Public Key Id, can be used as criteria for AUSF discovery. This may only be used by the HPLMN in roaming scenarios in this release of the specification, i.e. an AMF in a visited network does not use the Home Network Public Key ID for AUSF selection.	
NOTE 3:	If the suciInfos attribute is present and contains the routingInds sub-attribute, then the routingIndicators attribute shall also be present.	

5.5 Common notifications

5.5.1 Alarm notifications

This clause presents a list of notifications, defined in TS 28.111[109], 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	O	--
notifyAlarmListRebuilt	M	--
notifyChangedAlarm	O	--
notifyCorrelatedNotificationChanged	O	--
notifyChangedAlarmGeneral	O	--
notifyComments	O	--
notifyPotentialFaultyAlarmList	O	--

Note: `notifyChangedAlarm` is deprecated in TS 28.111 [109].

5.5.2 Configuration notifications

This clause presents a list of notifications, defined in 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	--
notifyMOIChanges	O	--
notifyEvent	O	--

5.5.3 Threshold Crossing notifications

This clause presents a list of notifications, defined in 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	

5A Information model definitions for SBA support of IMS

5A.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 28.705 [72], IOC, CSCFFunction	CSCFFunction
TS 28.705 [72], IOC, HSSFunction	HSSFunction
TS 28.705 [72], IOC, PCSCFFunction	PCSCFFunction

5A.2 Class diagram

5A.2.1 Class diagram for SBA support of IMS

5A.2.1.1 Relationships

The set of classes (e.g. IOCs) that encapsulate the information relevant for IMS network resource information for telecommunication network management purposes are described in TS 28.705 [72].

The set of classes IOC EP_RP for SBA support of SCSCFFunction, HSSFunction, PCSCFFunction and PCFFunction are described in this clause.

The Figure 5A.2.1.1-1 shows the transport view of SCSCFFunction NRM for SBA interfaces.

Figure 5A.2.1.1-1: Transport view of SCSCFFunction for SBA interfaces

The Figure 5A.2.1.1-2 shows the transport view of HSSFunction NRM for SBA interfaces.
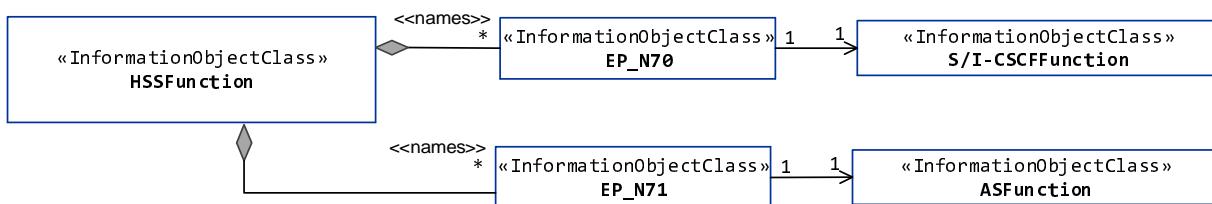
Figure 5A.2.1.1-2: Transport view of HSSFunction for SBA interfaces

The Figure 5A.2.1.1-3 shows the transport view of PCFFunction NRM for SBA interfaces.
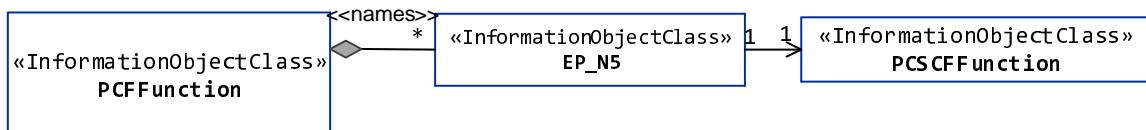
Figure 5A.2.1.1-3: Transport view of PCFFunction for SBA interfaces

The Figure 5A.2.1.1-4 shows the transport view of PCSCFFunction NRM for SBA interfaces.
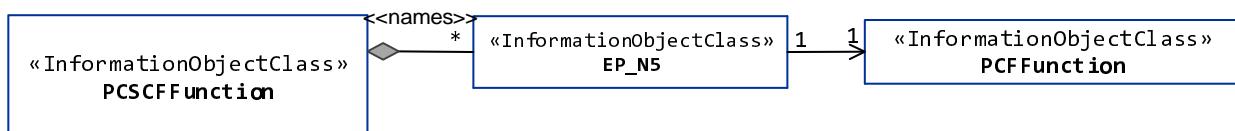
Figure 5A.2.1.1-4: Transport view of PCSCFFunction for SBA interfaces

5A.2.1.2   Inheritance

Figure 5A.2.1.2-1 shows the inheritance hierarchy from IOC EP_RP related to SBA interfaces of IMS nodes.
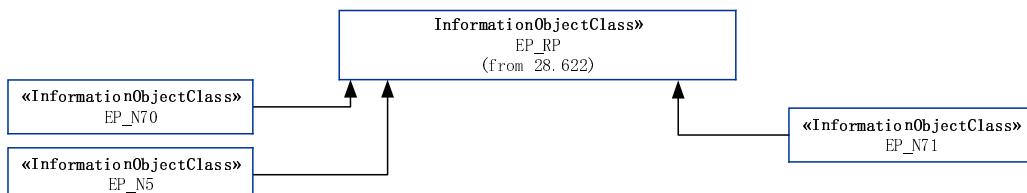
Figure 5A.2.1.2-1: Inheritance hierarchy from IOC EP_RP related to SBA interfaces of IMS

5A.3   Class definitions

5A.3.1   `EP_N5`

5A.3.1.1   Definition

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

5A.3.1.2   Attributes

The EP_N5 IOC includes attributes inherited from EP_RP IOC (defined in 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

5A.3.2 EP_N70

5A.3.2.1 Definition

This IOC represents the N70 interface between S/I-CSCF and HSS, which is defined in 3GPP TS 23.501 [2].

5A.3.2.2 Attributes

The EP_N70 IOC includes attributes inherited from EP_RP IOC (defined in 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

5A.3.3 EP_N71

5A.3.3.1 Definition

This IOC represents the N71 interface between AF and HSS, which is defined in 3GPP TS 23.501 [2].

5A.3.3.2 Attributes

The EP_N71 IOC includes attributes inherited from EP_RP IOC (defined in 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

6 Information model definitions for network slice NRM

6.1 Imported information entities and local labels

Label reference	Local label
TS 28.622 [30], IOC, Top	Top
TS 28.622 [30], IOC, SubNetwork	SubNetwork
TS 28.622 [30], IOC, ManagedFunction	ManagedFunction
TS 28.658 [19], dataType, PLMNId	PLMNId
TS 28.622 [30], dataType, ProcessMonitor	ProcessMonitor
TS 28.622 [30], dataType, GeoArea	GeoArea
TS 28.622 [30], dataType, Tai	Tai
TS 28.622 [30], choice, TimeWindow	TimeWindow
TS 28.622 [30], choice, SchedulingTime	SchedulingTime

6.2 Class diagram

6.2.1 Relationships
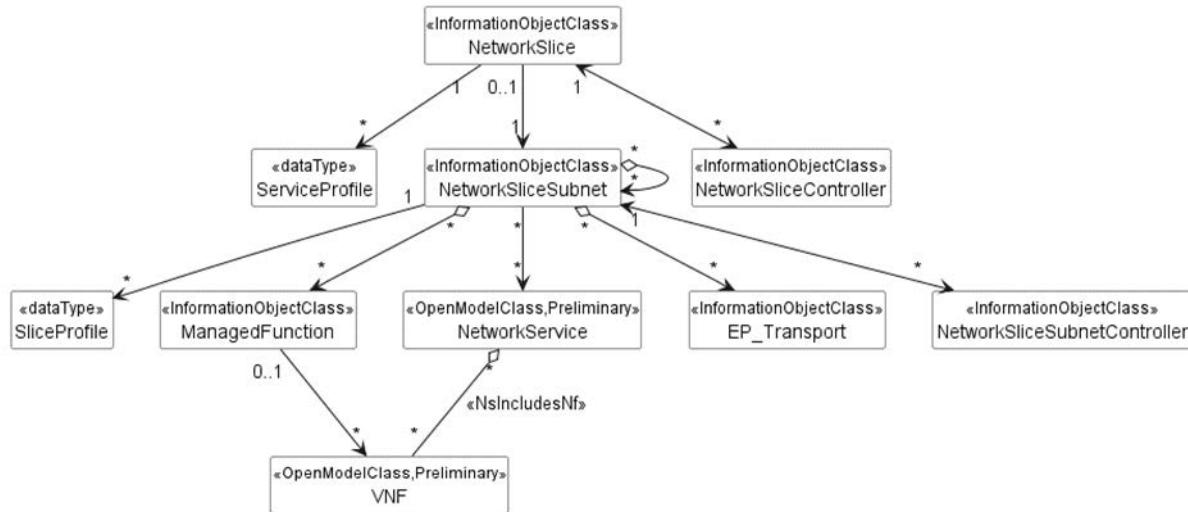
Figure 6.2.1-1: Network slice NRM fragment relationship

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)
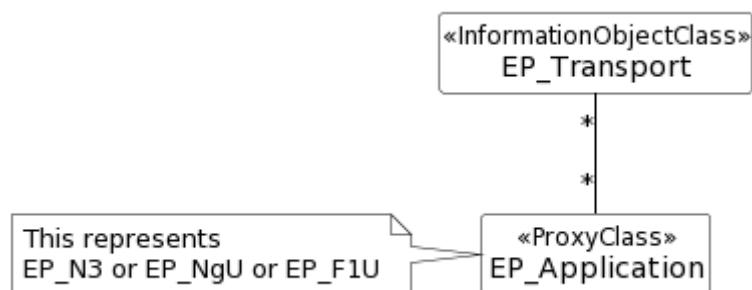
Figure 6.2.1-2: Transport EP NRM fragment relationship
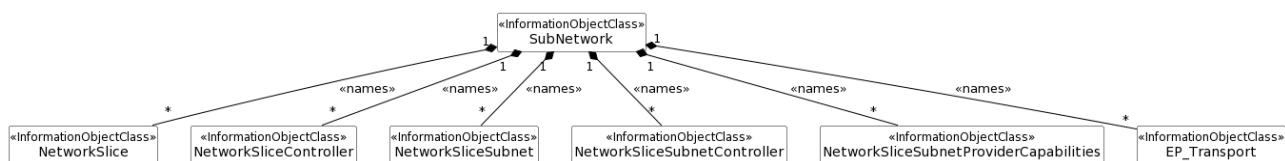
Figure 6.2.1-3: Containment relationship for network slice fragment
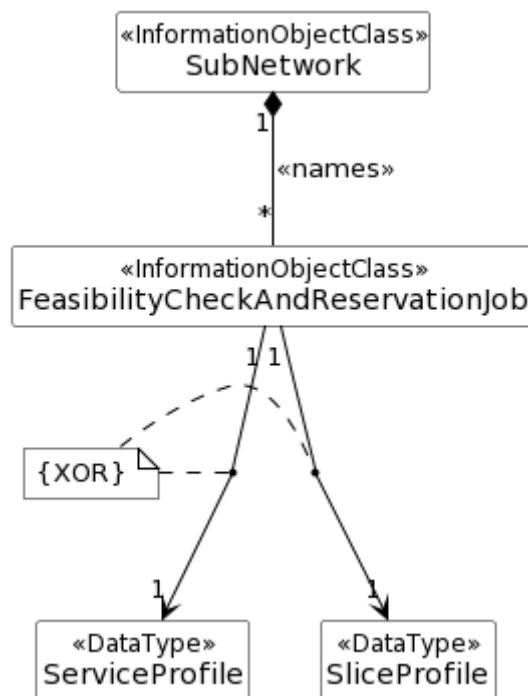
Figure 6.2.1-4: Containment relationship for feasibility check and resource reservation NRM fragment
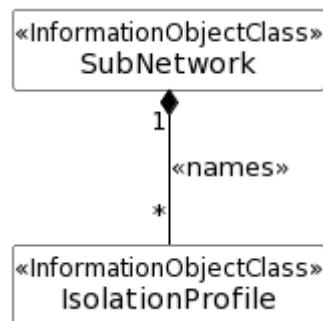
Figure 6.2.1-5: Containment relationship for isolation profile fragment
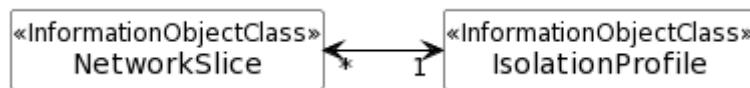
Figure 6.2.1-6: IsolationProfile NRM fragment relationship related to NetworkSlice
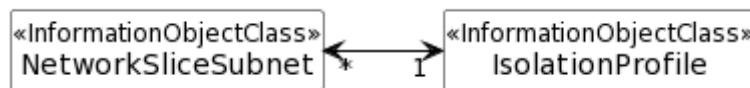
Figure 6.2.1-7: IsolationProfile NRM fragment relationship related to NetworkSliceSubnet

6.2.2 Inheritance
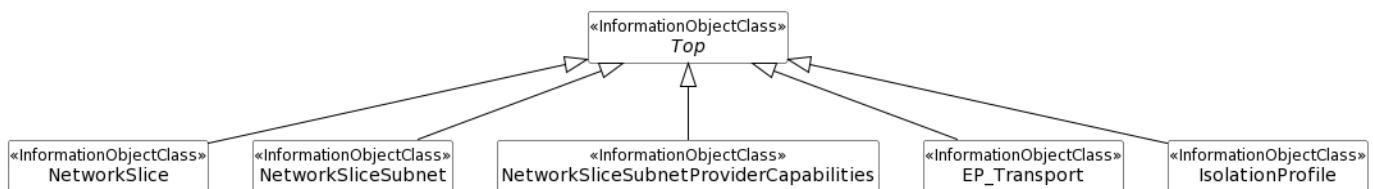
Figure 6.2.2-1: Network slice inheritance relationship
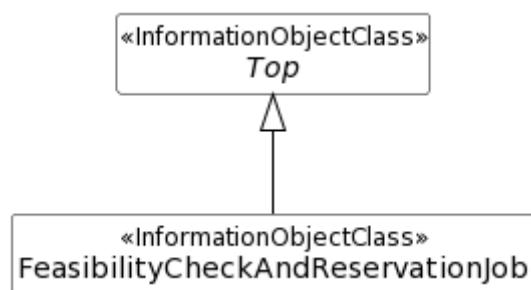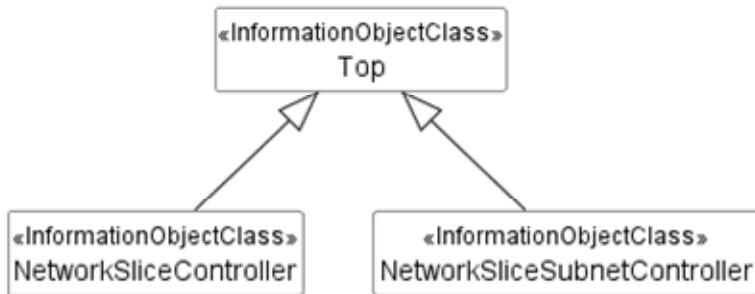
Figure 6.2.2-2: inheritance relationship for feasibility check NRM fragment

Figure 6.2.2-3: inheritance relationship for NetworkSliceController and NetworkSliceSubnetController NRM fragment

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 [70].

6.3.1.2   Attributes

The NetworkSlice IOC includes attributes inherited from Top IOC (defined in 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
networkSliceController Ref	M	T	F	F	T
isolationProfileRef	CM	T	T	F	T

6.3.1.3   Attribute constraints

Name	Definition
isolationProfileR ef S	Condition: Network slicing isolation feature is supported.

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 in a 5G network. For more information about the network slice subnet instance, see 3GPP TS 28.530 [70].

The NetworkSliceSubnet can be categorized by following types:

- RANSliceSubne represent the RAN network slice subnet in a 5G network, which is associated to one or multiple "RANSliceSubnetProfile".

- CNSliceSubnet represent the CN network slice subnet in a 5G network, which is associated to one or multiple "CNSliceSubnetProfile".

- TopSliceSubnet represent the top network slice subnet in a 5G network, which is associated to one or multiple "TopSliceSubnetProfile".

The attribute epTransportRef is used to specify a list of EP_Transport instance as transport resources to be aggregated to a NetworkSliceSubnet instance. The MnS consumer determines the EP_Transport instance(s) to support EP_Application instances as part of the NetworkSliceSubnet instance and request the MnS producer to configure the attribute epTransportRef of the NetworkSliceSubnet.

The EP_Transport is name contained by SubNetwork, and an EP_Transport instance can be a new instance created for the EP_Application instances as part of NetworkSliceSubnet instance or an existing instance reused for EP_Application instance.

An instance of NetworkSliceSubnet that represents top network slice subnet shall be associated with one NetworkSlice instance. An instance of NetworkSliceSubnet that represents CN network slice subnet or RAN network slice subnet shall be associated with one instance of NetworkSliceSubnet that represents the top network slice subnet. An instance of NetworkSliceSubnet that represents CN network slice subnet or RAN network slice subnet may be associated with one or more constituent NetworkSliceSubnet instance(s) represented by attribute networkSliceSubnetRef.

6.3.2.2 Attributes

The NetworkSliceSubnet IOC includes attributes inherited from Top IOC (defined in 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
networkSliceSubnetType	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
networkSliceSubnetControllerRef	M	T	F	F	T
isolationProfileRef	CM	T	T	F	T

6.3.2.3 Attribute constraints

Name	Definition

`nsInfo` S	Condition: It shall be supported if the NetworkSliceSubnet instance is realized in the virtualized environment.
`isolationProfileRef` S	Condition: Network slicing isolation feature is supported.

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 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
`dLLatency`	O	T	T	F	T
`uLLatency`	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
`dLDeterministicComm`	O	T	T	F	T
`uLDeterministicComm`	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
`dLMaxPktSize`	O	T	T	F	T
`uLMaxPktSize`	O	T	T	F	T
`maxNumberofPDUSessions`	O	T	T	F	T
`kPIMonitoring`	O	T	T	F	T
`userMgmtOpen`	O	T	T	F	T
`v2XCommModels`	O	T	T	F	T
`termDensity`	O	T	T	F	T
`activityFactor`	O	T	T	F	T
`uESpeed`	O	T	T	F	T
`survivalTime`	O	T	T	F	T
`radioSpectrum`	O	T	T	F	T
`dLReliability`	O	T	T	F	T
`uLReliability`	O	T	T	F	T
`maxDLDataVolume`	O	T	T	F	T
`maxULDataVolume`	O	T	T	F	T

nBIoT	O	T	T	F	T
synchronicity	O	T	T	F	T
positioning	O	T	T	F	T
sliceSimultaneousUse	O	T	T	F	T
energyEfficiency	O	T	T	F	T
nssaaSupport	O	T	T	F	T
n6Protection	O	T	T	F	T
nonIPSupport	O	T	T	F	T
supportedDataNetworks	O	T	T	F	T
dataNetworkAccess	O	T	T	F	T
sliceAvailability	O	T	T	F	T
dLPktDelayVariation	O	T	T	F	T
uLPktDelayVariation	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
CNSliceSubnetProfile	CM	T	T	F	T
RANSliceSubnetProfile	CM	T	T	F	T
TopSliceSubnetProfile	CM	T	T	F	T

6.3.4.3   Attribute constraints

Name	Definition
CNSliceSubnetProfileS	Condition: CN domain slice profile is supported.
RANSliceSubnetProfileS	Condition: RAN domain slice profile is supported.
TopSliceSubnetProfileS	Condition: Top network slice subnet is supported.

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: This attribute shall be supported when this data type is used in the service requirement attribute of GST in the character category.

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	CM	T	F	T	T
support	M	T	F	F	T

6.3.7.3 Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on delay tolerance (GSMA attribute) in ServiceProfile.

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 in downlink or uplink. Periodic traffic refers to the type of traffic with periodic transmissions.

6.3.8.2 Attributes

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

6.3.8.3 Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only *when requirements are being defined on* deterministic communication for periodic user traffic per network slice (GSMA attribute) in ServiceProfile.

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   XLThpt<<dataType>>

6.3.9.1   Definition

This data type can be used to represent downlink or uplink throughput per network slice , per network slice subnet,or per UE in a network slice (see clause 3.4.5, 3.4.6, 3.4.31 and 3.4.32 of GSMA NG.116 [50]).

6.3.9.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servAttrCom	CM	T	F	F	T
guaThpt	O	T	T	F	T
maxThpt	O	T	T	F	T

6.3.9.3   Attribute constraints

Name	Definition
servAttrCom S	Condition: This [attribute] is mandatory only *when requirements are being defined on* throughput per: network slice (GSMA attribute), per UE in a network slice (GSMA attribute) in ServiceProfile.

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   Void

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]) in downlink or uplink.

6.3.11.2   Attributes

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

6.3.11.3   Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only *when requirements are being defined on* maximum packet size per network slice (GSMA attribute) in ServiceProfile.

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 MaxNumberofPDUSessions <<dataType>>

6.3.12.1 Definition

This data type represents the maximum number of concurrent PDU sessions supported by the network slice (see clause 3.4.16 of GSMA NG.116 [50]).

6.3.12.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servAttrCom	CM	T	F	T	T
3GPPNoOfPDUSessions	CM	T	T	F	T
non3GPPnOofPDUSessions	CM	T	T	F	T

6.3.12.3 Attribute constraints

Name	Definition
3GPPNoOfPDUSessions S	Condition: This attribute is mandatory only *when requirements are being defined for 3GPP access type.*
non3GPPNoOfPDUSessions S	Condition: This attribute is mandatory only *when requirements are being defined for non 3GPP access type.*
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on maximum number of PDU sessions per network slice (GSMA attribute) in ServiceProfile.

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	CM	T	F	T	T
kPIList	M	T	F	F	T

6.3.14.3 Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on performance monitoring (GSMA attribute) in ServiceProfile.

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	CM	T	F	T	T
support	M	T	F	F	T

6.3.15.3 Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on user management openness (GSMA attribute) in ServiceProfile.

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	CM	T	F	T	T
v2XMode	M	T	F	F	T

6.3.16.3 Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on V2X

	communication mode (GSMA attribute) in ServiceProfile.

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	CM	T	F	T	T
density	M	T	T	F	T

6.3.17.3   Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on terminal density (GSMA attribute) in ServiceProfile.

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 which is part of a RAN or CN SubNetwork, including reference to transport level information.

MnS consumer can request MnS producer to create an EP_transport instance for one or multiple EP_Application instance(s) of one or multiple NetworkSliceSubnet(s).

The attribute "epApplicationRef" is used to specify a list of EP_N3 instances, EP_NgU instances and EP_F1U instances aggregated to the EP_transport instance.

The attribute "externalEndPointRefList" contains information required to identify associated model instances which reside outside of the 3GPP MIB.

MnS consumer can obtain all the information of the EP_Transport associated to a NetworkSliceSubnet from MnS producer and send to corresponding TN Management System as transport network related requirements.

6.3.18.2   Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
ipAddress	M	T	F	F	T
localLogicalInterfaceInfo	M	T	T	F	T
qosProfile	O	T	T	F	T
Attribute related to role					
epApplicationRef	M	T	T	F	T
externalEndPointRefList	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 or <<IOC>>EP_F1U.

6.3.19.2   Attributes

See that defined in <<IOC>>EP_N3 or <<IOC>>EP_NgU or <<IOC>>EP_F1U.

6.3.19.3   Attribute constraints

See respective IOCs.

6.3.19.4   Notifications

See respective IOCs.

6.3.20   NBIoT <<dataType>>

6.3.20.1   Definition

This data type represents NB-IoT Support (see clause 3.4.14 of GSMA NG.116 [50]).

6.3.20.2   Attributes

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

6.3.20.3   Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on NB-IoT support (GSMA attribute) in ServiceProfile.

6.3.20.4 Notifications

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

6.3.21 Void

6.3.22 Void

6.3.23 `CNSliceSubnetProfile<<dataType>>`

6.3.23.1 Definition

This data type represents the requirements for CN slice profile.

6.3.23.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
maxNumberofUEs	O	T	T	F	T
dLLatency	O	T	T	F	T
uLLatency	O	T	T	F	T
dLThptPerSliceSubnet	O	T	T	F	T
dLThptPerUE	O	T	T	F	T
uLThptPerSliceSubnet	O	T	T	F	T
uLThptPerUE	O	T	T	F	T
maxNumberofPDUSessions	O	T	T	F	T
coverageAreaTAList	O	T	T	F	T
dLReliability	O	T	T	F	T
uLReliability	O	T	T	F	T
resourceSharingLevel	O	T	T	F	T
dLMaxPktSize	O	T	T	F	T
uLMaxPktSize	O	T	T	F	T
sliceSimultaneousUse	O	T	T	F	T
delayTolerance	O	T	T	F	T
energyEfficiency	O	T	T	F	T
dLDeterministicComm	O	T	T	F	T
uLDeterministicComm	O	T	T	F	T
survivalTime	O	T	T	F	T
nssaaSupport	O	T	T	F	T
n6Protection	O	T	T	F	T
nonIPSupport	O	T	T	F	T
availability	O	T	T	F	T
supportedDataNetworks	O	T	T	F	T
dataNetworkAccess	O	T	T	F	T
sliceSubnetAvailability	O	T	T	F	T
dLPktDelayVariation	O	T	T	F	T
uLPktDelayVariation	O	T	T	F	T

6.3.23.3 Attribute constraints

None.

6.3.23.4 Notifications

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

6.3.24 RANSliceSubnetProfile<<dataType>>

6.3.24.1 Definition

This data type represents the requirements for RAN slice profile.

6.3.24.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
coverageAreaTAList	O	T	T	F	T
uEMobilityLevel	O	T	T	F	T
resourceSharingLevel	O	T	T	F	T
maxNumberofUEs	O	T	T	F	T
activityFactor	O	T	T	F	T
dLThptPerSliceSubnet	O	T	T	F	T
dLThptPerUE	O	T	T	F	T
uLThptPerSliceSubnet	O	T	T	F	T
uLThptPerUE	O	T	T	F	T
uESpeed	O	T	T	F	T
dLReliability	O	T	T	F	T
uLReliability	O	T	T	F	T
nROperatingBands	O	T	T	F	T
dLLatency	O	T	T	F	T
uLLatency	O	T	T	F	T
delayTolerance	O	T	T	F	T
sliceSimultaneousUse	O	T	T	F	T
dLMaxPktSize	O	T	T	F	T
uLMaxPktSize	O	T	T	F	T
energyEfficiency	O	T	T	F	T
termDensity	O	T	T	F	T
survivalTime	O	T	T	F	T
dLDeterministicComm	O	T	T	F	T
uLDeterministicComm	O	T	T	F	T
positioning	O	T	T	F	T
synchronicity	O	T	T	F	T
availability	O	T	T	F	T
kPIMonitoring	O	T	T	F	T
maxDLDataVolume	O	T	T	F	T
maxULDataVolume	O	T	T	F	T
dLPktDelayVariation	O	T	T	F	T
uLPktDelayVariation	O	T	T	F	T

6.3.24.3 Attribute constraints

None.

6.3.24.4 Notifications

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

6.3.25 TopSliceSubnetProfile<<dataType>>

6.3.25.1 Definition

This data type represents the requirements for a top network slice subnet, a network slice subnet directly associated with the network slice. It includes an aggregated list of the attributes from RANSliceSubnetProfile and CNSliceSubnetProfile.

6.3.25.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dLLatency	O	T	T	F	T
uLLatency	O	T	T	F	T
maxNumberofUEs	O	T	T	F	T
dLThptPerSliceSubnet	O	T	T	F	T
dLThptPerUE	O	T	T	F	T
uLThptPerSliceSubnet	O	T	T	F	T
uLThptPerUE	O	T	T	F	T
dLMaxPktSize	O	T	T	F	T
uLMaxPktSize	O	T	T	F	T
maxNumberofPDUSessions	O	T	T	F	T
nROperatingBands	O	T	T	F	T
sliceSimultaneousUse	O	T	T	F	T
delayTolerance	O	T	T	F	T
energyEfficiency	O	T	T	F	T
termDensity	O	T	T	F	T
activityFactor	O	T	T	F	T
coverageAreaTAList	O	T	T	F	T
resourceSharingLevel	O	T	T	F	T
uEMobilityLevel	O	T	T	F	T
uESpeed	O	T	T	F	T
dLReliability	O	T	T	F	T
uLReliability	O	T	T	F	T
dLDeterministicComm	O	T	T	F	T
uLDeterministicComm	O	T	T	F	T
survivalTime	O	T	T	F	T
positioning	O	T	T	F	T
synchronicity	O	T	T	F	T
nssaaSupport	O	T	T	F	T
n6Protection	O	T	T	F	T
nonIPSupport	O	T	T	F	T
availability	O	T	T	F	T
kPIMonitoring	O	T	T	F	T
maxDLDataVolume	O	T	T	F	T
maxULDataVolume	O	T	T	F	T
supportedDataNetworks	O	T	T	F	T
dataNetworkAccess	O	T	T	F	T
sliceSubnetAvailability	O	T	T	F	T
dLPktDelayVariation	O	T	T	F	T
uLPktDelayVariation	O	T	T	F	T

6.3.25.3 Attribute constraints

None.

6.3.25.4 Notifications

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

6.3.26 Positioning <<dataType>>

6.3.26.1 Definition

This data type represents positioning support (see clause 3.4.20 of GSMA NG.116 [50]).

6.3.26.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servAttrCom	CM	T	F	T	T
availability	O	T	F	F	T
predictionFrequency	O	T	T	F	T
accuracy	O	T	T	F	T

6.3.26.3 Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on positioning support (GSMA attribute) in ServiceProfile.

6.3.26.4 Notifications

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

6.3.27 Synchronicity <<dataType>>

6.3.27.1 Definition

This data type represents synchronicity support (see clause 3.4.29 of GSMA NG.116 [50]).

6.3.27.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servAttrCom	CM	T	F	T	T
availability	O	T	F	F	T
accuracy	O	T	T	F	T

6.3.27.3 Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on synchronicity support (GSMA attribute) in ServiceProfile.

6.3.27.4 Notifications

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

6.3.28 Void

6.3.29 Void

6.3.30 `EnergyEfficiency <<dataType>>`

6.3.30.1 Definition

This data type represents `energyEfficiency` support (see clause 3.4.7 of GSMA NG.116 [50]).

6.3.30.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servAttrCom	CM	T	F	T	T
performance	O	T	T	F	T

6.3.30.3 Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on energy effieciency support (GSMA attribute) in ServiceProfile.

6.3.30.4 Notifications

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

6.3.31 `RadioSpectrum <<dataType>>`

6.3.31.1 Definition

This data type represents the radio spectrum in which the network slice should be supported (see clause 3.4.21 of GSMA NG.116 [50]).

6.3.31.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servAttrCom	CM	T	F	T	T
nROperatingBands	M	T	T	F	T

6.3.31.3 Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on radio spectrum (GSMA attribute) in ServiceProfile.

6.3.31.4 Notifications

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

6.3.32 N6Protection <<dataType>>

6.3.32.1 Definition

This data type defines required security functions and corresponding rules of each function. It represents the N6 interface protection information in ServiceProfile and CNSliceSubnetProfile for CN.

6.3.32.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servAttrCom	CM	T	F	T	T
secFuncList	M	T	T	F	T

6.3.32.3 Attribute constraints

Name	Definition
servAttrCom S	Condition: Only valid when the attribute is in ServiceProfile.

6.3.32.4 Notifications

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

6.3.33 SecFunc <<dataType>>

6.3.33.1 Definition

This data type defines each security control functions/features required by the Network Slice or Network Slice Subnet consumer. E.g. Firewall, NAT, antimalware, parental control, DDoS protection function, etc.

6.3.33.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
secFunId	M	T	F	T	T
secFunType	M	T	F	F	T
secRules	O	T	T	T	T

6.3.33.3 Attribute constraints

None.

6.3.33.4 Notifications

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

6.3.34 `NSSAASupport <<dataType>>`

6.3.34.1 Definition

This data type represents the Network Slice Specific Authentication and Authorization (NSSAA) (See Clause 3.4.37 of GSMA NG.116 [50]).

6.3.34.2 Attributes

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

6.3.34.3 Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on Network Slice Specific Authentication and Authorization (GSMA attribute) in ServiceProfile.

6.3.34.4 Notifications

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

6.3.35 `LogicalInterfaceInfo <<dataType>>`

6.3.35.1 Definition

This data type represents the logical interface information of the logical transport interface.

6.3.35.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
logicalInterfaceType	M	T	T	F	T
logicalInterfaceId	M	T	T	F	T
systemName	O	T	T	F	T
portName	O	T	T	F	T
routingProtocol	O	T	T	F	T

6.3.35.3 Attribute constraints

None.

6.3.35.4 Notifications

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

6.3.36 `NetworkSliceSubnetProviderCapabilities`

6.3.36.1 Definition

The NetworkSliceSubnetProviderCapabilities IOC store the capabilities/features of the network slice subnet provider in terms of network slice subnets it can manage/provide. The attributes of this IOC can be queried, using getMOIAttributes operation, to know the capabilities of the provider. Based on the capabilities decision can be made e.g derivation of subnet requirements by the consumer.

6.3.36.2 Attributes

The NetworkSliceSubnetProviderCapabilities IOC includes attributes inherited from Top IOC (defined in TS 28.622[30]) and the following attributes. The attributes here are subjected to updates, e.g. after each successful subnet allocation or because of any other operator internals decision.

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dLLatency	M	T	F	F	T
uLLatency	M	T	F	F	T
dLThptPerSliceSubnet	M	T	F	F	T
uLThptPerSliceSubnet	M	T	F	F	T
coverageAreaTAList	M	T	F	F	T

6.3.36.3 Attribute constraints

None

6.3.36.4 Notifications

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

6.3.37 `FeasibilityCheckAndReservationJob`

6.3.37.1 Definition

This IOC represents a feasibility check and reservation job for network slicing related requirements (i.e. `ServiceProfile` for network slice related requirements, `SliceProfile` for network slice subnet related requirements) to determine whether the network slicing related requirements can be satisfied. It can be name-contained by `SubNetwork`.

When the MnS Consumer derives the network slicing related requirements (i.e. `ServiceProfile`, `SliceProfile`), before request the MnS producer to allocate or modify an NSI or NSSI, MnS consumer may express a feasibility check and reservation job requirement for the specified network slicing related requirements to MnS producer.

To express a feasibility check and reservation job requirement for specific network slicing related requirements (i.e. `ServiceProfile`, `SliceProfile`), MnS consumer needs to request MnS producer to create a `FeasibilityCheckAndReservationJob` instance on the MnS producer side with the network slicing related requirements specified, and to execute the feasibility check and resource reservation process.

For deletion of feasibility check and reservation job, the MnS consumer needs to request the MnS producer to delete the `FeasibilityCheckAndReservationJob` instance on the MnS producer side.

Attribute "`resourceReservation`" is used to represent MnS consumer's requirements for resource reservation for corresponding network slicing related requirements (i.e. `ServiceProfile`, `SliceProfile`). In case the value is "True", which means MnS producer needs to reserve corresponding resources (i.e. radio access network resources and/or core network resources) when the feasibility check result is feasible. In this case, attribute

"requestedReservationExpiration" is used to represent MnS's requirements for the validity period of the resource reservation, which is specified by MnS consumer. While "reservationExpiration" is used to represent the actual validity period of the resource reservation, which is specified by MnS producer based on requested reservation expiration from MnS consumer and its own reservation capabilities. After the period expires, no guarantees are given for the resources associated to the corresponding network slicing related requirements (i.e. ServiceProfile, SliceProfile). In case the value by is "False" which means MnS producer only check the feasibility for corresponding network slicing related requirements, no guarantee for the corresponding resources.

Attribute "RecommendationRequest" is used to represent MnS consumer's request for recommended requirements when the feasibility check result for corresponding network slicing related requirements (i.e. ServiceProfile and SliceProfile information) is infeasible. In case the value is "True", which means MnS producer needs to derive the value of "recommendedRequirements" as recommended network slicing related requirements (i.e. ServiceProfile and SliceProfile information) which can be supported by the MnS producer when the feasibility check result is infeasible and provide these recommendations to MnS consumer. The value of "recommendedRequirements" is a list of [attributeName of network slicing related requirements (i.e. ServiceProfile, SliceProfile), recommendedValueRange].

Attribute "feasibilityTimeWindow" represents MnS consumer's request for checking whether the network slicing related requirements (i.e. ServiceProfile and SliceProfile information) can be satisfied at a specified time window. If the resourceReservation is "TRUE", MnS producer also reserve the resources for the MnS consumer at the specified time window, which means the resources associated to the corresponding network slicing related requirements are only guaranteed for the MnS consumer at the specified time window.

To obtain the progress information of a feasibility check and reservation job, MnS consumer needs to request MnS producer to query the values of attribute "processMonitor".

To obtain the feasibility check result of a feasibility check and reservation job, MnS consumer needs to request MnS producer to query the values of attribute "feasibilityResult" and "inFeasibleReason" when the feasibility check and reservation job is finished. If the feasibility check result indicated as feasible, MnS consumer can request MnS producer to allocate a network slice or network slice subnet with the checked network slicing related requirements (i.e. ServiceProfile or SliceProfile). In case the feasibility check result is infeasible, MnS consumer may update the network slicing related requirements, and may trigger the feasibility check and reservation job again.

To obtain the resource reservation status, MnS consumer need to request MnS producer to query the value of the attribute "resourceReservationStatus ".

MnS producer will use the reserved resources to satisfy the corresponding network slicing related requirements in the allocation request. In case to use the reserved resources, MnS consumer will use the same ServiceProfileId or SliceProfileId value (which is obtained/queried from the FeasibilityCheckAndReservationJob) as input parameters for allocation request.

6.3.37.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
sliceProfile	CM	T	T	F	T
serviceProfile	CM	T	T	F	T
resourceReservation	O	T	T	F	T
recommendationRequest	O	T	T	F	T
requestedReservationExpiration	O	T	T	F	T
feasibilityTimeWindow	O	T	T	F	T
processMonitor	M	T	F	F	T
feasibilityResult	M	T	F	F	T
inFeasibleReason	O	T	F	F	T
resourceReservationStatus	O	T	F	F	T
reservationFailureReason	O	T	F	F	T
reservationExpiration	O	T	F	F	T
recommendedRequirements	O	T	F	F	T

NOTE: the feasibility check and resource reservation for TN part is not defined in the present document.

6.3.37.3   Attribute constraints

Name	Definition
`sliceProfile` S	Condition: The FeasibilityCheckAndReservationJob is used to check the feasibility and reserve resources for network slice subnet related requirements.
`serviceProfile` S	Condition: The FeasibilityCheckAndReservationJob is used to check the feasibility and reserve resources for network slice related requirements.

6.3.37.4   Notifications

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

6.3.38   `MaxNumberofUEs <<dataType>>`

6.3.38.1   Definition

This data type represents the maximum number of concurrent UEs supported by the network slice (see clause 3.4.17 of GSMA NG.116 [50]).

6.3.38.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servAttrCom	CM	T	F	T	T
3GPPNoOfUEs	CM	T	T	F	T
non3GPPNoOfUEs	CM	T	T	F	T

6.3.38.3   Attribute constraints

Name	Definition
`3GPPNoOfUEs` S	Condition: This attribute is mandatory only *when requirements are being defined for 3GPP access type.*
`non3GPPNoOfUEs` S	Condition: This attribute is mandatory only *when requirements are being defined for non 3GPP access type.*
`servAttrCom` S	Condition: This attribute is mandatory only when requirements are being defined on maximum number of concurrent UEs supported by the network slice (GSMA attribute) in ServiceProfile.

6.3.38.4   Notifications

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

6.3.39 NetworkSliceController

6.3.39.1 Definition

This IOC represents the network slice controller, that controls the lifecycle of the `NetworkSlice` MOI, with the requirements of a network slice in a 5G network. For more information about the network slice, see 3GPP TS 28.530 [70].

The MnS consumer communicates the network slice related requirements with either:

    a) `inputServiceProfile` attribute, in case of using `createMOI` operation (defined in TS 28.532 [35]) for network slice allocation.

    b) input parameter `attributeListIn`, in case of using `AllocateNsi` operation (defined in TS 28.531 [26]) for network slice allocation.

The attribute `serviceProfileId` defines the service profile identifier provided by the MnS producer. This attribute allows in uniquely identifying the network slice related requirements received from the MnS consumer. Attribute `operationalState` indicates the ability of the MnS producer to handle the network slice related requirements:

    - "`Enabled`": The MnS producer is running properly to fulfil the network slice related requirements.

    - "`Disabled`": The MnS producer is not running properly to fulfil the network slice related requirements.

Attribute `availabilityStatus` indicates the availability status of the fulfilment of network slice related requirements by the MnS producer：

    - "`dependency`": The MnS producer is not able to implement the network slice related requirement because some dependencies outside the control of the MnS producer cannot be fulfilled.

    - "`degraded`": The MnS producer is able to fulfil parts of the network slice related requirements only, hence the network slice is not able to fully comply with the request.

Attribute `administrativeState` allows the MnS consumer to suspend the implementation of the network slice related requirements:

    - "`Unlocked`": The MnS producer shall implement the network slice related requirements

    - "`Locked`": The MnS producer shall suspend the implementation of the network slice related requirements.

The `processMonitor` attribute represents the status of the fulfilment of the network slice related requirements by the `NetworkSliceController` and includes information the MnS consumer can use to monitor the progress and result of the implementation of the `NetworkSlice` object. The data type of this attribute is `ProcessMonitor`.

The attribute `networkSliceRef` shall be a DN of `NetworkSlice` IOC (defined in clause 6.3.1).

6.3.39.2 Attributes

This IOC includes attributes inherited from Top IOC (defined in TS 28.622[30]) and the following attributes:

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
inputServiceProfile	O	T	T	F	T
serviceProfileId	M	T	F	T	T
operationalState	M	T	F	F	T
administrativeState	M	T	T	F	T
availabilityStatus	O	T	F	F	T
processMonitor	O	T	T	F	T
Attribute related to role					
networkSliceRef	M	T	F	F	T

6.3.39.3 Attribute constraints

None.

6.3.39.4 Notifications

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

6.3.40 NetworkSliceSubnetController

6.3.40.1 Definition

This IOC represents the network slice subnet controller, that controls the lifecycle of the `NetworkSliceSubnet` MOI, with the requirements of a network slice subnet in a 5G network. For more information about the network slice subnet instance, see 3GPP TS 28.530 [70].

The MnS consumer communicates the network slice subnet related requirements with either:

a) `inputSliceProfile` attribute, in case of using `createMOI` operation (defined in TS 28.532 [35]) for network slice allocation.

b) input parameter `attributeListIn`, in case of using `AllocateNssi` operation (defined in TS 28.531 [26]) for network slice allocation.

The attribute `sliceProfileId` defines the service profile identifier provided by the MnS producer. This attribute allows in uniquely identifying the network slice related requirements received from the MnS consumer.
Attribute `operationalState` indicates the ability of the MnS producer to handle the network slice subnet related requirements:

- "`Enabled`": The MnS producer is running properly to fulfil the network slice subnet related requirements.

- "`Disabled`": The MnS producer is not running properly to fulfil the network slice subnet related requirements.

Attribute `availabilityStatus` indicates the availability status of the fulfilment of network slice subnet related requirements by the MnS producer:

- "`dependency`": The MnS producer is not able to implement the requirement because some dependencies outside the control of the MnS producer cannot be fulfilled.

- "`degraded`": The MnS producer is able to fulfil parts of the network slice subnet related requirements only.

Attribute `administrativeState` allows the MnS consumer to suspend the implementation of the network slice subnet related requirements:

- "`Unlocked`": The MnS producer shall implement the network slice subnet related requirements

- "`Locked`": The MnS producer shall suspend the implementation of the network slice subnet related requirements.

The `processMonitor` attribute represents the status of the fulfilment of the network slice subnet related requirements by the `NetworkSliceSubnetController` and includes information the MnS consumer can use to monitor the progress and result of the implementation of the `NetworkSubnetSlice` object.

The attribute `networkSliceSubnetRef` shall be a DN of `NetworkSliceSubnet` IOC (defined in clause 6.3.2).

6.3.40.2 Attributes

This IOC includes attributes inherited from Top IOC (defined in TS 28.622[30]) and the following attributes:

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable

inputSliceProfile	O	T	T	F	T
sliceProfileId	M	T	F	T	T
operationalState	M	T	F	F	T
administrativeState	M	T	T	F	T
availabilityStatus	O	T	F	F	T
processMonitor	O	T	T	F	T
Attribute related to role					
networkSliceSubnetRef	M	T	F	F	T

6.3.40.3 Attribute constraints

None.

6.3.40.4 Notifications

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

6.3.41 ConnectionPointInfo <<datatype>>

6.3.41.1 Definition

This datatype contains information required to identify a connection point outside of scope of 3GPP MIB (e.g. transport domain), for more details see RFC 8345 [89] and YANG Data Models for 'Attachment Circuits'-as-a-Service (ACaaS) [90].

6.3.41.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
connectionPointId	M	T	T	F	T
connectionPointIdType	M	T	T	F	T

6.3.41.3 Attribute constraints

None.

6.3.41.4 Notifications

None.

6.3.42 NonIPSupport<<dataType>>

6.3.42.1 Definition

This data type represents the non IP support of the slice (See Clause 3.4.27 of GSMA NG.116 [50]).

6.3.42.2 Attributes

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

6.3.42.3 Attribute constraints

Name	Definition
`servAttrCom` S	Condition: This attribute is mandatory only when requirements are being defined on non-IP support of the slice (GSMA attribute) in ServiceProfile.

6.3.42.4 Notifications

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

6.3.43 `IsolationProfile`

6.3.43.1 Definition

This IOC represents Isolation Profile with a set of isolation requirements for the managed resources.

The `resourceIsolationRuleList` attribute is used to specify the list of rules for isolation of managed resources.

As an example, if it is required is to have a dedicated User Plane and shared Control Plane each part would need to have their own CN network slice subnet, the first CN network slice subnet containing only UPFs and the second CN network slice subnet containing all other NF's (so that together the two CN network slice subnets form the complete CN network slice subnet). The two CN network slice subnet would be associated with different IsolationProfiles.

6.3.43.2 Attributes

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

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
`networkSlicingApplicability`	M	T	T	F	T
`resourceIsolationRuleList`	M	T	T	F	T
Attribute related to role					
`networkSliceSubnetRefList`	CM	T	F	F	T
`networkSliceRefList`	CM	T	F	F	T

6.3.43.3 Attribute constraints

Name	Definition
`networkSliceRefList` S	Condition: IsolationProfile IOC supports isolation requirements for the network slices.
`networkSliceSubnetRefList` S	Condition: IsolationProfile IOC supports isolation requirements for the network slice subnets.

6.3.43.4 Notifications

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

6.3.44 `ResourceIsolationRule <<dataType>>`

6.3.44.1 Definition

This data type represents isolation requirements for the managed resource.

The attribute `resourceType` is used to specify the managed resource type for isolation. The scope of managed resource type can be "MANAGED_FUNCTION" for the managed function instances, "NETWORK_SERVICE" for the Network Service (NS) information. The attribute `isolationRule` is used to specify the isolation rules to be applied for the managed resource specified in attribute `resourceType`.

As an example, to isolate user plane data in the core network for the slices for a particular tenant, attribute `resourceType` could be specified with value "MANAGED_FUNCTION", and attribute `isolationRule` value could be specified with value "DEDICATED".

6.3.44.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
resourceType	M	T	T	F	T
isolationRule	M	T	T	F	T

6.3.44.3   Attribute constraints

None.

6.3.44.4   Notifications

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

6.3.45   DataNetwork <<dataType>>

6.3.45.1   Definition

This data type represents the supported data network (See Clause 3.4.39 of GSMA NG.116 [50]).

6.3.45.2   Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servAttrCom	CM	T	F	T	T
dnnList	M	T	T	F	T

6.3.45.3   Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on supported data network (GSMA attribute) in ServiceProfile.

6.3.45.4   Notifications

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

6.3.46 `DataNetworkAccess <<dataType>>`

6.3.46.1 Definition

This data type represents the data network access attributes (See Clause 3.4.34 of GSMA NG.116 [50]).

6.3.46.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
servAttrCom	CM	T	F	T	T
dataAccessList	M	T	T	F	T
tunnellingMechanismList	M	T	T	F	T
localBreakoutAllowedList	M	T	T	F	T

6.3.46.3 Attribute constraints

Name	Definition
servAttrCom S	Condition: This attribute is mandatory only when requirements are being defined on data network access (GSMA attribute) in ServiceProfile.

6.3.46.4 Notifications

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

6.3.47 `DataAccess <<dataType>>`

6.3.47.1 Definition

This data type represents the data network access (See Clause 3.4.34 of GSMA NG.116 [50]).

6.3.47.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dataNetworkName	M	T	T	F	T
dataAccessUsed	M	T	T	F	T

6.3.47.3 Attribute constraints

None.

6.3.47.4 Notifications

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

6.3.48 TunnellingMechanism <<dataType>>

6.3.48.1 Definition

This data type represents the data network access (See Clause 3.4.34 of GSMA NG.116 [50]).

6.3.48.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dataNetworkName	M	T	T	F	T
tunellingMechanismUsed	M	T	T	F	T

6.3.48.3 Attribute constraints

None.

6.3.48.4 Notifications

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

6.3.49 LboAllowed <<dataType>>

6.3.49.1 Definition

This data type represents the data network access (See Clause 3.4.34 of GSMA NG.116 [50]).

6.3.49.2 Attributes

Attribute name	S	isReadable	isWritable	isInvariant	isNotifyable
dataNetworkName	M	T	T	F	T
localBreakoutAllowed	M	T	T	F	T

6.3.49.3 Attribute constraints

None.

6.3.49.4 Notifications

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

6.4 Attribute definition

6.4.1 Attribute properties

Attribute Name	Documentation and Allowed Values	Properties
ServiceProfile.availability	This parameter specifies the communication service availability requirement, expressed as a percentage. This parameter is applicable for an end-to-end communication service provided by a network slice. The communication service availability is defined in clause 3.1 of TS 22.261 [28].	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
serviceProfileId	A unique identifier of property of network slice related requirement should be supported by the network slice.	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
sliceProfileId	A unique identifier of the property of network slice subnet related requirement should be supported by the network slice subnet.	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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 ITU-T X.731 [18].	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None allowedValues: N/A 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 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: 0..1 isOrdered: N/A isUnique: True defaultValue: None isNullable: False
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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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 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 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 isNullable: False
maxNumberofUEs	An attribute specifies the maximum number of UEs may simultaneously access the network slice or network slice subnet instance.	type: MaxNumberofUEs multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
MaxNumberofUE. 3GPPNoOfUEs	An attribute specifies the maximum number of UEs may simultaneously access the network slice or network slice subnet instance on 3GPP access.	Type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
MaxNumberofUE. non3GPPNoOfUEs	An attribute specifies the maximum number of UEs may simultaneously access the network slice or network slice subnet instance on non-3GPP access.	Type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
coverageAreaTA List	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 isNullable: False
dLLatency	An attribute specifies the required DL 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 28.554 [27].	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
uLLatency	An attribute specifies the required UL 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 28.554 [27].	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
TopSliceSubnet Profile.dLLate ncy	An attribute specifies the required DL packet transmission latency (millisecond) through all domains of the network slice and is used to evaluate utilization performance of the end-to-end network slice. See clause 6.3.1 of 28.554 [27].	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
TopSliceSubnet Profile.uLLate ncy	An attribute specifies the required UL packet transmission latency (millisecond) through all domains of the network slice and is used to evaluate utilization performance of the end-to-end network slice. See clause 6.3.1 of 28.554 [27].	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
CNSliceSubnetP rofile.dLLaten cy	An attribute specifies the required DL packet transmission latency (millisecond) through CN domain of the network slice and is used to evaluate the delay in CN domain, e.g. time between received DL packet on N6 interface of UPF and successfully sent out the packet on N3 interface.	type: Real multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`CNSliceSubnetP rofile.uLLaten cy`	An attribute specifies the required UL packet transmission latency (millisecond) through CN domain of the network slice and is used to evaluate the delay in CN domain, e.g. time between received UL packet on N3 interface of UPF and successfully sent out the packet on N6 interface.	type: Real multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`RANSliceSubnet Profile.dLLate ncy`	An attribute specifies the required DL packet transmission latency (millisecond) in RAN including the air interface of the network slice and is used to evaluate the delay between NR-RAN and UE, e.g. time between received DL packet from UPF and the packet successfully received by UE. See clause 5.1.1.1.6 in TS 28.552 [69].	type: Real multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`RANSliceSubnet Profile.uLLate ncy`	An attribute specifies the required UL packet transmission latency (millisecond) in RAN including the air interface of the network slice and is used to evaluate the delay between UE and NG-RAN, e.g. time between the UL packet transmitted by UE and the packet transmitted by gNB to UPF. See clause 5.1.1.1.7 in TS 28.552 [69].	type: Real multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`uEMobilityLeve l`	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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`networkSliceSh aringIndicator`	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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`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.p LMNInfoList`	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.r esourceSharing Level`	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: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`serviceProfile List`	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 isNullable: False

sliceProfileLi st	An attribute specifies a list of SliceProfile (see clause 6.3.4) supported by the network slice subnet. All members of the list, instances of SliceProfile, shall contain the same datatype representing slice profile requirements: TopSliceSubnetProfile, RANSliceSubnetProfile or CNSliceSubnetProfile. E.g. the sliceProfileList may contain only instances of sliceProfile containing RANSliceSubnetProfile datatype; the sliceProfileList may not contain instances of sliceProfile containing RANSliceSubnetProfile and CNSliceSubnetProfile datatypes Members of the list may contain TopSliceSubnetProfile datatype only when this attribute (sliceProfileList) belongs to a NetworkSliceSubnet that is directly referenced by a NetworkSlice	type: SliceProfile multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
sST	This attribute specifies the slice/service type in a ServiceProfile to be supported by a network slice. See standardised SST values in clause 5.15.2 of TS 23.501 [2].	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None 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 TS 22.104 [51].	type: DelayTolerance multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None 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: None isNullable: False
dLDeterministi cComm	An attribute specifies the properties of the deterministic communication in downlink for periodic user traffic, see clause 4.3 of TS 22.104 [51].	type: DeterministicComm multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
uLDeterministi cComm	An attribute specifies the properties of the deterministic communication in uplink for periodic user traffic, see clause 4.3 of TS 22.104 [51].	type: DeterministicComm multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
DeterministicC omm.availabili ty	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: None isNullable: False
DeterministicC omm.periodicit yList	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: None 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: XLThpt multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`dLThptPerSlice Subnet`	This attribute defines required data rate of the network slice subnet in downlink that should be available ubiquitously across the coverage area of the slice.	type: XLThpt multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`dLThptPerUE`	This attribute defines data rate supported by the network slice per UE, refer NG.116 [50].	type: XLThpt multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`guaThpt`	This attribute describes the guaranteed data rate.	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`maxThpt`	This attribute describes the maximum data rate.	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`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: XLThpt multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`uLThptPerUE`	This attribute defines data rate supported by the network slice per UE, refer NG.116 [50].	type: XLThpt multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`uLThptPerSlice Subnet`	This attribute defines required data rate of the network slice subnet in uplink that should be available ubiquitously across the coverage area of the slice.	type: XLThpt multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`dLMaxPktSize`	This parameter specifies the maximum packet size supported by the network slice or the network slice subnet, in downlink refer NG.116 [50].	type: MaxPktSize multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`uLMaxPktSize`	This parameter specifies the maximum packet size supported by the network slice or the network slice subnet in uplink, refer NG.116 [50].	type: MaxPktSize multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`MaxPktSize.max size`	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 isNullable: False
`maxNumberofPDU Sessions`	This parameter defines the maximum number of concurrent PDU sessions supported by the network slice on 3GPP access type, refer NG.116 [50].	type: MaxNumberofPDUSess ions multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

MaxNumberofPDU Sessions.3GPPN oOfPDUSessions	This parameter defines the maximum number of concurrent PDU sessions supported by the network slice, refer NG.116 [50].	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
MaxNumberofPDU Sessions.non3G PPNoOfPDUSessi ons	This parameter defines the maximum number of concurrent PDU sessions supported by the network slice on non 3GPP access type, refer NG.116 [50].	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ServiceProfile .kPIMonitoring	An attribute specifies the name list of KQIs and KPIs, related to the network slice available for performance monitoring.	type: KPIMonitoring multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
KPIMonitoring. kPIList	An attribute specifies the name list of KQIs and KPIs available for performance monitoring.	type: String multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
nBIoT	An attribute specifies whether NB-IoT is supported in the RAN in the network slice, see NG.116 [50].	type: NBIoT multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
NBIoT.support	An attribute specifies whether NB-IoT is supported in the RAN in the network slice, see NG.116 [50]. allowedValues: "NOT_SUPPORTED", "SUPPORTED".	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
synchronicity	An attribute specifies whether synchronicity of communication devices is supported, Two cases are most important in this context, see clause 3.4.29 of NG.116 [50]: - Synchronicity between a base station and a mobile device and - Synchronicity between mobile devices.	type: Synchronicity multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
Synchronicity. availability	An attribute specifies whether synchronicity of communication devices is supported, see NG.116 [50]. allowedValues: "NOT_SUPPORTED", "BETWEEN_BS_AND_UE", "BETWEEN_BS_AND_UE_AND_UE_AND_UE".	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
Synchronicity. accuracy	An attribute specifies the accuracy of the synchronicity, see NG.116 [50].	type: Real multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
RANSliceSubnet Profile.synchr onicity	An attribute specifies whether synchronicity of communication devices is supported in the RAN domain, Two cases are most important in this context, see clause 3.4.29 of NG.116 [50]: - Synchronicity between a base station and a mobile device and - Synchronicity between mobile devices.	type: Synchronicity multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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: None 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: None isNullable: False
`v2XCommModels`	An attribute specifies whether or not the V2X communication mode is supported by the network slice.	type: V2XCommMode multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`V2XCommMode.v2XMode`	An attribute specifies whether or not the V2X communication mode is supported by the network slice. allowedValues: "NOT_SUPPORTED", "SUPPORTED_BY_NR".	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None 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 TS 22.261 [28]) and NG.116 [50].	type: GeoArea multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`termDensity`	An attribute specifies the overall user density over the coverage area of the network slice. See Table 7.1-1 of TS 22.261 [28]).	type: TermDensity multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`TermDensity.density`	An attribute specifies the overall user density over the coverage area of the network slice. See Table 7.1-1 of TS 22.261 [28]).	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`positioning`	An attribute specifies whether the network slice provides geo-localization methods or supporting methods, see clause 3.4.20 of NG.116 [50].	type: Positioning multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`RANSliceSubnetProfile.positioning`	An attribute specifies whether the RAN domain of the network slice provides geo-localization methods or supporting methods, see clause 3.4.20 of NG.116 [50].	type: Positioning multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`Positioning.availability`	An attribute specifies if this attribute is provided by the RAN domain of the network slice and contains a list of positioning methods provided by the RAN domain. If the list is empty this attribute is not available in the RAN domain and the other parameters might be ignored, see NG.116 [50]. Comma separated multiple values are allowed: CIDE_CID, OTDOA, RF_FINGERPRINTING, AECID, HYBRID_POSITIONING, NET_RTK.	type: ENUM multiplicity: 1..6 isOrdered: False isUnique: True defaultValue: None isNullable: False
`Positioning.predictionFrequency`	An attribute specifies how often location information is provided. This parameter simply defines how often the customer is allowed to request location information. This is not related to the time it takes to determine the location, which is a characteristic of the positioning method, see NG.116 [50]. allowedValues: "PERSEC", "PERMIN", "PERHOUR".	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

Positioning.accuracy	An attribute specifies the accuracy of the location information. Accuracy depends on the respective positioning solution applied in the RAN domain of the network slice, measurement unit is meter, see NG.116 [50].	type: Real multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
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 TS 22.261 [28]).	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
uESpeed	An attribute specifies the maximum speed (in km/hour) supported by the network slice or network slice subnet at which a defined QoS can be achieved. See Table 7.1-1 of TS 22.261 [28]).	type: Integer multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ServiceProfile.dLPktDelayVariation	An attribute specifies the maximum allowed deviation (millisecond) of the difference in DL packet spacing at the receiver compared to the sender for a pair of packets through the RAN, CN and TN part of an end-to-end network slice. How to measure inter-packet delay variation is documented by IETF in RFC 3393 [102] as measuring the IP packet delay variation and its applicability to use it as metric is documented in Section 4.1 of RFC 5481 [103]. The deviation is also defined in Annex C.4.4 of TS 22.104 [51]	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ServiceProfile.uLPktDelayVariation	An attribute specifies the maximum allowed deviation (millisecond) of the difference in UL packet spacing at the receiver compared to the sender for a pair of packets through the RAN, CN and TN part of an end-to-end network slice. How to measure inter-packet delay variation is documented by IETF in RFC 3393 [102] as measuring the IP packet delay variation and its applicability to use it as metric is documented in Section 4.1 of RFC 5481 [103]. The deviation is also defined in Annex C.4.4 of TS 22.104 [51]	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
TopSliceSubnetProfile.dLPktDelayVariation	An attribute specifies the maximum allowed deviation (millisecond) of the difference in DL packet spacing at the receiver compared to the sender for a pair of packets through the RAN, CN and TN part of an end-to-end network slice. How to measure inter-packet delay variation is documented by IETF in RFC 3393 [102] as measuring the IP packet delay variation and its applicability to use it as metric is documented in Section 4.1 of RFC 5481 [103]. The deviation is also defined in Annex C.4.4 of TS 22.104 [51]	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
TopSliceSubnetProfile.uLPktDelayVariation	An attribute specifies the maximum allowed deviation (millisecond) of the difference in UL packet spacing at the receiver compared to the sender for a pair of packets through the RAN, CN and TN part of an end-to-end network slice. How to measure inter-packet delay variation is documented by IETF in RFC 3393 [102] as measuring the IP packet delay variation and its applicability to use it as metric is documented in Section 4.1 of RFC 5481 [103]. The deviation is also defined in Annex C.4.4 of TS 22.104 [51]	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
CNSliceSubnetProfile.dLPktDelayVariation	An attribute specifies the maximum allowed deviation (millisecond) of the difference in DL packet spacing at the receiver compared to the sender for a pair of packets through CN domain of the network slice. How to measure inter-packet delay variation is documented by IETF in RFC 3393 [102] as measuring the IP packet delay variation and its applicability to use it as metric is documented in Section 4.1 of RFC 5481 [103]. The deviation is also defined in Annex C.4.4 of TS 22.104 [51]	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

CNSliceSubnetP rofile. uLPktDelayVari ation	An attribute specifies the maximum allowed deviation (millisecond) of the difference in UL packet spacing at the receiver compared to the sender for a pair of packets through CN domain of the network slice. How to measure inter-packet delay variation is documented by IETF in RFC 3393 [102] as measuring the IP packet delay variation and its applicability to use it as metric is documented in Section 4.1 of RFC 5481 [103]. The deviation is also defined in Annex C.4.4 of TS 22.104 [51]	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
RANSliceSubnet Profile.dLPktD elayVariation	An attribute specifies the maximum allowed deviation (millisecond) of the difference in DL packet spacing at the receiver compared to the sender for a pair of packets through RAN domain of the network slice. How to measure inter-packet delay variation is documented by IETF in RFC 3393 [102] as measuring the IP packet delay variation and its applicability to use it as metric is documented in Section 4.1 of RFC 5481 [103]. The deviation is also defined in Annex C.4.4 of TS 22.104 [51]	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
RANSliceSubnet Profile.uLPktD elayVariation	An attribute specifies the maximum allowed deviation (millisecond) of the difference in UL packet spacing at the receiver compared to the sender for a pair of packets through RAN domain of the network slice. How to measure inter-packet delay variation is documented by IETF in RFC 3393 [102] as measuring the IP packet delay variation and its applicability to use it as metric is documented in Section 4.1 of RFC 5481 [103]. The deviation is also defined in Annex C.4.4 of TS 22.104 [51]	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
survivalTime	An attribute specifies the time (millisecond) that an application consuming a communication service may continue without an anticipated message. See clause 5 of TS 22.104 [51]).	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
dLReliability	An attribute specifies in the context of network layer DL 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 TS 22.261.	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
uLReliability	An attribute specifies in the context of network layer UL 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 TS 22.261.	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
NetworkSlice.n etworkSliceSub netRef	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
NetworkSliceSu bnet.networkSl iceSubnetRef	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 isNullable: False
ipAddress	This parameter specifies the IP address assigned to a logical transport interface/endpoint which is part of a RAN or CN SubNetwork. It can be an IPv4 address (See RFC 791 [37]) or an IPv6 address (See RFC 2373 [38]). See note 1	type: IpAddress multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
localLogicalInterfaceInfo	This parameter specifies the information of a local logical transport interface.	type: LogicalInterfaceInfo multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
logicalInterfaceType	This parameter specifies the type of a logical transport interface. It could be VLAN, MPLS or SEGMENT. allowedValues: `VLAN,MPLS, SEGMENT`	type:ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
logicalInterfaceId	This parameter specifies the identify of a logical transport interface which is part of a RAN or CN SubNetwork. It could be VLAN ID (See IEEE 802.1Q [39]), MPLS Tag or Segment ID. In case logical transport interface is VLAN, it is VLAN Id (See IEEE 802.1Q [39]). In case logical transport interface is MPLS, it is MPLS Tag. In case logical transport interface is Segment, it is Segment ID.	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
externalEndPointRefList	This parameter is used to identify a list of connection point info(s).	Type: ConnectionPointInfo multiplicity: * isOrdered: False isUnique: False defaultValue: None isNullable: False
connectionPointId	This parameter specifies the identifier of a TN object.	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
connectionPointIdType	This parameter specifies the type of the connection point identifier. allowedValues: VLAN, MPLS, SEGMENT, IPV4, IPV6, ATTACHMENT_CIRCUIT	type:ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
LogicalInterfaceInfo.systemName	This parameter specifies the identifier for a system.	Type: String Multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

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LogicalInterfaceInfo.portName	This parameter specifies the identifier for a port.	Type: String Multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
LogicalInterfaceInfo.routingProtocol	This parameter specifies the Routing protocol. allowedValues: RIP, IGMP, OSPF, EGP, EIGRP, BGP, IS-IS, STATIC	type:ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
qosProfile	This parameter specifies the 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. An example of the parameter value could be "DSCP" (See RFC 8436 [74]).	type: String multiplicity: 0..1 isOrdered: N/A isUnique: True defaultValue: None isNullable: False
maxDLDataVolume	An attribute specifies the maximum DL PDCP data volume supported by the network slice instance (performance measurement definition see in TS 28.552 [69]). The unit is MByte/day.	type: Real multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
maxULDataVolume	An attribute specifies the maximum UL PDCP data volume supported by the network slice instance (performance measurement definition see in TS 28.552 [69]). The unit is MByte/day.	type: Real multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
radioSpectrum	This attribute represents the radio spectrum in which the network slice should be supported (see clause 3.4.21 of GSMA NG.116 [50]).	type: RadioSpectrum multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
nROperatingBands	This attribute represents which 5G NR frequency bands can be used to access the network slice. 5G NR operating bands are defined in 3GPP TS 38.101-1 [42].	type: String multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
epApplicationRef	This parameter specifies a list of application level EPs (i.e. EP_N3 or EP_NgU or EP_F1U) associated with the logical transport interface.	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 EP_F1U) or network slice subnet.	type: DN multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
sliceSimultaneousUse	This attribute describes whether a network slice can be simultaneously used by a device together with other network slices and if so, with which other classes of network slices. allowedValues: "0", "1", "2", "3", "4". "0": Can be used with any network slice "1": Can be used with network slices with same SST value "2": Can be used with any network slice with same SD value "3": Cannot be used with another network slice "4": Cannot be used by a UE in a specific location	type: integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`energyEfficien` `cy`	An attribute which describes the energy efficiency of a network slice, i.e. the ratio between the performance of a network slice and its energy consumption (EC) when assessed during the same time frame, see clause 3.4.7 of NG.116 [50].	type: EnergyEfficiency multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`EnergyEfficien`
`cy.performance`
	Depending on the sST value, EnergyEfficiency.performance will be
	- `eMBBEEPerfReq`
	or
	- `uRLLCEEPerfReq`
	or
	- `mIoTEEPerfReq`
	
	allowedValues:
	- `eMBBEEPerfReq` identifies the requirement in terms of energy efficiency, i.e. the performance per consumed Joule in type Real, where performance can take one of the following forms (type: ENUM):
	   - number of bits (Integer) (see TS 28.554 [27] clause 6.7.2.2).
	   - number of bits (Integer) for RAN-based network slice (see TS 28.554 [27] clause 6.7.2.2a).
	
	- `uRLLCEEPerfReq` identifies the requirement in terms of energy efficiency, i.e. the performance per consumed Joule in type Real, where performance can take one of the following forms (type: ENUM):
	   - inverse of the latency in 0.1ms (Real) (see TS 28.554 [27] clause 6.7.2.3.2).
	   - number of bits multiplied by the inverse of the latency in 0.1ms (Real) (see TS 28.554 [27] clause 6.7.2.3.3).
	
	- `mIoTEEPerfReq` identifies the requirement in terms of energy efficiency, i.e. the performance per consumed Joule in type Real, where performance can take one of the following forms (type: ENUM):
	   - maximum number of registered subscribers (Integer) (see TS 28.554 [27] clause 6.7.2.4.1),
	   - mean number of active UEs (Integer) (see TS 28.554 [27] clause 6.7.2.4.2).
	
	See NOTE 3.
		type: ENUM
		multiplicity: 0..1
		isOrdered: N/A
		isUnique: N/A
		defaultValue: None
		isNullable: False

`TopSliceSubnet`
`Profile.energy`
`Efficiency`
	An attribute which describes the energy efficiency through all domains of the network slice, i.e. the ratio between the performance and the energy consumption (EC) when assessed during the same time frame, see clause 3.4.7 of NG.116 [50].	type: EnergyEfficiency
		multiplicity: 0..1
		isOrdered: N/A
		isUnique: N/A
		defaultValue: None
		isNullable: False

`CNSliceSubnetP`
`rofile.energyE`
`fficiency`
	An attribute which describes the energy efficiency through CN domain of the network slice, i.e. the ratio between the performance and the energy consumption (EC) when assessed during the same time frame, see clause 3.4.7 of NG.116 [50].	type: Real
		multiplicity: 0..1
		isOrdered: N/A
		isUnique: N/A
		defaultValue: None
		isNullable: False

`RANSliceSubnet`
`Profile.energy`
`Efficiency`
	An attribute which describes the energy efficiency through RAN domain of the network slice, i.e. the ratio between the performance and the energy consumption (EC) when assessed during the same time frame, see clause 3.4.7 of NG.116 [50].	type: Real
		multiplicity: 0..1
		isOrdered: N/A
		isUnique: N/A
		defaultValue: None
		isNullable: False

`nssaaSupport`	An attribute specifies whether for the Network Slice, devices need to be also authenticated and authorized by a AAA server using additional credentials different than the ones used for the primary authentication, see clause 3.4.37 of NG.116 [50]. allowedValues: N/A	type: NSSAASupport multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`nssaaSupport.support`	An attribute specifies whether or not the Network Slice, devices need to be also authenticated and authorized by a AAA server using additional credentials different than the ones used for the primary authentication. allowedValues: "NOT_SUPPORTED", "SUPPORTED".	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`ServiceProfile.n6Protection`	An attribute which includes required security functions and corresponding rules of each function for network slice N6 interface protection. allowedValues: N/A	type: N6Protection multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`CNSliceSubnetProfile.n6Protection`	An attribute which includes required security functions and corresponding rules of each function for network slice N6 interface protection. allowedValues: N/A	type: N6Protection multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`secFuncList`	An attribute which holds the list of security control functions/features required by the Network Slice or Network Slice Subnet consumer. allowedValues: N/A	type: SecFunc multiplicity: 1..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`secFunId`	An attribute which identifies a security function. allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`secFunType`	An attribute which describes the type of the security function. E.g. Firewall, NAT, antimalware, parental control, DDoS protection function, etc. allowedValues: N/A	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`secRules`	An attribute which could be configured on each function. If it's absent, the default rules could be applied. allowedValues: N/A	type: String multiplicity: 0..* isOrdered: False isUnique: True defaultValue: None isNullable: False
`networkSliceSubnetType`	An attribute indicating type of network slice subnet, including: - Top network slice subnet - RAN network slice subnet - CN network slice subnet allowedValued: `TOP_SLICESUBNET,RAN_SLICESUBNET,CN_SLICESUBNET`	type:ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`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
`NetworkSliceSubnetProviderCapabilities.dLLatency`	This attribute specifies the achievable packet transmission latency in downlink (millisecond) through the network slice subnet.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`NetworkSliceSu bnetProviderCa pabilities.uLL atency`	This attribute specifies the achievable packet transmission latency in uplink (millisecond) through the network slice subnet.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NetworkSliceSu bnetProviderCa pabilities.dLT hptPerSliceSub net`	This attribute defines achievable data rate of the network slice subnet in downlink that is available ubiquitously across the coverage area of the slice.	type: XLThpt multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NetworkSliceSu bnetProviderCa pabilities.uLT hptPerSliceSub net`	This attribute defines achievable data rate of the network slice subnet in uplink that is available ubiquitously across the coverage area of the slice.	type: XLThpt multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NetworkSliceSu bnetProviderCa pabilities.cov erageAreaTALis t`	An attribute specifies a list of Tracking Areas that a network slice subnet can serve. 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 isNullable: False
`processMonitor`	An attribute describes the process monitoring information of the feasibility check and reservation job. See corresponding `processMonitor` definition in TS 28.622[30].	type: ProcessMonitor multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`feasibilityRes ult`	An attribute which specifies the feasibility check result for the feasibility check and reservation job. This attribute is configured by MnS producer and can be read by MnS consumer. The feasibilityResult is configured once the "`status`" is "`FINISHED`" allowedValues: FEASIBLE: which means the specified network slicing related requirements (i.e. ServiceProfile, SliceProfile) can be satisfied by the MnS producer. INFEASIBLE: which means the specified network slicing related requirements (i.e. ServiceProfile, SliceProfile) cannot be satisfied by the MnS producer.	type: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`inFeasibleReas on`	An attribute that specifies the additional reason information if the feasibility check result is infeasible. This attribute can be absent if the feasibility check result is feasibile. allowedValues: the detailed content (ENUM Value) for the `inFeasibleReason` is not defined in the present document.	type: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`resourceReserv ation`	An attribute represents MnS consumer's requirements for resource reservation. allowedValues: TRUE: MnS producer need to reserve corresponding resources FALSE: no guarantee for the corresponding resources.	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False
`recommendation Request`	An attribute represents MnS consumer's request for recommended network slice related requirements allowedValues: TRUE: MnS producer need to derive and provide the recommended network slicing related requirements FALSE: no guarantee for derive and provide the recommended network slicing related requirements.	type: Boolean multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: FALSE isNullable: False

requestedReser vationExpirati on	An attribute which specifies MnS consumer's requirememts for the validity period of the resource reservation. The value of `requestedReservationExpiration` is specified by MnS consumer.	type: TimeWindow multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
reservationExp iration	An attribute which specifies the actual validity period of the resource reservation. After the period expires, no guarantees are given for the resources associated to the corresponding network slicing related requirements (i.e. `ServiceProfile`, `SliceProfile`). which is specified by MnS producer based on requested reservation expiration from MnS consumer and its own reservation capabilities. In case MnS produer have the enpugh capability to satisfy MnS consumer's reservation requirememts, the value of `reservationExpiration` is same as `requestedReservationExpiration`.	type: TimeWindow multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
resourceReserv ationStatus	An attribute which specifies the resource reservation result for the feasibility check and reservation job. This attribute is configured by MnS producer and can be read by MnS consumer. allowedValues: RESERVED: which means the resources for the specified network slicing related requirements (i.e. ServiceProfile, SliceProfile) is reserved. UNRESERVED: which means the resources for the specified network slicing related requirements (i.e. ServiceProfile, SliceProfile) is not reserved. USED: which means the reserved resource for the specified network slicing related requirements is used.	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
recommendedReq uirements	An attribute which specifies the recommended network slicing related requirements (i.e. ServiceProfile and SliceProfile information) which can be supported by the MnS producer. This information is provided when the feasibility check result is infeasible. This information can be used by MnS consumer to adjust the network slicing related requirements.	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
reservationFai lureReason	An attribute that specifies the additional reason information if the reservation is failed. This attribute can be absent if the reservation is successful. allowedValues: the detailed content (ENUM Value) for the reservationFailureReason is not defined in the present document.	type: ENUM multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
FeasibilityChe ckAndReservati onJob.serviceP rofile	An attribute specifies the network slice related requirements for the feasibility check and resource reservation job	type: ServiceProfile multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
FeasibilityChe ckAndReservati onJob.slicePro file	An attribute specifies the network slice subnet related requirements for the feasibility check and resource reservation job	type: SliceProfile multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
feasibilityTim eWindow	An attribute represents MnS consumer's request for checking whether the network slicing related requirements (i.e. ServiceProfile and SliceProfile information) can be satisfied at a specified time window. If this attribute specified by MnS consumer, MnS producer determine whether the network slicing related requirements can be satisfied at the specified time window and reserve corresponding resources at the specified time window if resourceReservation is "TRUE".	type: TimeWindow multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`NetworkSlice.n etworkSliceCon trollerRef`	This holds a list of DN of `NetworkSliceController` supported by the `NetworkSlice` MOI.	type: DN multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`NetworkSliceSu bnet.networkSl iceSubnetContr ollerRef`	This holds a list of DN of `NetworkSliceSubnetController` supported by the `NetworkSliceSubnet` MOI.	type: DN multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
`NetworkSliceCo ntroller.inputS erviceProfile`	This attribute specifies the input network slice related requirements provided by the MnS consumer.	type: ServiceProfile multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NetworkSliceCo ntroller.servi ceProfileId`	This attribute specifies the service profile identifier provided by the MnS producer for the network slice related requirements specified in `inputServiceProfile` attribute or as specified as part of `AllocateNsi` operation (defined in TS 28.531 [26]).	type: String multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NetworkSliceCo ntroller.proces sMonitor`	This attribute describes the process monitoring information of the fulfilment of the network slice life cycle management.	type: ProcessMonitor multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NetworkSliceCo ntroller.netwo rkSliceRef`	This attribute specifies the DN of the `NetworkSlice` MOI, that the MnS producer has selected to fulfil the network slice related requirements specified in `inputServiceProfile` attribute or as specified as part of `AllocateNsi` operation (defined in TS 28.531 [26]).	type: DN multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NetworkSliceSu bnetController. inputSliceProf ile`	This attribute specifies the network slice subnet related requirements.	type: SliceProfile multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NetworkSliceSu bnetController .sliceProfileI d`	This attribute specifies the service profile identifier provided by the MnS producer for the network slice subnet related requirements specified in `inputSliceProfile` attribute or as specified as part of `AllocateNssi` operation (defined in TS 28.531 [26]).	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NetworkSliceSu bnetController. processMonitor`	This attribute describes the process monitoring information of the fulfilment of the network slice subnet life cycle management.	type: ProcessMonitor multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`NetworkSliceSu bnetController .networkSliceS ubnetRef`	This attribute specifies the DN of the `NetworkSliceSubnet` MOI, that the MnS producer has selected to fulfil the network slice subnet related requirements specified in `inputSliceProfile` attribute or as specified as part of `AllocateNssi` operation (defined in TS 28.531 [26]).	type: DN multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

availabilitySt atus	It indicates the availability status of the fulfilment of network slice or the network slice subnet related requirements by the MnS producer. allowedValues: "IN_TEST", "FAILED", "POWER_OFF", "OFF_LINE ", "OFF_DUTY", "DEPENDENCY", "DEGRADED", "NOT_INSTALLED", "LOG_FULL". The meaning of these values is as defined in 3GPP TS 28.625 [17] and ITU-T X.731 [18].	type: ENUM multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
nonIPSupport	An attribute specifies the non-IP Session support (Ethernet session and forwarding support) of the slice or slice subnet. See Clause 3.4.27 of GSMA NG.116 [50].	type: NonIPSupport multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
NonIPSupport.s upport	An attribute specifies the non-IP Session support (Ethernet session and forwarding support) of the slice or slice subnet. See Clause 3.4.27 of GSMA NG.116 [50]. allowedValues: "NOT SUPPORTED", "SUPPORTED".	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
NetworkSlice. isolationProfi leRef	This holds the DN of `IsolationProfile` MOI representing the isolation requirements applied for the `NetworkSlice` MOI. allowedValues: N/A	type: DN multiplicity: 0..1 isOrdered: False isUnique: N/A defaultValue: None isNullable: False
NetworkSliceSu bnet. isolationProfi leRef	This holds the DN of `IsolationProfile` MOI representing the isolation requirements applied for the `NetworkSliceSubnet` MOI. allowedValues: N/A	type: DN multiplicity: 0..1 isOrdered: False isUnique: N/A defaultValue: None isNullable: False
IsolationProfi leRef.networkS liceSubnetRefL ist	This holds a list of DN of `NetworkSliceSubnet` MOI to which the isolation is applicable. allowedValues: N/A	type: DN multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
IsolationProfi leRef.networkS liceRefList	This holds a list of DN of `NetworkSlice` MOI to which the isolation is applicable. allowedValues: N/A	type: DN multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
IsolationProfi leRef.resource IsolationRuleL ist	An attribute which describes a set of isolation rules for the managed resources.	type: ResourceIsolationRule multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False

resourceType	An attribute which describes the managed resource type for isolation. MANAGED_FUNCTION: Indicates the managed function instances are selected using the the isolation rule which is specified by isolationRule attribute. NETWORK_SERVICE: Indicates the Network Service (NS) information are selected using the isolation rule which is specified by isolationRule attribute. allowedValues: "MANAGED_FUNCTION", "NETWORK_SERVICE"	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
isolationRule	An attribute which describes the isolation requirement. DEDICATED: The network slices are provided with exclusive network resources, preventing any interference between other network slices. SHARED: Allows the network slice resources to be shared with other network slices. allowedValues: DEDICATED, SHARED	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
networkSlicing Applicability	An attribute which describes if the isolation requirements are associated with NetworkSlice(s) or NetworkSliceSubnet(s). allowedValues: NETWORKSLICE, NETWORKSLICESUBNET	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
TopSliceSubnet Profile.availa bility	An attribute specifies the required communication service availability (percentage) through the RAN, CN, and TN part of an end-to-end network slice. See clause 3.1 of TS 22.261 [28].	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
CNSliceSubnetP rofile.availab ility	An attribute specifies the required communication service availability (percentage) through the CN domain of a network slice, i.e., CN slice subnet. The percentage value of the amount of time the CN slice subnet is delivered according to all the slice subnet related requirements listing in the CNSliceSubnetProfile, divided by the amount of time the system is expected to deliver the CN slice subnet.	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
RANSliceSubnet Profile.availa bility	An attribute specifies the required communication service availability (percentage) through the RAN domain of a network slice, i.e., RAN slice subnet. The percentage value of the amount of time the RAN slice subnet is delivered according to all the slice subnet related requirements listing in the RANSliceSubnetProfile, divided by the amount of time the system is expected to deliver the RAN slice subnet.	type: Real multiplicity: 0..1 isOrdered: N/A isUnique: N/A defaultValue: None allowedValues: N/A isNullable: False
TopSliceSubnet Profile.kPIMon itoring	An attribute specifies the name list of KPIs, related to all domains of the network slice, available for performance monitoring.	type: KPIMonitoring multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: True
RANSliceSubnet Profile.kPIMon itoring	An attribute specifies the name list of KPIs, related to the RAN domain network slice subnet, available for performance monitoring.	type: KPIMonitoring multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: True
supportedDataN etworks	An attribute specifies the supported data network of the slice or slice subnet. See Clause 3.4.39 of GSMA NG.116 [50].	type: DataNetwork multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

`DataNetwork.dn nList`	An attribute specifies the list of supported data network (DNN, see) of the slice or slice subnet. See Clause 3.4.39 of GSMA NG.116 [50].	type: String multiplicity: * isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`dataNetworkAcc ess`	An attribute specifies how the supported data networks handle the user data of the slice or slice subnet. See Clause 3.4.34 of GSMA NG.116 [50].	type: DataNetworkAccess multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`DataNetworkAcc ess.dataAccess List`	An attribute specifies Data access per data network for the supported data networks of the slice or slice subnet. See Clause 3.4.34 of GSMA NG.116 [50].	type: DataAccess multiplicity: * isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`DataNetworkAcc ess.tunnelling MechanismList`	An attribute specifies Tunnelling mechanism per data network for the supported data networks of the slice or slice subnet. See Clause 3.4.34 of GSMA NG.116 [50].	type: TunnellingMechanism multiplicity: * isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`DataNetworkAcc ess.localBreak outAllowedList`	An attribute specifies whether a data network is available in Local Breakout while roaming for the supported data networks of the slice or slice subnet. See Clause 3.4.34 of GSMA NG.116 [50].	type: LboAllowed multiplicity: * isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`DataAccess.dat aNetworkName`	An attribute specifies data network name of the supported data networks of the slice or slice subnet. See Clause 3.4.34 of GSMA NG.116 [50].	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`DataAccess.dat aAccessUsed`	An attribute specifies Data access per data network for the supported data networks of the slice or slice subnet. See Clause 3.4.34 of GSMA NG.116 [50]. "DIRECT_INTERNET_ACCESS": Direct access to the Internet "TERM_PVT_NETWORK": Termination in a private network (e.g., via tunnelling mechanism such as L2TP, VPN Virtual Private Network, tunnel, etc.) "LOCAL_TRAFFIC": All data traffic stays local to an operator network and the devices do not have access to the Internet or private network. allowedValues: "DIRECT_INTERNET_ACCESS", "TERM_PVT_NETWORK", "LOCAL_TRAFFIC".	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
`TunnellingMech anism.dataNetw orkName`	An attribute specifies data network name of the supported data networks of the slice or slice subnet. See Clause 3.4.34 of GSMA NG.116 [50].	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

TunnellingMechanism.tunellingMechanismUsed	An attribute specifies Tunnelling mechanism for the supported data networks of the slice or slice subnet. See Clause 3.4.34 of GSMA NG.116 [50]. allowedValues: "L2TP_TUNNEL", "GRE_TUNNEL", "VPN_TUNNEL", "LABEL_BASED_ROUTING", "802.1Q_VLAN", "SRV6", "OTHER".	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
LboAllowed.dataNetworkName	An attribute specifies data network name of the supported data networks of the slice or slice subnet. See Clause 3.4.34 of GSMA NG.116 [50].	type: String multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
LboAllowed.localBreakoutAllowed	An attribute specifies whether a data network is available in Local Breakout while roaming for the supported data networks of the slice or slice subnet. See Clause 3.4.34 of GSMA NG.116 [50]. allowedValues: "YES", "NO".	type: ENUM multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
ServiceProfile.sliceAvailability	This attribute provides information about the time at which the slice or slice subnet instance is scheduled to be available.	type: SchedulingTime multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
CNSliceSubnetProfile.sliceSubnetAvailability	This attribute provides information about the time at which the slice or slice subnet instance is scheduled to be available.	type: SchedulingTime multiplicity: * isOrdered: False isUnique: True defaultValue: None isNullable: False
TopSliceSubnetProfile.sliceSubnetAvailability	This attribute provides information about the time at which the slice or slice subnet instance is scheduled to be available.	type: SchedulingTime multiplicity: * isOrdered: False isUnique: True 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: void NOTE 3: energy efficiency requirement for V2X is not part of the current document.		

6.5 Common notifications

6.5.1 Alarm notifications

This clause presents a list of notifications, defined in TS 28.111 [109], 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	O	--
notifyAlarmListRebuilt	M	--
notifyChangedAlarm	O	--
notifyCorrelatedNotificationChanged	O	--
notifyChangedAlarmGeneral	O	--

Name	S	Notes
notifyComments	O	--
notifyPotentialFaultyAlarmList	O	--

Note: notifyChangedAlarm is deprecated in TS 28.111 [109].

6.5.2 Configuration notifications

This clause presents a list of notifications, defined in 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	--
notifyMOIChanges	O	--
notifyEvent	O	--

6.5.3 Threshold Crossing notifications

This clause presents a list of notifications, defined in 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)

7.1 OpenAPI Definitions of NR and NG-RAN NRM

The OpenAPI/YAML definitions are specified in 3GPP Forge, refer to clause 4.3 of TS 28.623 [106] for the Forge location. An example of Forge location is: "https://forge.3gpp.org/rep/sa5/MnS/-/tree/Tag_Rel18_SA104/".

Directory: OpenAPI

File: TS28541_NrNrm.yaml

7.2 OpenAPI Definitions of 5GC NRM

The OpenAPI/YAML definitions are specified in 3GPP Forge, refer to clause 4.3 of TS 28.623 [106] for the Forge location.

Directory: OpenAPI

File: TS28541_5GcNrm.yaml

7.3 OpenAPI Definitions of slice and network slice subnet NRM

The OpenAPI/YAML definitions are specified in 3GPP Forge, refer to clause 4.3 of TS 28.623 [106] for the Forge location.

Directory: OpenAPI

File: TS28541_SliceNrm.yaml

7.4 YANG Definitions for NR and NG-RAN

YANG definitions are specified in 3GPP Forge, refer to clause 4.4 of TS 28.623 [106] for the Forge location.

Directory: yang-models

Files:

_3gpp-nr-nrm-beam.yang

_3gpp-nr-nrm-bwp.yang

_3gpp-nr-nrm-bwpset.yang

_3gpp-nr-nrm-cco.yang

_3gpp-nr-nrm-cesmanagementfunction.yang

_3gpp-nr-nrm-commonbeamformingfunction.yang

_3gpp-nr-nrm-cpciconfigurationfunction.yang

_3gpp-nr-nrm-danrmanagementfunction.yang

_3gpp-nr-nrm-desmanagementfunction.yang

_3gpp-nr-nrm-dlbofunction.yang

_3gpp-nr-nrm-dmrofunction.yang

_3gpp-nr-nrm-dpciconfigurationfunction.yang

_3gpp-nr-nrm-drachoptimizationfunction.yang

_3gpp-nr-nrm-ecmappingrule.yang

_3gpp-nr-nrm-ep.yang

_3gpp-nr-nrm-eutrancellrelation.yang

_3gpp-nr-nrm-eutranetwork.yang

_3gpp-nr-nrm-eutranfreqrelation.yang

_3gpp-nr-nrm-eutranfrequency.yang

_3gpp-nr-nrm-externalamffunction.yang

_3gpp-nr-nrm-externalenbfunction.yang

_3gpp-nr-nrm-externaleutrancell.yang

_3gpp-nr-nrm-externalgnbcucpfunction.yang

_3gpp-nr-nrm-externalgnbcuupfunction.yang

_3gpp-nr-nrm-externalgnbdufunction.yang

_3gpp-nr-nrm-externalnrcellcu.yang

_3gpp-nr-nrm-externalservinggwfunction.yang

_3gpp-nr-nrm-externalupffunction.yang

_3gpp-nr-nrm-gnbcucpfunction.yang

_3gpp-nr-nrm-gnbcuupfunction.yang

_3gpp-nr-nrm-gnbdufunction.yang

_3gpp-nr-nrm-nrcellcu.yang

_3gpp-nr-nrm-nrcelldu.yang

_3gpp-nr-nrm-nrcellrelation.yang

_3gpp-nr-nrm-nrfreqrelation.yang

_3gpp-nr-nrm-nrfrequency.yang

_3gpp-nr-nrm-nrnetwork.yang

_3gpp-nr-nrm-nroperatorcelldu.yang

_3gpp-nr-nrm-nrsectorcarrier.yang

_3gpp-nr-nrm-ntnfunction.yang

_3gpp-nr-nrm-operatordu.yang

_3gpp-nr-nrm-rimrsset.yang

_3gpp-nr-nrm-rrmpolicy.yang

Mount information

If the class ManagedElement and the underlying hierarchy is contained under a SubNetwork, the YANG module for ManagedElement shall be mounted at the mountpoint "children-of-SubNetwork" in the YANG module _3gpp-common-subnetwork, together with the YANG modules containing IOCs that can be contained under the ManagedElement directly or under other IOCs contained by the ManagedElement.

If the class ManagedElement and the underlying hierarchy is contained under a MeContext, the YANG module for ManagedElement shall be mounted at the mountpoint "children-of-MeContext" in the YANG module _3gpp-common-mecontext, together with the YANG modules containing IOCs that can be contained under the ManagedElement directly or under other IOCs contained by the ManagedElement.

See IETF RFC 8528 [45] that describes the mechanism that adds the schema trees defined by a set of YANG modules onto a mount point defined in the schema tree in another YANG module.

7.5   YANG Definitions for 5GC

YANG definitions are specified in 3GPP Forge, refer to clause 4.4 of TS 28.623 [106] for the Forge location.

Directory: yang-models

Files:

_3gpp-5gc-nrm-affunction.yang

_3gpp-5gc-nrm-amffunction.yang

_3gpp-5gc-nrm-amfregion.yang

_3gpp-5gc-nrm-amfset.yang

_3gpp-5gc-nrm-anlffunction.yang_3gpp-5gc-nrm-ausffunction.yang

_3gpp-5gc-nrm-configurable5qiset.yang

_3gpp-5gc-nrm-dnfunction.yang

_3gpp-5gc-nrm-dynamic5qiset.yang

_3gpp-5gc-nrm-ecmconnectioninfo.yang

_3gpp-5gc-nrm-ep.yang

_3gpp-5gc-nrm-externalnrffunction.yang

_3gpp-5gc-nrm-externalnssffunction.yang

_3gpp-5gc-nrm-externalseppfunction.yang

_3gpp-5gc-nrm-FiveQiDscpMappingSet.yang

_3gpp-5gc-nrm-GtpUPathQoSMonitoringControl.yang

_3gpp-5gc-nrm-lmffunction.yang

_3gpp-5gc-nrm-n3iwffunction.yang

_3gpp-5gc-nrm-neffunction.yang

_3gpp-5gc-nrm-nfprofile.yang

_3gpp-5gc-nrm-nfservice.yang

_3gpp-5gc-nrm-ngeirfunction.yang

_3gpp-5gc-nrm-nrffunction.yang

_3gpp-5gc-nrm-nssffunction.yang

_3gpp-5gc-nrm-nwdaffunction.yang

_3gpp-5gc-nrm-pcffunction.yang

_3gpp-5gc-nrm-predefinedpccruleset.yang

_3gpp-5gc-nrm-QFQoSMonitoringControl.yang

_3gpp-5gc-nrm-scpfunction.yang

_3gpp-5gc-nrm-seppfunction.yang

_3gpp-5gc-nrm-smffunction.yang

_3gpp-5gc-nrm-smsffunction.yang

_3gpp-5gc-nrm-udmfunction.yang

_3gpp-5gc-nrm-udrfunction.yang

_3gpp-5gc-nrm-udsffunction.yang

_3gpp-5gc-nrm-upffunction.yang

_3gpp-5g-common-yang-types.yang

Mount information

If the class ManagedElement and the underlying hierarchy is contained under a SubNetwork, the YANG module for ManagedElement shall be mounted at the mountpoint "children-of-SubNetwork" in the YANG module _3gpp-common-subnetwork, together with the YANG modules containing IOCs that can be contained under the ManagedElement directly or under other IOCs contained by the ManagedElement.

If the class ManagedElement and the underlying hierarchy is contained under a MeContext, the YANG module for ManagedElement shall be mounted at the mountpoint "children-of-MeContext" in the YANG module _3gpp-common-mecontext, together with the YANG modules containing IOCs that can be contained under the ManagedElement directly or under other IOCs contained by the ManagedElement.

See IETF RFC 8528 [45] that describes the mechanism that adds the schema trees defined by a set of YANG modules onto a mount point defined in the schema tree in another YANG module.

7.6 YANG Definitions for slice and network slice subnet

YANG definitions are specified in 3GPP Forge, refer to clause 4.4 of TS 28.623 [106] for the Forge location.

Directory: yang-models

Files:

_3gpp-ns-nrm-common.yang

_3gpp-ns-nrm-networkslice.yang

_3gpp-ns-nrm-networkslicesubnet.yang

_3gpp-ns-nrm-serviceprofile.yang

_3gpp-ns-nrm-sliceprofile.yang

Annex A (normative):
Cell state handling

A.1 Relation between the administrative state and the "Pre-operation state of the gNB-DU Cell"

The administrative state indicates the permission to use or prohibition against using the cell, imposed through the OAM services. The administrative state has three values: "LOCKED", "SHUTTING DOWN" or "UNLOCKED"

The meanings of these values are defined in ITU T Recommendation X.731 [18].

The relation between the administrative state and the "Pre-operation state of the gNB-DU Cell" is defined in clause 8.5 of TS 38.401 [4]. See below an extract from clause 8.5 of TS 38.401 [4] on the F1 startup and cell activation.

If the `operationalState` is "ENABLED" (i.e. the resource is physically installed and working) and if the `administrativeState` is "UNLOCKED", the step "0: Pre-operational state" will exit and the step "1: F1 Setup Request" will be executed."

8.5 F1 Startup and cells activation

This function allows to setup the F1 interface between a gNB-DU and a gNB-CU and it allows to activate the gNB-DU cells.
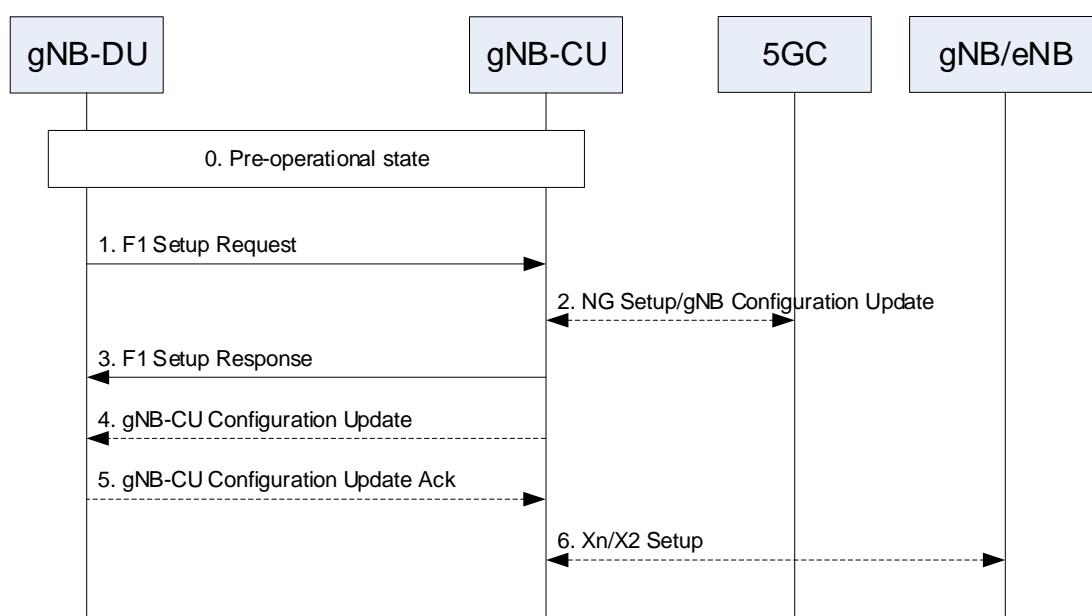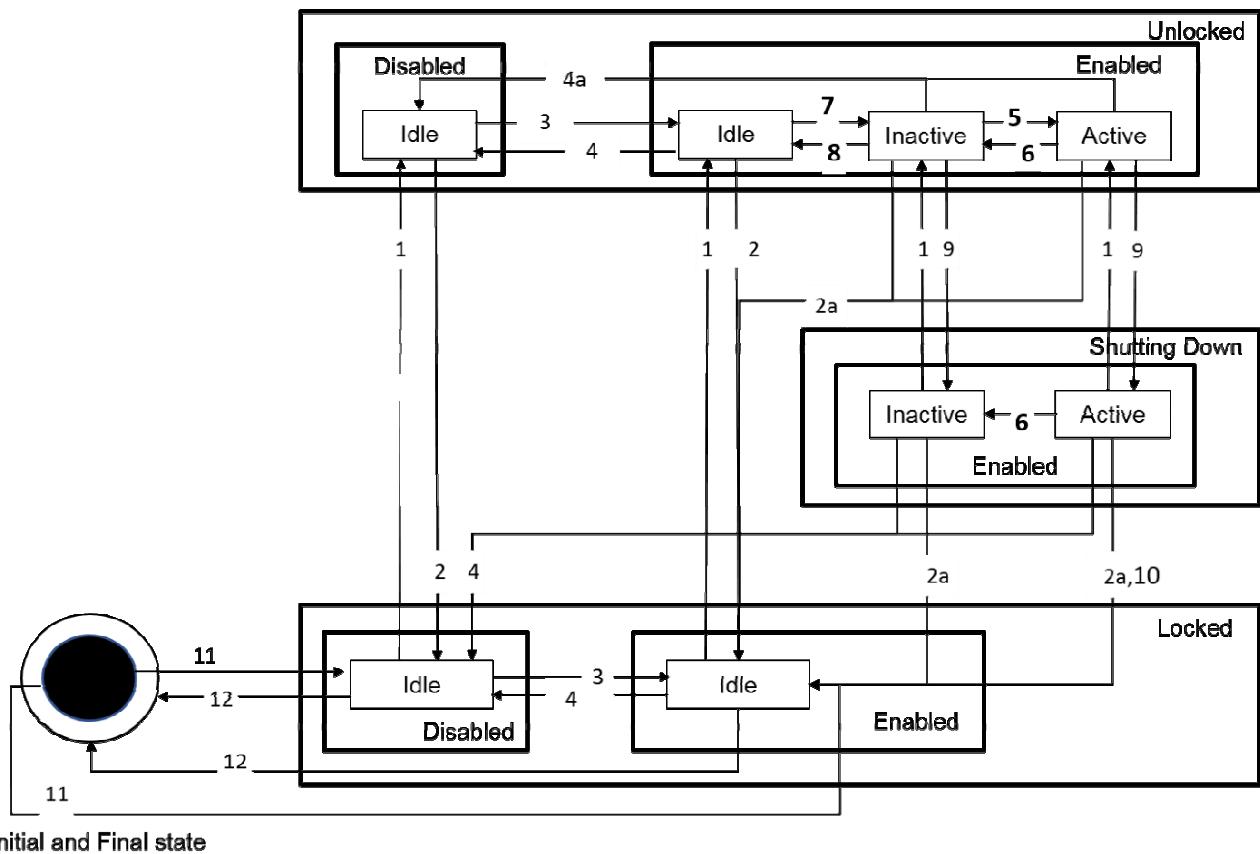
Figure 8.5-1: F1 startup and cell activation

A.2 Combined state diagram for gNB cell

This is the Combined state diagram for gNB cell.

Figure A.2-1: Combined gNB cell state diagram

The gNB-DU maintains cell states. The following table is the gNB cell state transition table.

In 3-split and 2-split deployment scenarios, the interactions between gNB-CU and gNB-DU are standardized. The interactions specified under the column "The state transition events and actions" of "The gNB Cell state transition table" below shall be present for the state transition.

In the non-split deployment scenarios, the interactions between gNB-CU and gNB-DU are not standardized. The interactions between gNB-CU and gNB-DU specified under the column "The state transition events and actions" of "The gNB Cell state transition table" can be replaced by other means that is not standardized.

Table A.2-1: The gNB Cell state transition table

Transition number	The state transition event and actions
1	Event: Receive request to unlock. Action: None.
2	Event: Receive request to lock. Action: None.
2a	Event: Receive request to lock Action: Send to gNB-CU the "gNB-DU Configuration Update message" with served cell to delete.
3	Event: When the required cell resource is physically installed and working. Action: none.
4	Event: When the required cell resource is not physically installed or is not working. Action: Send to gNB-CU the "gNB-DU Configuration update message" with cell to delete.
4a	Event: When the required cell resource is physically uninstalled or is not working. Action: Send to gNB-CU the "GNB-DU Configuration Update message" with served cell to delete.

5	Event: Receive from gNB-CU the "F1 Setup Response message" (identifying the cell to be activated). The cell is activated successfully. Actions: Do nothing or send gNB-CU the "gNB-DU Configuration Update message" with Cell stated as active' ----- or ----- Event: Receive from gNB-CU the "gNB-CU Configuration Update message" (identifying cell to be activated e.g., in case that the cell was not activated using the "F1 Setup Response message"). Actions: The cell is activated successfully. Send to gNB-CU the "gNB-CU Configuration Update Response" to confirm the cell is in active state. ----- or ----- Event: Receive from gNB-CU the "gNB-DU Configuration Update Acknowledge message" (identifying cell to be activated e.g., in case that the cell was not activated using the "F1 Setup Response message") and the cell is activated successfully Actions: Do nothing.
6	Event: Receive from gNB-CU the "gNB-CU Configuration Update message" and responds with gNB-CU Configuration Update Acknowledge messages. Actions: Respond with gNB-CU Configuration Update Acknowledge messages. ----- or ----- Event: Event: DU experiences an internal failure and decided to place the cell into inactive state. Actions: Send to gNB-CU the "gNB-DU Cell status Update message"
7	Event: Send to gNB-CU the "F1 Setup request" (identifying the cell that is configured and ready to be activated). Actions: none. ----- or ----- Send to gNB-CU the "gNB-DU Configuration Update message" with the served cell to add. Actions: none.
8	Event: Sends to gNB-CU the "gNB-DU Configuration Update message" with served cell to delete. Receive response from gNB-CU the "gNB-DU Configuration Update Acknowledge message". Actions: None.
9	Event: Receive request to shut down. Actions: None.
10	Event: Last user quit. Actions: Send to gNB-CU the "GNB-DU Configuration Update message" with served cell to delete.
11	Event: When a cell is created and is configured. Actions: None
12	Event: When a cell is deleted. Action: None.

Annex B (normative):
NetworkSlice and NetworkSliceSubnet state handling

B.1   NetworkSlice instance state handling

A NetworkSlice instance is a logical object in the management system that represents a complex grouping of resources that may be in various states. At any time, the management system needs to know the state of an NetworkSlice instance.

The ITU-T X.731 [18], to which [17] refers, has defined the inter-relation between the administrative state and operational state of systems in general.
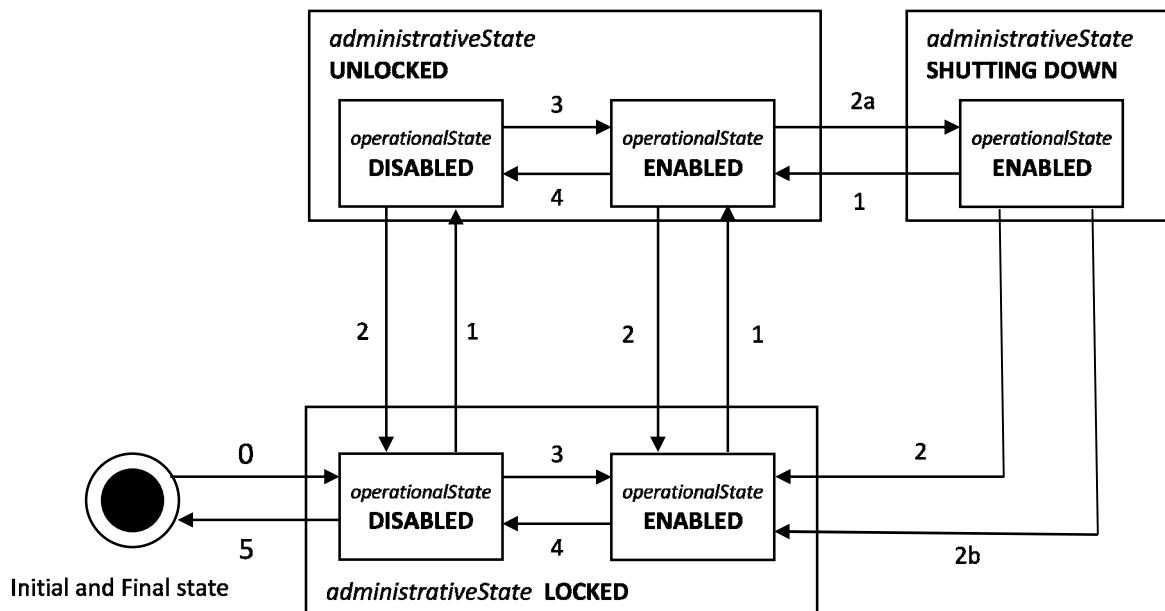
Figure B.1: Combined NetworkSlice instance state diagram

The interactions specified under the column "The state transition events and actions" of " NetworkSlice instance state transition table" below shall be present for the state transition.

Table B.1: The NetworkSlice instance state transition table

Trigger number	The state transition events and actions
0	Operation allocateNsi results in the creation of a NetworkSlice instance. The administrative state is set to LOCKED and operationalState is set to DISABLED -- or – CM operation creates a NetworkSlice instance. The administrative state is set to LOCKED and operationalState is set to DISABLED
1	CM operation sets administrative state to UNLOCKED.
2	CM operation sets administrative state to LOCKED
2a	CM operation sets administrative state to SHUTTING DOWN
2b	The last user of the NetworkSlice instance stops using the NetworkSlice instance
3	The related NetworkSliceSubnet instance (identified by `NetworkSlice.networkSliceSubnetRef`) changes state to UNLOCKED and ENABLED.
4	The related NetworkSliceSubnet instance (identified by `NetworkSlice.networkSliceSubnetRef`) changes state to LOCKED -- or – The related NetworkSliceSubnet instance (identified by `NetworkSlice.networkSliceSubnetRef`) changes state to DISABLED

5	Operation deallocateNsi results in the deletion of NetworkSlice instance -- or – CM operation deletes NetworkSlice instance

B.2 State handling of NetworkSliceSubnet instance

A NetworkSliceSubnet instance is a logical object in the management system that represents a complex grouping of resources that may be in various states. At any time the management system needs to know the state of an NetworkSliceSubnet instance.

The ITU-T X.731 [18], to which [17] refers, has defined the inter-relation between the administrative state and operational state of systems in general.
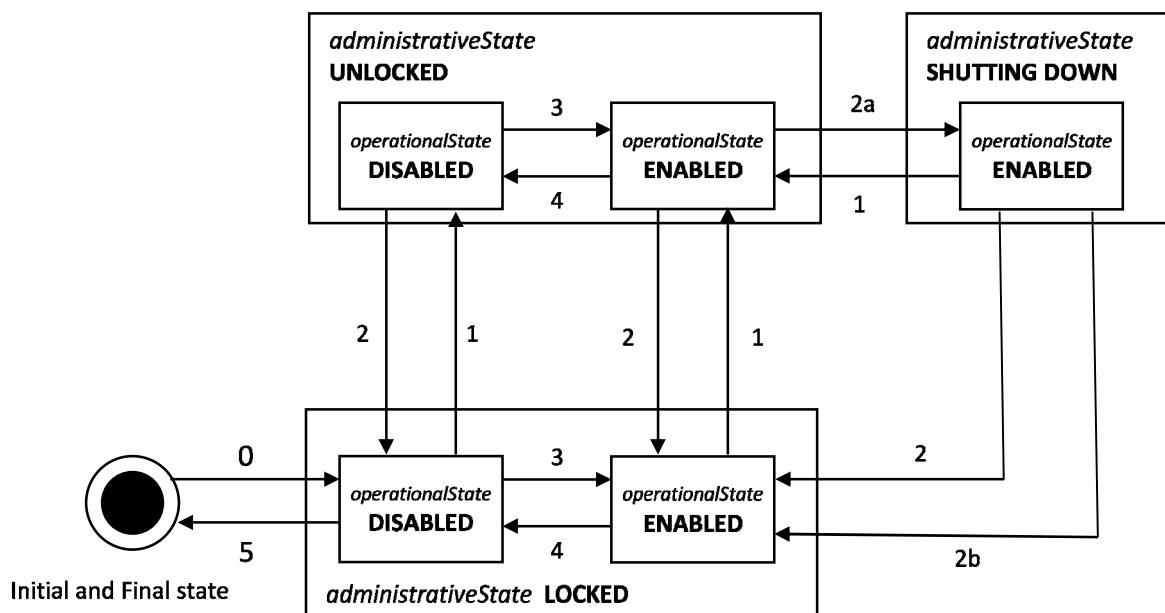
Figure B.2.1: Combined NetworkSliceSubnet instance state diagram

The interactions specified under the column "The state transition events and actions" of "NNetworkSliceSubnet instanceSSI state transition table" below shall be present for the state transition.

Table B.2.1: The NetworkSliceSubnet instance state transition table

Trigger number	The state transition events and actions
0	Operation allocateNssi results in the creation of NetworkSliceSubnet instance. The administrative state is set to LOCKED and operationalState is set to DISABLED -- or – CM operation creates NetworkSliceSubnet instance. The administrative state is set to LOCKED and operationalState is set to DISABLED
1	CM operation sets administrative state to UNLOCKED.
2	CM operation sets administrative state to LOCKED
2a	CM operation sets administrative state to SHUTTING DOWN
2b	The last user of the NetworkSliceSubnet instance stops using the NetworkSliceSubnet instance
3	All constituent NetworkSliceSubnet instances (identified by `NetworkSliceSubnet.networkSliceSubnetRef`) change state to UNLOCKED and ENABLED.
4	At least one constituent NetworkSliceSubnet instance (identified by `NetworkSliceSubnet.networkSliceSubnetRef`) changes state to LOCKED -- or –

	At least one constituent NetworkSliceSubnet instance (identified by `NetworkSliceSubnet.networkSliceSubnetRef`) changes state to DISABLED
5	Operation deallocateNssi results in the deletion of NetworkSliceSubnet instance -- or – CM operation deletes NetworkSliceSubnet instance.

Annex C (normative):
Void

Annex D (normative):
Void

Annex E (normative):
Void

Annex F (normative):
Void

Annex G (normative):
Void

Annex H (normative):
Void

Annex I (normative):
Void

Annex J (normative):
Void

Annex K (normative):
Void

Annex L (normative):
Relation of GSMA GST, ServiceProfile and SliceProfile

L.1   General

This annex describes the relation between GSMA GST [50] and the `ServiceProfile` and `SliceProfile` captured in the network slice NRM fragment (see clause 6).

L.2   GSMA GST, ServiceProfile and sliceProfile

The GSMA GST is used as the SLA information for the communication between the NSC (e.g., vertical industry) and the NSP. The SLA requirements can be fulfilled from management aspect and control aspect in a coordinated way. The SLS includes `ServiceProfile` information model.

As shown in figure L.2.1, the GST parameters [50] are used as input to `ServiceProfile`. The `ServiceProfile` which defines the service requirements related to a particular NSC, is translated into the `SliceProfile`. In particular, the attributes captured in the `ServiceProfile` are mapped to `TopSliceSubnetProfile` attributes. Based on the `TopSliceSubnetProfile` attributes, the corresponding requirements for the dedicated domain specific network slice subnets are defined. For example, the `CNSliceSubnetProfile` attributes are used to carry 5GC domain requirements, the `RANSliceSubnetProfile` attributes are used to carry NG-RAN domain requirements, and the TN requirements are derived and provide input to the TN domain.

As shown in Table L.2.1 some of the attributes in `CNSliceSubnetProfile` and `RANSliceSubnetProfile` parameters can be translated to configurable parameters related to network function behaviour to satisfy SLS of the service in the control plane. While other information (e.g., delay tolerance, deterministic communication support) in `CNSliceSubnetProfile` and `RANSliceSubnetProfile` are kept at OAM domain and is used to determine the overall behaviour of the network slice.

The following table show the translation of GST attributes.

Table L.2.1: GST translation

GST parameters	ServiceProfile attributes	SliceProfile Parameter			Configuration Parameters
		TopSlice SubnetProfile attributes	RANSlice SubnetProfile attributes	CNSlice SubnetProfile attributes	
Maximum number of UEs	maxNumberof UEs	maxNumberof UE	maxNumberofU Es	maxNumber ofUEs	attributes in clause 5.3.96 IOC NSACFFunction: NsacfInfoSnssai.maxNumb erofUEs
Maximum number of PDU sessions	maxNumberof Conns	maxNumberof PDUSessions	N/A	maxNumber ofPDUSessi ons	attributes in clause 5.3.96 IOC NSACFFunction: NsacfInfoSnssai.maxNumb erofPDUSessions

NOTE: Void.
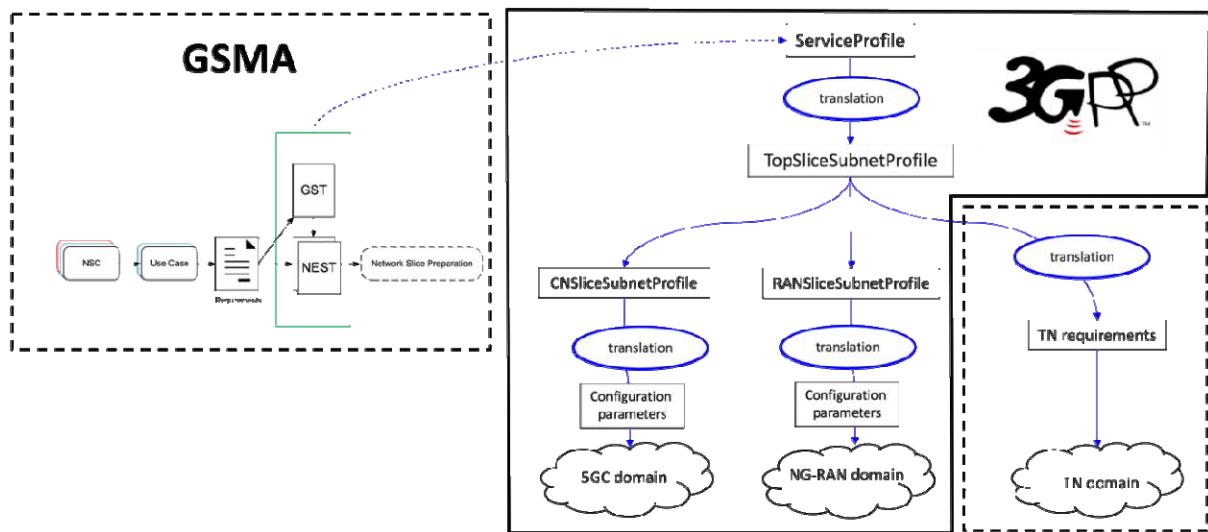
Figure L.2.1 Relation between GSMA GST, ServiceProfile and SliceProfile

Annex M (normative): Managed NF Service state handling

M.1 Combined state diagram for a Managed NF Service
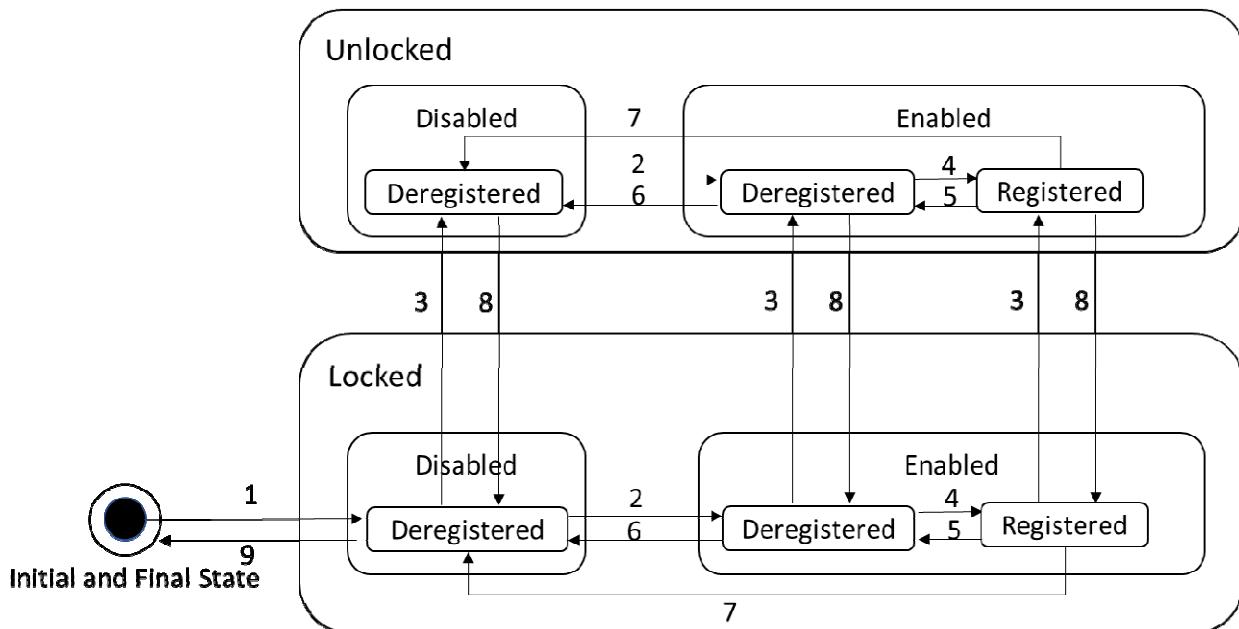
Figure M.1-1: Combined Managed NF Service state diagram

Table M.1-1: The Managed NF Service state transition table

Trigger number	The state transition events and actions
1	Event: Received information of deployment of a Network Function (NF) service. Action: Create a ManagedNFService instance (MSI) whose(Administrative/Operational/Registration) are set to Locked/Disabled/Deregistered.
2	Event: Received information of positive state change of the NF service. Action: Set the Operational state of the MSI to Enabled.
3	Event: Received CM operation to unlock the NF Service or the NF. Action: Set the Administrative state of the MSI to Unlocked. Note: Changing Administrative state on NF service level is optional
4	Event: Received information that the NF Service is registered to an NRF either by the NF itself or by an OAM system on behalf of the NF. Action: Set the registration state of the MSI to Registered.
5	Event: Received information that the NF Service is deregistered from the NRF either by the NF itself or by an OAM system on behalf of the NF. Action: Set registration state of the MSI to Deregistered.
6	Event: Received information that the NF Service is unavailable because of, for example, limitation of resource or other exceptions. Action: Set the Operational state of the MSI to Disabled.
7	Event: Received information that the NF Service is unavailable. Action: Deregister the NF Service on behalf of the NF, and set the registration state of the MSI to Deregistered.
8	Event: Received CM operation to lock the NF Service or the NF. Action: Set the Administrative state of the MSI to Locked. Note: Changing Administrative state on NF service level is optional
9	Event: Received information that the NF Service is terminated or deleted,

	Action: Delete the MSI and set its state to NULL.

Annex N (normative):
Void

Annex O (informative):
QoS model usage for NG-RAN

O.1 Overview

The Configurable 5QI set IOC (as defined in 5.3.75) provides flexibility to support multiple scenarios:

- Configurable 5QI sets can be name contained by SubNetwork, ManagedElement, GNBDUFunction, GNBCUUPFunction and GNBCUCPFunction.

- Sets are referenced by attributes (configurable5QISetRef) in applicable MOIs.

Specific containment and/or referencing may be appropriate for certain scenarios.

O.2 General usage

For consistency, referenced 5QI sets can be defined within the same subtree (see Figure 4.2.1.1-8) as follows:

- a Configurable5QISet instance contained by ManagedEntity does not need a reference from the ManagedEntity instance which contains it.

- a Configurable5QISet instance contained by ManagedElement is only referenced by ManagedFunction instances contained within that ManagedElement.

- a Configurable5QISet instance contained by Subnetwork is only referenced by ManagedFunction instances contained within the same Subnetwork.

- a Configurable5QISet instance contained by ManagedFunction is only used by that ManagedFunction instance.

O.3 NG-RAN MOCN network sharing usage recommendation

The operator specific IOCs, including OperatorDU (as defined in 4.3.67) which are configured per operator, are used to support the NG-RAN Multi-Operator Core Network (NG-RAN MOCN) network sharing with multiple Cell Identity broadcast scenario.

In addition to the general usage described in O.2, the following recommendations apply for NG-RAN MOCN network sharing with multiple Cell Identity broadcast scenario:

- Configurable5QISet instances applicable to multiple operators sharing a gNB can be associated with the shared GNBDUFunction

- Configurable5QI instances which are operator specific can be referenced by the OperatorDU defined for the applicable operator

Annex P (informative): Mapping between GSMA GST and ServiceProfile

Table P.1 shows the mapping from the GSMA GST, see reference [50] to the ServiceProfile which can be found in clause 6.3.3 of this document.

Table P.1: Mapping between GSMA GST and ServiceProfile

GSMA GST attribute name [50]	GST reference location [50]	ServiceProfile attribute	Clause number (see NOTE)
Availability	3.4.1	`availability`	6.4.1
Area of service	3.4.2	`coverageArea`	6.4.1
Delay tolerance	3.4.3	`delayTolerance`	6.4.1 and 6.3.7
Deterministic communication	3.4.4	`dLDeterministicComm`	6.4.1 and 6.3.8
Determinstic communication	3.4.4	`uLDeterministicComm`	6.4.1 and 6.3.8
Maximum supported packet size	3.4.11	`dLMaxPktSize`	6.4.1 and 6.3.11
Maximum supported packet size	3.4.11	`uLMaxPktSize`	6.4.1 and 6.3.12
Downlink throughput per network slice	3.4.5	`dLThptPerSlice`	6.4.1 and 6.3.9
Uplink throughput per network slice	3.4.31	`uLThptPerSlice`	6.4.1 and 6.3.9
Downlink maximum throughput per UE	3.4.6	`dLThptPerUE`	6.4.1 and 6.3.9
Uplink maximum throughput per UE	3.4.32	`uLThptPerUE`	6.4.1 and 6.3.9
Energy efficiency	3.4.7	`energyEfficiency`	6.4.1 and 6.3.30
Performance monitoring	3.4.18	`kPIMonitoring`	6.4.1 and 6.3.14
Maximum number of PDU sessions	3.4.16	`maxNumberofPDUSessions`	6.4.1 and 6.3.12
Maximum number of UEs	3.4.17	`maxNumberofUEs`	6.4.1 and 6.3.38
NB-IoT support	3.4.14	`nBIoT`	6.4.1 and 6.3.20
Positioning support	3.4.20	`positioning`	6.4.1 and 6.3.26
Radiospectrum	3.4.21	`radioSpectrum`	6.4.1 and 6.3.31
Simultaneous use of the network slice	3.4.25	`sliceSimultaneousUse`	6.4.1
Synchronicity	3.4.29	`synchronicity`	6.4.1 and 6.3.27
UE density	3.4.30	`termDensity`	6.4.1 and 6.3.17
Supported device velocity	3.4.28	`uESpeed`	6.4.1
User management openness	3.4.33	`userMgmtOpen`	6.4.1 and 6.3.15
V2X-PC5 Network Scheduled Mode	3.4.35	`v2XCommModels`	6.4.1 and 6.3.16
Network Slice Specific Authentication and Authorization (NSSAA) Required	3.4.37	`nssaaSupport`	6.4.1 and 6.3.34
Slice quality of service	3.4.26	NA	NA
Performance prediction	3.4.19	NA	NA
Data network access	3.4.34	`dataNetworkAccess`	6.4.1 and 6.3.46

Isolation level	3.4.9	NA	NA
Group communication support	3.4.8	NA	NA
Latency from (last) UPF to Application Server	3.4.36	NA	NA
Mission critical support	3.4.12	NA	NA
MMTel support	3.4.13	NA	NA
Network function owned by Network Slice Customer	3.4.15	NA	NA
Monitoring and analytics	3.4.23	NA	NA
Session and Service Continuity support	3.4.24	NA	NA
Support for non-IP traffic	3.4.27	`nonIPSupport`	6.4.1 and 6.3.42
Latency from (last) UPF to Application Server	3.4.36	NA	NA
Multimedia Priority Service	3.4.38	NA	NA
Maximum number of UEs with at least one PDU session/PDN connection	3.4.40	NA	NA
Supported data network	3.4.39	`supportedDataNetworks`	6.4.1 and 6.3.45
V2X-PC5 parameter provisioning	3.4.41	NA	NA
PDU Set Support	3.4.42	NA	NA
NOTE: The attribute definitions can be found in clause 6.4, there where the attribute is defined by a custom data type the clause for the data type definition is also mentioned.			

Annex Q (informative): PlantUML source code

Q.1   5GC NRM relationship diagram

Q.1.1   The 5GC NF NRM containment/naming relationship

```
@startuml Figure 5.2.1.1-1: 5GC NF NRM containment/naming relationship
hide empty members
skinparam ClassStereotypeFontStyle normal
hide circle
skinparam class {
BackgroundColor White
ArrowColor Black
BorderColor Black
}
left to right direction
skinparam ranksep 100
skinparam nodesep 4
class ManagedElement <<InformationObjectClass>>
class LMFFunction <<InformationObjectClass>>
class NGEIRFunction <<InformationObjectClass>>
class NSSFFunction <<InformationObjectClass>>
class SEPPFFunction <<InformationObjectClass>>
class SCPFFunction <<InformationObjectClass>>
class SMSFFunction <<InformationObjectClass>>
class UDRFunction <<InformationObjectClass>>
class N3IWFFunction <<InformationObjectClass>>
class "5G DDNMFFunction" <<InformationObjectClass>>
class NSSAAFFunction  <<InformationObjectClass>>
class MFAFFunction <<InformationObjectClass>>
class NSACFFunction <<InformationObjectClass>>
class GMLCFunction <<InformationObjectClass>>
class TSCTSFFunction <<InformationObjectClass>>
class MBUPFFunction <<InformationObjectClass>>
class MNPFFunction <<InformationObjectClass>>

class AMFFunction <<InformationObjectClass>>
class SMFFunction <<InformationObjectClass>>
class UPFFunction <<InformationObjectClass>>
class PCFFunction <<InformationObjectClass>>
class NEFFunction <<InformationObjectClass>>
class NRFFunction <<InformationObjectClass>>
class UDMFunction <<InformationObjectClass>>
class AUSFFunction <<InformationObjectClass>>
class AFFunction <<InformationObjectClass>>
class EASDFFunction <<InformationObjectClass>>
class CHFFFunction <<InformationObjectClass>>
class DCCFFunction <<InformationObjectClass>>
class NWDAFFunction <<InformationObjectClass>>
class AANFFunction <<InformationObjectClass>>
class BSFFunction <<InformationObjectClass>>
class MBSMFFunction <<InformationObjectClass>>

LMFFunction        "*" --* "1" ManagedElement: <<names>>
NGEIRFunction      "*" --* "1" ManagedElement: <<names>>
NSSFFunction       "*" --* "1" ManagedElement: <<names>>
SEPPFFunction      "*" --* "1" ManagedElement: <<names>>
SCPFFunction       "*" --* "1" ManagedElement: <<names>>
SMSFFunction       "*" --* "1" ManagedElement: <<names>>
UDRFunction        "*" --* "1" ManagedElement: <<names>>
N3IWFFunction      "*" --* "1" ManagedElement: <<names>>
"5G DDNMFFunction" "*" --* "1" ManagedElement: <<names>>
NSSAAFFunction     "*" --* "1" ManagedElement: <<names>>
MFAFFunction       "*" --* "1" ManagedElement: <<names>>
NSACFFunction      "*" --* "1" ManagedElement: <<names>>
GMLCFunction       "*" --* "1" ManagedElement: <<names>>
TSCTSFFunction     "*" --* "1" ManagedElement: <<names>>
MBUPFFunction      "*" --* "1" ManagedElement: <<names>>
MNPFFunction       "*" --* "1" ManagedElement: <<names>>
```

```
ManagedElement "1" *-- "*" AMFFunction  : <<names>>
ManagedElement "1" *-- "*" SMFFunction  : <<names>>
ManagedElement "1" *-- "*" UPFFunction  : <<names>>
ManagedElement "1" *-- "*" PCFFunction  : <<names>>
ManagedElement "1" *-- "*" NEFFunction  : <<names>>
ManagedElement "1" *-- "*" NRFFunction  : <<names>>
ManagedElement "1" *-- "*" UDMFunction  : <<names>>
ManagedElement "1" *-- "*" AUSFFunction : <<names>>
ManagedElement "1" *-- "*" AFFunction   : <<names>>
ManagedElement "1" *-- "*" EASDFFunction: <<names>>
ManagedElement "1" *-- "*" CHFFFunction : <<names>>
ManagedElement "1" *-- "*" DCCFFunction : <<names>>
ManagedElement "1" *-- "*" NWDAFFunction : <<names>>
ManagedElement "1" *-- "*" AANFFunction : <<names>>
ManagedElement "1" *-- "*" BSFFunction  : <<names>>
ManagedElement "1" *-- "*" MBSMFFunction: <<names>>

class SubNetwork <<InformationObjectClass>>
class ExternalNRFFunction <<InformationObjectClass>>
class ExternalNSSFFunction <<InformationObjectClass>>
class ExternalAMFFunction <<InformationObjectClass>>
ExternalNRFFunction     "*" -u-* "1" SubNetwork: <<names>>
ExternalNSSFFunction    "*" -u-* "1" SubNetwork: <<names>>
SubNetwork "1" *-d- "*" ExternalAMFFunction  : <<names>>
SubNetwork "1" *-- "*" ManagedElement  : <<names>>
@enduml
```

Q.1.2 The Figure 5.2.1.1-2 for the transport view of AMF NRM

```
'Figure 5.2.1.1-2: Transport view of AMF NRM
@startuml Figure 5.2.1.1-2: Transport view of AMF NRM
hide empty members
hide circle
skinparam class {
BackgroundColor White
ArrowColor Black
BorderColor Black
}
skinparam ClassStereotypeFontStyle normal
skinparam linetype ortho
skinparam nodesep 2
skinparam ranksep 100
left to right direction
class AMFFunction <<InformationObjectClass>>
class EP_N2 <<InformationObjectClass>>
class EP_N8 <<InformationObjectClass>>
class EP_N11 <<InformationObjectClass>>
class EP_N12 <<InformationObjectClass>>
class EP_N13 <<InformationObjectClass>>
class EP_N15 <<InformationObjectClass>>
class EP_N17 <<InformationObjectClass>>
class EP_N22 <<InformationObjectClass>>
class EP_N26 <<InformationObjectClass>>
class EP_N20 <<InformationObjectClass>>
class EP_NL1 <<InformationObjectClass>>
class EP_NL2 <<InformationObjectClass>>
class EP_N60 <<InformationObjectClass>>
class EP_N41 <<InformationObjectClass>>
class EP_N42 <<InformationObjectClass>>
class EP_N89 <<InformationObjectClass>>
class EP_N11mb <<InformationObjectClass>>
class FarEnd_N2 <<ProxyClass>>
class UDMFunction <<InformationObjectClass>>
class SMFFunction <<InformationObjectClass>>
class AUSFFunction <<InformationObjectClass>>
class "AMFFunction " <<InformationObjectClass>>
class PCFFunction <<InformationObjectClass>>
class NGEIRFunction <<InformationObjectClass>>
class NSSFFunction <<InformationObjectClass>>
class MMEFunction <<InformationObjectClass>>
class SMSFFunction <<InformationObjectClass>>
class LMFFunction <<InformationObjectClass>>
class GMLCFunction <<InformationObjectClass>>
class NSACFFunction <<InformationObjectClass>>
class "CHFFunction (HPLMN)" <<InformationObjectClass>>
```

```
class "CHFFunction (VPLMN)" <<InformationObjectClass>>
class TSCTSFFunction <<InformationObjectClass>>
class MBSMFFunction <<InformationObjectClass>>

AMFFunction "1" *-- "*" EP_N2: <<names>>
AMFFunction "1" *-- "*" EP_N8: <<names>>
AMFFunction "1" *-- "*" EP_N11: <<names>>
AMFFunction "1" *-- "*" EP_N12: <<names>>
AMFFunction "1" *-- "*" EP_N13: <<names>>
AMFFunction "1" *-- "*" EP_N15: <<names>>
AMFFunction "1" *-- "*" EP_N17: <<names>>
AMFFunction "1" *-- "*" EP_N22: <<names>>
AMFFunction "1" *-- "*" EP_N26: <<names>>
AMFFunction "1" *-- "*" EP_N20: <<names>>
AMFFunction "1" *-- "*" EP_NL1: <<names>>
AMFFunction "1" *-- "*" EP_NL2: <<names>>
AMFFunction "1" *-- "*" EP_N60: <<names>>
AMFFunction "1" *-- "*" EP_N41: <<names>>
AMFFunction "1" *-- "*" EP_N42: <<names>>
AMFFunction "1" *-- "*" EP_N89: <<names>>
AMFFunction "1" *-- "*" EP_N11mb: <<names>>

EP_N2  "1" --> "1" FarEnd_N2
EP_N8  "1" --> "1" UDMFunction
EP_N11 "1" --> "1" SMFFunction
EP_N12 "1" --> "1" AUSFFunction
EP_N13 "1" --> "1" "AMFFunction "
EP_N15 "1" --> "1" PCFFunction
EP_N17 "1" --> "1" NGEIRFunction
EP_N22 "1" --> "1" NSSFFunction
EP_N26 "1" --> "1" MMEFunction
EP_N20 "1" --> "1" SMSFFunction
EP_NL1 "1" --> "1" LMFFunction
EP_NL2 "1" --> "1" GMLCFunction
EP_N60 "1" --> "1" NSACFFunction
EP_N41 "1" --> "1" "CHFFunction (HPLMN)"
EP_N42 "1" --> "1" "CHFFunction (VPLMN)"
EP_N89 "1" --> "1" TSCTSFFunction
EP_N11mb "1" --> "1" MBSMFFunction
note top of FarEnd_N2: "This proxy class represents\n GNBFunction or \n GNBCUCPFunction (TS\n
28.541) or ENBFunction (TS\n 28.658) or N3IWFFunction"

@enduml
```

Q.1.3   The Figure 5.2.1.1-3 for the transport view of SMF NRM

```
@startuml Figure 5.2.1.1-3: Transport view of SMF NRM
hide empty members
hide circle
skinparam class {
BackgroundColor White
ArrowColor Black
BorderColor Black
}
skinparam ClassStereotypeFontStyle normal
skinparam nodesep 3
skinparam ranksep 100
skinparam linetype ortho
left to right direction
class SMFFunction <<InformationObjectClass>>
class EP_NS5C <<InformationObjectClass>>
class EP_N4 <<InformationObjectClass>>
class EP_N7 <<InformationObjectClass>>
class EP_N10 <<InformationObjectClass>>
class EP_N11 <<InformationObjectClass>>
class EP_N16 <<InformationObjectClass>>
class EP_N40 <<InformationObjectClass>>
class EP_N88 <<InformationObjectClass>>
class EP_N16mb <<InformationObjectClass>>

class FarEnd_S5C <<ProxyClass>>
class UPFFunction <<InformationObjectClass>>
class UDMFunction <<InformationObjectClass>>
class AMFFunction <<InformationObjectClass>>
class PCFFunction <<InformationObjectClass>>
```

```
class "SMFFunction " <<InformationObjectClass>>
class CHFFunction <<InformationObjectClass>>
class EASDFFunction <<InformationObjectClass>>
class MBSMFFunction <<InformationObjectClass>>

SMFFunction "1" *-- "*" EP_NS5C : <<names>>
SMFFunction "1" *-- "*" EP_N4   : <<names>>
SMFFunction "1" *-- "*" EP_N7   : <<names>>
SMFFunction "1" *-- "*" EP_N10  : <<names>>
SMFFunction "1" *-- "*" EP_N11  : <<names>>
SMFFunction "1" *-- "*" EP_N16  : <<names>>
SMFFunction "1" *-- "*" EP_N40  : <<names>>
SMFFunction "1" *-- "*" EP_N88  : <<names>>
SMFFunction "1" *-- "*" EP_N16mb  : <<names>>

EP_NS5C  "1" --> "1" FarEnd_S5C
EP_N4    "1" --> "1" UPFFunction
EP_N7    "1" --> "1" PCFFunction
EP_N10   "1" --> "1" UDMFunction
EP_N11   "1" --> "1" AMFFunction
EP_N16   "1" --> "1" "SMFFunction "
EP_N40   "1" --> "1" CHFFunction
EP_N88   "1" --> "1" EASDFFunction
EP_N16mb  "1" --> "1" MBSMFFunction
note top of FarEnd_S5C: "It represents ServingGWFunction\(from TS 28.708)"

@enduml
```

Q.1.4 The Figure 4.2.1.1-X: NRM fragment to support energy saving based on Energy Cost Reporting

```
@startuml TS28.541 Figure NRECMappingRule
hide empty members
hide circle
skinparam class {
BackgroundColor White
ArrowColor Black
BorderColor Black
}
skinparam ClassStereotypeFontStyle normal
top to bottom direction
skinparam nodesep 40

class ManagedEntity <<ProxyClass>>
note left
Represents the following IOCs:
SubNetwork or
ManagedElement
end note

class " ManagedEntity" <<ProxyClass>>
note left
Represents the following IOCs:
GNBCUCPFunction
end note

class NRECMappingRule <<InformationObjectClass>>

NRECMappingRule "*" -u-* "1" ManagedEntity: <<names>>
NRECMappingRule "0..1" <-u "*" " ManagedEntity": " +nRECMappingRuleRef"

@enduml
```

Q.2 5GC NRM inheritance diagram

Q.2.1 The inheritance hierarchy from IOC ManagedFunction related to the 5GC NF NRM

```
@startuml Figure 5.2.1.2-1: Inheritance hierarchy from IOC ManagedFunction
hide empty members
skinparam ClassStereotypeFontStyle normal
hide circle
skinparam class {
BackgroundColor White
ArrowColor Black
BorderColor Black
}
left to right direction
skinparam linetype ortho
skinparam nodesep 2
class ManagedFunction <<InformationObjectClass>>
class ExternalNRFFunction <<InformationObjectClass>>
class ExternalNSSFFunction <<InformationObjectClass>>
class LMFFunction <<InformationObjectClass>>
class NGEIRFunction <<InformationObjectClass>>
class NSSFFunction <<InformationObjectClass>>
class SCPFFunction <<InformationObjectClass>>
class SEPPFFunction <<InformationObjectClass>>
class SMSFFunction <<InformationObjectClass>>
class UDRFunction <<InformationObjectClass>>
class N3IWFFunction <<InformationObjectClass>>
class NSACFFunction <<InformationObjectClass>>
class EASDFFunction <<InformationObjectClass>>
class ExternalAMFFunction <<InformationObjectClass>>
class AMFFunction <<InformationObjectClass>>
class SMFFunction <<InformationObjectClass>>
class UPFFunction <<InformationObjectClass>>
class PCFFunction <<InformationObjectClass>>
class NEFFunction <<InformationObjectClass>>
class NRFFunction <<InformationObjectClass>>
class UDMFunction <<InformationObjectClass>>
class AUSFFunction <<InformationObjectClass>>
class "5G DDNMFFunction" <<InformationObjectClass>>
class AFFunction <<InformationObjectClass>>
class NWDAFFunction <<InformationObjectClass>>
class NSSAAFFunction  <<InformationObjectClass>>
class CHFFFunction <<InformationObjectClass>>
class DCCFFunction <<InformationObjectClass>>
class MFAFFunction <<InformationObjectClass>>
class AANFFunction <<InformationObjectClass>>
class BSFFunction <<InformationObjectClass>>
class GMLCFunction <<InformationObjectClass>>
class TSCTSFFunction <<InformationObjectClass>>
class MBUPFFunction <<InformationObjectClass>>
class MBSMFFunction <<InformationObjectClass>>
class MNPFFunction <<InformationObjectClass>>
class ExternalSeppFunction <<InformationObjectClass>>
class UDSFFunction <<InformationObjectClass>>

ExternalNSSFFunction --|> ManagedFunction
LMFFunction          --|> ManagedFunction
ExternalNRFFunction  --|> ManagedFunction
NGEIRFunction        --|> ManagedFunction
NSSFFunction         --|> ManagedFunction
SCPFFunction         --|> ManagedFunction
SEPPFFunction        --|> ManagedFunction
SMSFFunction         --|> ManagedFunction
UDRFunction          --|> ManagedFunction
N3IWFFunction        --|> ManagedFunction
NSACFFunction        --|> ManagedFunction
EASDFFunction        --|> ManagedFunction
NSSAAFFunction       --|> ManagedFunction
MFAFFunction         --|> ManagedFunction
AANFFunction         --|> ManagedFunction
BSFFunction          --|> ManagedFunction
MBUPFFunction        --|> ManagedFunction
MNPFFunction         --|> ManagedFunction
```

```
UDSFFunction        --|> ManagedFunction

ManagedFunction <|-- AMFFunction
ManagedFunction <|-- SMFFunction
ManagedFunction <|-- ExternalAMFFunction
ManagedFunction <|-- UPFFunction
ManagedFunction <|-- PCFFunction
ManagedFunction <|-- NEFFunction
ManagedFunction <|-- NRFFunction
ManagedFunction <|-- UDMFunction
ManagedFunction <|-- AUSFFunction
ManagedFunction <|-- "5G DDNMFFunction"
ManagedFunction <|-- AFFunction
ManagedFunction <|-- NWDAFFunction
ManagedFunction <|-- CHFFunction
ManagedFunction <|-- DCCFFunction
ManagedFunction <|-- GMLCFunction
ManagedFunction <|-- TSCTSFFunction
ManagedFunction <|-- MBSMFFunction
ManagedFunction <|-- ExternalSeppFunction
@enduml
```

Q.2.2   Figure 5.2.1.2-2 the inheritance hierarchy from IOC EP_RP related to 5GC NF NRM

```
@startuml igure 5.2.1.2-2: Inheritance hierarchy from IOC EP_RP related to the 5GC NF NRM
hide empty members
skinparam ClassStereotypeFontStyle normal
hide circle
skinparam class {
BackgroundColor White
ArrowColor Black
BorderColor Black
}
left to right direction
skinparam linetype ortho
'skinparam BoxPadding 40
skinparam nodesep 2

class EP_RP <<InformationObjectClass>>
class EP_N2 <<InformationObjectClass>>
class EP_N3 <<InformationObjectClass>>
class EP_N4 <<InformationObjectClass>>
class EP_N5 <<InformationObjectClass>>
class EP_N6 <<InformationObjectClass>>
class EP_N7 <<InformationObjectClass>>
class EP_N8 <<InformationObjectClass>>
class EP_N9 <<InformationObjectClass>>
class EP_N10 <<InformationObjectClass>>
class EP_N11 <<InformationObjectClass>>
class EP_N12 <<InformationObjectClass>>
class EP_N13 <<InformationObjectClass>>
class EP_N14 <<InformationObjectClass>>
class EP_N15 <<InformationObjectClass>>
class EP_N16 <<InformationObjectClass>>
class EP_N17 <<InformationObjectClass>>
'class EP_N18 <<InformationObjectClass>>
class EP_N22 <<InformationObjectClass>>
class EP_N26 <<InformationObjectClass>>
class EP_N27 <<InformationObjectClass>>
class EP_N28 <<InformationObjectClass>>
class EP_N31 <<InformationObjectClass>>
class EP_N32 <<InformationObjectClass>>
class EP_N33 <<InformationObjectClass>>
class EP_N40 <<InformationObjectClass>>
class EP_N41 <<InformationObjectClass>>
class EP_N42 <<InformationObjectClass>>
class EP_N58 <<InformationObjectClass>>
class EP_N60 <<InformationObjectClass>>
class EP_Npc4 <<InformationObjectClass>>
class EP_Npc6 <<InformationObjectClass>>
class EP_Npc7 <<InformationObjectClass>>
class EP_Npc8 <<InformationObjectClass>>
class EP_N59 <<InformationObjectClass>>
```

```
class EP_N88 <<InformationObjectClass>>
class EP_NL1 <<InformationObjectClass>>
class EP_NL2 <<InformationObjectClass>>
class EP_N20 <<InformationObjectClass>>
class EP_N22 <<InformationObjectClass>>
' AANFFunction
class EP_N61 <<InformationObjectClass>>
class EP_N62 <<InformationObjectClass>>
class EP_N63 <<InformationObjectClass>>
' GMLC
class EP_NL3 <<InformationObjectClass>>
class EP_NL6 <<InformationObjectClass>>
class EP_NL5 <<InformationObjectClass>>
class EP_NL9 <<InformationObjectClass>>
' TSCTSFFunction
class EP_N86 <<InformationObjectClass>>
class EP_N84 <<InformationObjectClass>>
class EP_N85 <<InformationObjectClass>>
class EP_N87 <<InformationObjectClass>>
class EP_N89 <<InformationObjectClass>>
class EP_N96 <<InformationObjectClass>>
' MB-SMF & MB-UPF
class EP_N11mb <<InformationObjectClass>>
class EP_N16mb <<InformationObjectClass>>
class EP_N19mb <<InformationObjectClass>>
class EP_Nmb1  <<InformationObjectClass>>
class EP_Nmb9  <<InformationObjectClass>>
class EP_N3mb  <<InformationObjectClass>>
class EP_N4mb  <<InformationObjectClass>>
' MNPF
class EP_SM12 <<InformationObjectClass>>
class EP_SM13 <<InformationObjectClass>>
class EP_SM14 <<InformationObjectClass>>

EP_N2  --|> EP_RP
EP_N3  --|> EP_RP
EP_N4  --|> EP_RP
EP_N5  --|> EP_RP
EP_N6  --|> EP_RP
EP_N7  --|> EP_RP
EP_N8  --|> EP_RP
EP_N9  --|> EP_RP
EP_N10 --|> EP_RP
EP_N11 --|> EP_RP
EP_N12 --|> EP_RP
EP_N13 --|> EP_RP
EP_N14 --|> EP_RP
EP_N15 --|> EP_RP
EP_N16 --|> EP_RP
EP_N17 --|> EP_RP
EP_N22 --|> EP_RP
EP_N26 --|> EP_RP
EP_N27 --|> EP_RP
EP_N28 --|> EP_RP
EP_N31 --|> EP_RP
EP_N32 --|> EP_RP
EP_N33 --|> EP_RP
EP_N40 --|> EP_RP
EP_N41 --|> EP_RP
EP_N42 --|> EP_RP
'since SA5#151
EP_Nmb1 --|> EP_RP
EP_Nmb9 --|> EP_RP
EP_N3mb --|> EP_RP
EP_N4mb --|> EP_RP
EP_SM12 --|> EP_RP

EP_RP <|-- EP_N58
EP_RP <|-- EP_N60
EP_RP <|-- EP_Npc4
EP_RP <|-- EP_Npc6
EP_RP <|-- EP_Npc7
EP_RP <|-- EP_Npc8
EP_RP <|-- EP_N59
EP_RP <|-- EP_N88
EP_RP <|-- EP_NL1
EP_RP <|-- EP_NL2
EP_RP <|-- EP_N20
```

```
EP_RP <|-- EP_N22
EP_RP <|-- EP_N61
EP_RP <|-- EP_N62
EP_RP <|-- EP_N63
EP_RP <|-- EP_NL3
EP_RP <|-- EP_NL6
EP_RP <|-- EP_NL5
EP_RP <|-- EP_NL9
EP_RP <|-- EP_N86
EP_RP <|-- EP_N84
EP_RP <|-- EP_N85
EP_RP <|-- EP_N87
EP_RP <|-- EP_N89
EP_RP <|-- EP_N96
'since SA5#151
EP_RP <|-- EP_N11mb
EP_RP <|-- EP_N16mb
EP_RP <|-- EP_N19mb
EP_RP <|-- EP_SM13
EP_RP <|-- EP_SM14
@enduml
```

Q.3 NetworkSlice NRM relationship diagram

Q.3.1 The NetworkSlice NRM containment/naming relationship

```
@startuml TS 28.541 figure 6.2.1-1 (for Controller)

' UML diagram from 3GPP TS 28.541 clause 6
skinparam ClassStereotypeFontStyle normal
skinparam ClassBackgroundColor White
skinparam shadowing false
skinparam monochrome true
hide members
hide circle

class NetworkSlice <<InformationObjectClass>>
class ServiceProfile <<dataType>>
class NetworkSliceSubnet <<InformationObjectClass>>
class SliceProfile <<dataType>>
class ManagedFunction <<InformationObjectClass>>
class NetworkService <<OpenModelClass,Preliminary>>
class EP_Transport <<InformationObjectClass>>
class VNF <<OpenModelClass,Preliminary>>
class NetworkSliceController <<InformationObjectClass>>
class NetworkSliceSubnetController <<InformationObjectClass>>


NetworkSlice "1 " -d-> "*" ServiceProfile
NetworkSlice "1 " <-d-> "*"  NetworkSliceController
NetworkSlice "0..1" -d-> "1" NetworkSliceSubnet
NetworkSliceSubnet "*" o--> "*" NetworkSliceSubnet
NetworkSliceSubnet "1" -d-> "*" SliceProfile
NetworkSliceSubnet "1" <-d-> "*"  NetworkSliceSubnetController
NetworkSliceSubnet "*" o-d-> "*" ManagedFunction
NetworkSliceSubnet "*" -d-> "*" NetworkService
NetworkSliceSubnet "*" o-d-> "*" EP_Transport
ManagedFunction "0..1" -d-> "*" VNF
NetworkService "*" o-d- "*" VNF : <<NsIncludesNf>>


@enduml
```

Q.3.2   The Transport EP NRM containment/naming relationship

```
@startuml Figure 6.2.1-2: Transport EP NRM fragment relationship

hide empty members
hide circle
skinparam class {
BackgroundColor White
ArrowColor Black
BorderColor Black
}
skinparam ClassStereotypeFontStyle normal
skinparam backgroundColor white
skinparam classBackgroundColor white
skinparam classBorderColor black
skinparam Shadowing false
skinparam noteBackgroundColor white
skinparam noteBorderColor black
skinparam arrowColor black
top to bottom direction

class EP_Transport <<InformationObjectClass>>
class EP_Application <<ProxyClass>>

EP_Transport "*" -- "*" EP_Application

Note left of EP_Application
This represents
EP_N3 or EP_NgU or EP_F1U
end note

@enduml
```

Q.3.3   The NetworkSlice NRM containment/naming relationship

```
@startuml Figure 6.2.1-3: containment relationship for network slice
fragment

skinparam backgroundColor white
skinparam classBackgroundColor white
skinparam classBorderColor black
skinparam Shadowing false
skinparam noteBackgroundColor white
skinparam noteBorderColor white
skinparam arrowColor black
skinparam ClassStereotypeFontStyle normal
hide circle
hide method
hide members

class SubNetwork <<InformationObjectClass>>
class NetworkSlice <<InformationObjectClass>>
class NetworkSliceController <<InformationObjectClass>>
class NetworkSliceSubnet <<InformationObjectClass>>
```

```
class NetworkSliceSubnetController <<InformationObjectClass>>
class NetworkSliceSubnetProviderCapabilities <<InformationObjectClass>>
class EP_Transport <<InformationObjectClass>>

SubNetwork "1" *-- "*" NetworkSlice: <<names>>
SubNetwork "1" *-- "*" NetworkSliceController: <<names>>
SubNetwork "1" *-- "*" NetworkSliceSubnet: <<names>>
SubNetwork "1" *-- "*" NetworkSliceSubnetController: <<names>>
SubNetwork "1" *-- "*" NetworkSliceSubnetProviderCapabilities: <<names>>
SubNetwork "1" *-- "*" EP_Transport: <<names>>

@enduml
```

Q.3.4 The feasibility check and resource reservation containment/naming relationship

```
@startuml Figure 6.2.1-4: containment relationship for feasibility check and
resource reservation NRM fragment

skinparam backgroundColor white
skinparam classBackgroundColor white
skinparam classBorderColor black
skinparam Shadowing false
skinparam noteBackgroundColor white
skinparam noteBorderColor black
skinparam arrowColor black
skinparam ClassStereotypeFontStyle normal
hide circle
hide method
hide members

class ServiceProfile <<dataType>>
class SliceProfile <<dataType>>
class SubNetwork <<InformationObjectClass>>
class FeasibilityCheckAndReservationJob <<InformationObjectClass>>

SubNetwork "1" *-- "*" FeasibilityCheckAndReservationJob: <<names>>
FeasibilityCheckAndReservationJob "1" --> "1" ServiceProfile
FeasibilityCheckAndReservationJob "1" --> "1" SliceProfile

note "{XOR}" as Note1
Note1 .. ServiceProfile), (FeasibilityCheckAndReservationJob
Note1 .. SliceProfile), (FeasibilityCheckAndReservationJob, SliceProfile)

@enduml
```

Q.3.5 The IsolationProfile NRM containment/naming relationship

```
@startuml Figure 6.2.1-4: containment relationship for isolation profile NRM
fragment

skinparam backgroundColor white
skinparam classBackgroundColor white
skinparam classBorderColor black
skinparam Shadowing false
```

```
skinparam noteBackgroundColor white
skinparam noteBorderColor white
skinparam arrowColor black
skinparam ClassStereotypeFontStyle normal
hide circle
hide method
hide members

class SubNetwork <<InformationObjectClass>>
class IsolationProfile <<InformationObjectClass>>

SubNetwork "1" *-- "*" IsolationProfile: <<names>>

@enduml
```

Q.3.6   The IsolationPofile to NetworkSlice relationship

```
@startuml Figure 6.2.1-4: Figure 6.2.1-6: IsolationProfile NRM fragment
relationship related to NetworkSlice

skinparam backgroundColor white
skinparam classBackgroundColor white
skinparam classBorderColor black
skinparam Shadowing false
skinparam noteBackgroundColor white
skinparam noteBorderColor white
skinparam arrowColor black
skinparam ClassStereotypeFontStyle normal
hide circle
hide method
hide members
left to right direction

class NetworkSlice <<InformationObjectClass>>
class IsolationProfile <<InformationObjectClass>>

NetworkSlice "*" <--> "1" IsolationProfile

@enduml
```

Q.3.7   The IsolationPofile to NetworkSliceSubnet relationship

```
@startuml Figure 6.2.1-7: IsolationProfile NRM fragment relationship related
to NetworkSliceSubnet

skinparam backgroundColor white
skinparam classBackgroundColor white
skinparam classBorderColor black
skinparam Shadowing false
skinparam noteBackgroundColor white
skinparam noteBorderColor white
skinparam arrowColor black
skinparam ClassStereotypeFontStyle normal
hide circle
hide method
hide members
left to right direction
```

```
class NetworkSliceSubnet <<InformationObjectClass>>
class IsolationProfile <<InformationObjectClass>>

NetworkSliceSubnet "*" <--> "1" IsolationProfile

@enduml
```

Q.4 NetworkSlice inheritance diagram

Q.4.1 Network slice inheritance diagram

```
@startuml
skinparam backgroundColor white
skinparam classBackgroundColor white
skinparam classBorderColor black
skinparam Shadowing false
skinparam noteBackgroundColor white
skinparam noteBorderColor white
skinparam arrowColor black
skinparam ClassStereotypeFontStyle normal
hide circle
hide method
hide members

abstract class Top <<InformationObjectClass>>
class NetworkSlice <<InformationObjectClass>>
class NetworkSliceSubnet <<InformationObjectClass>>
class NetworkSliceSubnetProviderCapabilities <<InformationObjectClass>>
class EP_Transport <<InformationObjectClass>>
class IsolationProfile <<InformationObjectClass>>

Top  <|-- NetworkSlice
Top  <|-- NetworkSliceSubnet
Top  <|-- NetworkSliceSubnetProviderCapabilities
Top  <|-- EP_Transport
Top  <|-- IsolationProfile

@enduml
```

Q.4.2 Feasibility check inheritance diagram

```
@startuml
skinparam backgroundColor white
skinparam classBackgroundColor white
skinparam classBorderColor black
skinparam Shadowing false
skinparam noteBackgroundColor white
skinparam noteBorderColor white
skinparam arrowColor black
skinparam ClassStereotypeFontStyle normal
hide circle
hide method
hide members
```

```
abstract class Top <<InformationObjectClass>>
class FeasibilityCheckAndReservationJob <<InformationObjectClass>>

Top  <|-- FeasibilityCheckAndReservationJob

@enduml
```

Q.4.3 NetworkSliceController inheritance diagram

```
@startuml
skinparam backgroundColor white
skinparam classBackgroundColor white
skinparam classBorderColor black
skinparam Shadowing false
skinparam noteBackgroundColor white
skinparam noteBorderColor white
skinparam arrowColor black
skinparam ClassStereotypeFontStyle normal
hide circle
hide method
hide members

abstract class Top <<InformationObjectClass>>
class NetworkSliceController <<InformationObjectClass>>
class NetworkSliceSubnetController <<InformationObjectClass>>

Top  <|-- NetworkSliceController
Top  <|-- NetworkSliceSubnetController

@enduml
```

Annex R (informative): Change history

Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2018-09	SA#81					Upgrade to change control version	15.0.0
2018-09	SA#81					EdiHelp review	15.0.1
2018-12	SA#82	SP-181046	0001	1	F	Fix issues raised by EditHelp	15.1.0
2018-12	SA#82	SP-181046	0002	2	F	Update NR Stage 2 definition to align with TS 37.340 for MR-DC	15.1.0
2018-12	SA#82	SP-181046	0003	1	F	Update NRM Stage 2 defintion to align with TS 23.501 for 5G architecture	15.1.0
2018-12	SA#82	SP-181046	0005	1	F	Update Stage 3 XML definition of NR to align with Stage 2 content	15.1.0
2018-12	SA#82	SP-181046	0006	1	F	Update Stage 3 JSON definition of NR to align with Stage 2 content	15.1.0
2018-12	SA#82	SP-181046	0007	1	F	Update Stage 3 YANG definition of NR to align with Stage 2 content	15.1.0
2018-12	SA#82	SP-181046	0008	1	F	Update Stage 3 XML definition of 5GC to align with Stage 2 content	15.1.0
2018-12	SA#82	SP-181046	0009	1	F	Update Stage 3 JSON definition of 5GC to align with Stage 2 content	15.1.0
2018-12	SA#82	SP-181046	0011	1	F	Update stage 3 XML definition of NS to align with Stage 2 content	15.1.0
2018-12	SA#82	SP-181046	0012	1	F	Update Stage 3 JSON definition of NS to align with Stage 2 content	15.1.0
2018-12	SA#82	SP-181046	0013	1	F	Update stage 3 YANG definition of NS to align with Stage 2 content	15.1.0
2018-12	SA#82	SP-181046	0014	1	F	Correct the term sNSSAIList and nRTAClist	15.1.0
2018-12	SA#82	SP-181046	0015	1	F	Update the inheritance hierarchy figure for NR NRM to include BWP IOC and NRSectorCarrier IOC	15.1.0
2018-12	SA#82	SP-181046	0016	1	F	Change the term nCGI to nCI	15.1.0
2018-12	SA#82	SP-181046	0019	1	F	Align properties of cell state	15.1.0
2018-12	SA#82	SP-181046	0021	1	F	Add missing attribute definition and condition	15.1.0
2018-12	SA#82	SP-181047	0022	1	F	Add missing detail definition for attribute	15.1.0
2018-12	SA#82	SP-181047	0023	1	F	Adding missing attribute, and correction of reference	15.1.0
2018-12	SA#82	SP-181043	0025	-	F	Remove NSSF from the abbrevations	15.1.0
2018-12	SA#82	SP-181046	0027	-	F	Replace symbol for network slice state management	15.1.0
2018-12	SA#82	SP-181046	0031	1	F	Remove the ExternalENBFunction definition	15.1.0
2018-12	SA#82	SP-181046	0033	1	F	Align the management of external function and cell with TS 28.658	15.1.0
2018-12	SA#82	SP-181156	0034	1	F	Update NR NRM with Cell Relation	15.1.0
2018-12	SA#82	SP-181156	0038	3	F	RRM Policy enhancements	15.1.0
2018-12	SA#82	SP-181156	0039	1	F	Fix containment issue in YANG definition	15.1.0
2018-12	SA#82	SP-181156	0040	-	F	Implement minor corrections	15.1.0
2018-12	SA#82	SP-181042	0041	-	F	Update Stage 3 NRM for RRM Policy enhancements	15.1.0
2019-03	SA#83	SP-190121	0043	1	F	Align NR attributes definition related to SSB with corresponding NG-RAN IE definition	15.2.0
2019-03	SA#83	SP-190121	0044	1	F	Correct the use of nCI and PLMN	15.2.0
2019-03	SA#83	SP-190121	0045	-	F	Remove duplicate definition for ExternalNRCellCU	15.2.0
2019-03	SA#83	SP-190121	0046	2	F	Correct class diagram for view on external entities	15.2.0
2019-03	SA#83	SP-190121	0047	1	F	Correct the definition for resourceSharingLevel	15.2.0
2019-03	SA#83	SP-190121	0048	1	F	Correction of references	15.2.0
2019-03	SA#83	SP-190121	0052	1	F	Align the term mFIdList and constituentNSSIIdList	15.2.0
2019-03	SA#83	SP-190121	0053	1	F	Correct the definition of nSSIId	15.2.0
2019-03	SA#83	SP-190121	0054	1	F	Add missing attribute constraint for class definition of NSSFFunction	15.2.0
2019-03	SA#83	SP-190121	0055	1	F	Correct attribute constraints for RRMpolicy related attributes in NRCellCU	15.2.0
2019-03	SA#83	SP-190121	0057	-	F	Correct cardinality of End Point (EP) to target	15.2.0
2019-03	SA#83	SP-190121	0058	0	F	Correct Import table	15.2.0
2019-03	SA#83	SP-190121	0059	-	F	Remove ExternalNRCellCU.pLMNIdList	15.2.0
2019-03	SA#83	SP-190121	0060	-	F	Use 'bS' (not 'bs') to prefix all BS (base station) attributes	15.2.0
3019-03	SA#83	SP-190121	0061	1	F	Correction of State attributes descriptions	15.2.0
2019-03	SA#83	SP-190121	0062	-	F	Update 5G JSON Solution Set to align with generic NRM	15.2.0
2019-03	SA#83	SP-190121	0063	1	F	Update YANG Solution Set to align with Stage 2 definition	15.2.0
2019-03	SA#83	SP-190121	0064	1	F	Update Information Service to fix Network Slice modeling issue	15.2.0
2019-03	SA#83	SP-190121	0065	1	F	Update Solution Set to fix Network Slice modeling issue	15.2.0

2019-03	SA#83	SP-190121	0066	1	F	Add availability in service profile of network slice resource model	15.2.0
2019-03	SA#83	SP-190121	0068	1	F	Add sST attribute to ServiceProfile	15.2.0
2019-03	SA#83	SP-190121	0069	1	F	Update to sST attribute stage 3	15.2.0
2019-03	SA#83	SP-190149	0073	2	F	Replace CoverageAreaTAList type definition	16.0.0
2019-03	SA#83	SP-190149	0074	1	F	Name datatypes SliceProfile and ServiceProfile	16.0.0
2019-03	SA#83	SP-190149	0075	1	F	Add datatype definition for S-NSSAI	16.0.0
2019-03	SA#83	SP-190149	0076	1	F	Remove incomplete description for TAC	16.0.0
2019-03	SA#83	SP-190149	0079	1	F	Name datatype RRMPolicyRatio2	16.0.0
2019-06	SA#84	SP-190374	0083	-	A	Remove attribute availabilityStatus in NRCellDU IOC	16.1.0
2019-06	SA#84	SP-190373	0085	1	F	Correct the definition for nsInfo	16.1.0
2019-06	SA#84	SP-190374	0088	1	A	Update Information Service of NR to fix unclear Note issue	16.1.0
2019-06	SA#84	SP-190373	0096	2	A	Correct the use of plmnIdList	16.1.0
2019-06	SA#84	SP-190373	0098	1	F	Add missing clauses to RRMPolicyRatio2 data type	16.1.0
2019-06	SA#84	SP-190373	0099	1	F	Update RRMPolicyRatio2 data type name in stage 3	16.1.0
2019-06	SA#84	SP-190373	0102	-	F	Fix the implementation errors	16.1.0
2019-09	SA#85	SP-190745	0089	2	B	Update 5GC Information Service to align with Managed Service Definition	16.2.0
2019-09	SA#85	SP-190743	0107	1	A	Correct description for NR deployment scenario	16.2.0
2019-09	SA#85	SP-190743	0109	1	A	Correct NR NRM model to be applicable for all NG-RAN architecture	16.2.0
2019-09	SA#85	SP-190745	0114	1	C	Support NF Profile management	16.2.0
2019-09	SA#85	SP-190743	0121	1	A	Clarification of sNSSAIList attribute	16.2.0
2019-09	SA#85	SP-190744	0123	-	A	Remove pLMNId from GNBDUFunction	16.2.0
2019-09	SA#85	SP-190743	0126	2	A	Update class definition with inheritance information	16.2.0
2019-09	SA#85	SP-190743	0128	1	A	Correct description of NRCellCU and NRCellDU to be applicable for all deployment scenarios	16.2.0
2019-09	SA#85	SP-190743	0130	-	A	Correct XML solution set for NR	16.2.0
2019-09	SA#85	SP-190743	0132	-	A	Correct XML solution set for Network slice	16.2.0
2019-09	SA#85	SP-190750	0133	1	F	Clarification on slice model	16.2.0
2019-09	SA#85	SP-190743	0142	1	A	Add YANG mount info	16.2.0
2019-09	SA#85	SP-190743	0143	-	A	Add YANG solution	16.2.0
2019-09	SA#85	SP-190745	0149	1	F	generate JSON definition for 5GC NRM based on new style guideline	16.2.0
2019-09	SA#85	SP-190744	0150	1	A	Fix NR NRM to add missed ID info	16.2.0
2019-09	SA#85	SP-190744	0152	-	F	XML Solution Set for 5GC	16.2.0
2019-09	SA#85	SP-190744	0154	-	A	Correct ETSI NFV reference	16.2.0
2019-09	SA#85	SP-190744	0157	1	A	generate JSON definition for Slice NRM based on new style guideline	16.2.0
2019-09	SA#85	SP-190744	0158	1	A	generate JSON definition for NR NRM based on new style guideline	16.2.0
2019-12	SA#86	SP-191159	0146	3	F	To syn up with v1540 stage 2	16.3.0
2019-12	SA#86	SP-191173	0156	2	A	Correct Import table	16.3.0
2019-12	SA#86	SP-191166	0161	1	C	Extensions to PCF and UPF IOCs for support of TSC (Time Sensitive Communication)	16.3.0
2019-12	SA#86	SP-191166	0166	1	F	Correct XML solution set for NR	16.3.0
2019-12	SA#86	SP-191166	0167	1	F	Correct Network slice NRM	16.3.0
2019-12	SA#86	SP-191173	0168	2	A	Correct NR TAC attribute property	16.3.0
2019-12	SA#86	SP-191173	0170	-	A	Correction of the duplicated IOC NSSFFunction in daigram	16.3.0
2019-12	SA#86	SP-191173	0172	-	A	Correction of the wrong IOC names in transport view diagram---Not implemented, wrong baseline (MCC)	16.3.0
2019-12	SA#86	SP-191166	0175	2	F	XML Solution Set for 5GC	16.3.0
2019-12	SA#86	SP-191170	0177	3	C	Update on slice NRM	16.3.0
2019-12	SA#86	SP-191170	0178	2	B	Add relation of GST and profiles	16.3.0
2019-12	SA#86	SP-191166	0180	3	F	Update SEPP Stage 2 definition in 5GC NRM	16.3.0
2019-12	SA#86	SP-191166	0182	1	C	Add NEF Stage 2 definition in 5GC NRM	16.3.0
2019-12	SA#86	SP-191166	0184	1	C	Add SCP Stage 2 definition in 5GC NRM	16.3.0
2019-12	SA#86	SP-191166	0185	-	C	Add Stage 3 definitions of 5GC NRM to align with stage 2	16.3.0
2019-12	SA#86	SP-191166	0186	1	C	Support communication model in 5GC NF - Stage 2	16.3.0
2019-12	SA#86	SP-191166	0192	1	F	Fix merging errors of the specification	16.3.0
2019-12	SA#86	SP-191166	0195	-	C	Add State Handling diagram for NF service	16.3.0
2019-12	SA#86	SP-191166	0197	-	B	Updates to YANG SS	16.3.0
2019-12	SA#86	SP-191170	0198	1	C	Update XML definitions of ServiceProfile NRM	16.3.0
2019-12	SA#86	SP-191170	0199	2	C	Update JSON definitions of ServiceProfile NRM	16.3.0
2019-12	SA#86	SP-191166	0200	1	C	Add managedNFProfile definition for ngc NRM - stage3	16.3.0
2019-12	SA#86	SP-191166	0202	2	B	Add the RIM monitoring parameters for remote interference management	16.3.0
2019-12	SA#86	SP-191166	0212	2	F	Correct Network slice NRM	16.3.0
2019-12	SA#86	SP-191166	0213	-	F	Update SEPP Stage 3 definition in 5GC NRM	16.3.0
2019-12	SA#86	SP-191180	0222	2	B	Management of NR ANR, Stage 2	16.3.0
2019-12	SA#86	SP-191180	0223	-	B	Management of NR ANR, Stage 3	16.3.0

2019-12	SA#86	SP-191173	0226	1	A	Add Stages 2 NRM Info Model definitions for beam managed object classes	16.3.0
2019-12	SA#86	SP-191173	0227	-	A	Add Stages 2 NRM Info Model definitions for beam managed object classes	16.3.0
2020-03	SA#87E	SP-200169	0163	4	F	Correct the parameter sNSSAIList	16.4.0
2020-03	SA#87E	SP-200169	0179	3	C	Update of RRM Policy	16.4.0
2020-03	SA#87E	SP-200169	0235	-	F	Correction of reference	16.4.0
2020-03	SA#87E	SP-200169	0239	1	F	Update the NR NRM to align with NG-RAN overview architecture	16.4.0
2020-03	SA#87E	SP-200169	0241	-	F	Some correction on the NR NRM	16.4.0
2020-03	SA#87E	SP-200169	0242	-	F	Fix merging errors of the specification	16.4.0
2020-03	SA#87E	SP-200169	0243	1	F	Update NRM attribute definitions	16.4.0
2020-03	SA#87E	SP-200233	0245	2	B	Add the RIM parameters for remote interference management	16.4.0
2020-03	SA#87E	SP-200234	0248	1	F	Update on slice NRM and solution sets	16.4.0
2020-03	SA#87E	SP-200234	0250	1	F	Update of GNBCUUPFunction NRM	16.4.0
2020-03	SA#87E	SP-200232	0253	2	B	Add Stage 3 NRM Info Model definitions for RRMPolicy and PLMNInfo related CRs	16.4.0
2020-03	SA#87E	SP-200178	0254	1	F	Correct CR implementation errors	16.4.0
2020-03	SA#87E	SP-200235	0255	1	F	Add OpenAPI definitions required by the ProvMnS	16.4.0
2020-03	SA#87E	SP-200169	0258		F	Correct errors in yang solution set	16.4.0
2020-03	SA#87E					Correction of implementation errrors	16.4.1
2020-06	SA#88-e	SP-200489	0259	1	F	Update on the RRMpolicyRatio	16.5.0
2020-06	SA#88-e	SP-200493	0260	-	F	Replace DN with better identifier for whitelists and blacklists management	16.5.0
2020-06	SA#88-e	SP-200603	0261	1	B	Add IOC for control of QoS monitoring per QoS flow per UE	16.5.0
2020-06	SA#88-e	SP-200604	0262	1	B	Add IOC for control of GTP-U path QoS monitoring	16.5.0
2020-06	SA#88-e	SP-200489	0263	1	F	Correction of reference	16.5.0
2020-06	SA#88-e	SP-200493	0268	-	B	ANR management for EN-DC architecture	16.5.0
2020-06	SA#88-e	SP-200484	0269	1	F	Clarification on network slice related identifiers	16.5.0
2020-06	SA#88-e	SP-200484	0270	-	F	Stage 3 update for clarification on network slice related identifiers	16.5.0
2020-06	SA#88-e	SP-200484	0274	1	F	Correct sNSSAI definition in XML solution set	16.5.0
2020-06	SA#88-e	SP-200484	0275	1	F	Clarify the NR NRM used for different deployment scenarios	16.5.0
2020-06	SA#88-e	SP-200484	0278	-	F	Add missing notification types to the definition of common notifications	16.5.0
2020-06	SA#88-e	SP-200491	0279	1	A	Update on NRCellDU	16.5.0
2020-06	SA#88-e	SP-200491	0281	1	A	Update Clause 4.2.1.2 Inheritance UML diagram	16.5.0
2020-06	SA#88-e	SP-200490	0283	2	B	new NRM fragment to support RIM stage 2	16.5.0
2020-06	SA#88-e	SP-200490	0284	1	B	new NRM fragment to support RIM stage 3	16.5.0
2020-06	SA#88-e	SP-200489	0285	-	F	Update stage 3 on the RRMpolicyRatio	16.5.0
2020-06	SA#88-e	SP-200605	0286	2	B	Add IOC for configurable 5QIs	16.5.0
2020-06	SA#88-e	SP-200490	0287	1	B	Add IOC for 5QI to DSCP mapping	16.5.0
2020-06	SA#88-e	SP-200493	0289	-	B	Stage3 add the NRM fragment for SON management	16.5.0
2020-06	SA#88-e	SP-200493	0290	-	B	ANR management for EN-DC architecture	16.5.0
2020-06	SA#88-e	SP-200493	0291	1	B	Add the NRM fragment for SON management	16.5.0
2020-06	SA#88-e	SP-200490	0293	-	F	Add CommModelList NRM definition	16.5.0
2020-06	SA#88-e	SP-200490	0294	1	F	Update NRM attribute definitions	16.5.0
2020-06	SA#88-e	SP-200490	0295	1	F	Correct NRM definition in XML solution	16.5.0
2020-06	SA#88-e	SP-200485	0300	1	F	Clarification on the relation of GST, ServiceProfile and SliceProfile	16.5.0
2020-06	SA#88-e	SP-200496	0301	1	B	Add ES coverage relation in NRCellRelation	16.5.0
2020-06	SA#88-e	SP-200490	0302	-	F	Update the decription for RRMPolicy_ and resouceType	16.5.0
2020-06	SA#88-e	SP-200490	0303	-	F	Update definition for attribute localAddress in EP_RP IOC	16.5.0
2020-06	SA#88-e	SP-200486	0305	1	A	Correction of references	16.5.0
2020-06	SA#88-e	SP-200485	0306	1	F	add transport information and slice mapping on backhaul endpoints	16.5.0
2020-06	SA#88-e	SP-200485	0307	-	F	add transport information and slice mapping on backhaul endpoints stage 3	16.5.0
2020-06	SA#88-e	SP-200490	0312	1	F	Update SliceProfile attributes solution 1	16.5.0
2020-06	SA#88-e	SP-200490	0315	1	B	Add configuredMaxTxEIRP on NRSectorCarrier	16.5.0
2020-06	SA#88-e	SP-200490	0316	-	B	Stage 3 Add configuredMaxTxEIRP on NRSectorCarrier	16.5.0
2020-06	SA#88-e	SP-200490	0318	-	F	Update NRM YANG for 28.541	16.5.0
2020-06	SA#88-e	SP-200496	0319	-	B	Add ES coverage relation in NRCellRelation Stage 3	16.5.0
2020-06	SA#88-e	SP-200612	0320	1	F	Update openAPI for NRCellRelation and NRFreqRelation	16.5.0
2020-09	SA#89-e	SP-200729	0321	-	F	Correction of NRM YANG errors	16.6.0
2020-09	SA#89-e	SP-200729	0322	1	F	Correct on NR NRM	16.6.0
2020-09	SA#89-e	SP-200729	0323	-	F	Correct the openAPI definition for NR NRM	16.6.0
2020-09	SA#89-e	SP-200730	0325	-	A	Correct on frequency related IOC	16.6.0
2020-09	SA#89-e	SP-200729	0329	1	B	Add IOC for predefined PCC rules	16.6.0
2020-09	SA#89-e	SP-200729	0330	2	B	Add IOC for predefined PCC rules	16.6.0
2020-09	SA#89-e	SP-200729	0331	-	B	Enable PCF to support configurable 5QIs	16.6.0
2020-09	SA#89-e	SP-200729	0332	-	B	Add IOC for dynamic 5QIs - stage 2	16.6.0

2020-09	SA#89-e	SP-200729	0333	-	B	Add IOC for dynamic 5QIs - stage 3	16.6.0
2020-09	SA#89-e	SP-200729	0334	-	B	Add TCE mapping info in GNBCUCPFunction	16.6.0
2020-09	SA#89-e	SP-200729	0335	-	B	Add TCE mapping info in openAPI solution	16.6.0
2020-09	SA#89-e	SP-200729	0336	-	F	Add missing definitions for perfReq	16.6.0
2020-09	SA#89-e	SP-200754	0338	1	F	Delete supportedAccessTech to align with GST	16.6.0
2020-09	SA#89-e	SP-200724	0339	-	F	Correction on duplicated annex numbering	16.6.0
2020-09	SA#89-e	SP-200729	0345	-	F	Update NRM attribute definitions	16.6.0
2020-09	SA#89-e	SP-200749	0362	-	F	Deleting SupportedAccessTech - Stage 3 - XML	16.6.0
2020-09	SA#89-e	SP-200724	0368	1	F	Add relation between transport and application level endpoints	16.6.0
2020-09	SA#89-e	SP-200724	0369	-	F	Add relation between transport and application level endpoints stage 3	16.6.0
2020-09	SA#89-e	SP-200729	0370	1	F	Cleanup stage 2 editorial issue and stage 3 yaml error	16.6.0
2020-09	SA#89-e	SP-200749	0371	-	F	Add clarifying note to ServiceProfile	16.6.0
2020-09	SA#89-e	SP-200752	0337	-	B	Add the MLB support indicator in NRcellrelation	17.0.0
2020-09	SA#89-e	SP-200749	0341	1	F	Update maxNumberofConns	17.0.0
2020-09	SA#89-e	SP-200749	0342	-	B	Add NB-IoT support in ServiceProfile	17.0.0
2020-09	SA#89-e	SP-200729	0366	1	B	Addition of attribute for network slice supporting maximum of data volume	17.0.0
2020-11						No technical changes. Cleanup of diverse issues in order to improve performance of the file: hidden XML, watermarks,etc..	17.0.1
2020-12	SA#90e	SP-201057	0380	-	A	Correct the definition for configurable5QI and dynamic5QI	17.1.0
2020-12	SA#90e	SP-201066	0382	1	F	Change RACH control attributes from beam to cell	17.1.0
2020-12	SA#90e	SP-201045	0384	1	A	Move Distributed RACH control IOC from CU to DU	17.1.0
2020-12	SA#90e	SP-201045	0386	2	A	Move Distributed PCI control IOC from DU to CU	17.1.0
2020-12	SA#90e	SP-201057	0388	-	A	Correction of cell neighbour relations related attributes in openAPI solution	17.1.0
2020-12	SA#90e	SP-201057	0393	-	A	Correction of NRM YANG errors	17.1.0
2020-12	SA#90e	SP-201057	0395	1	A	Correct Network slice NRM	17.1.0
2020-12	SA#90e	SP-201053	0399	1	A	Fix description related to service profile	17.1.0
2020-12	SA#90e	SP-201050	0405	-	A	Add containment relationship for network slice IOCs	17.1.0
2020-12	SA#90e	SP-201050	0406	-	F	Add containment relationship for network slice IOCs stage 3	17.1.0
2020-12	SA#90e	SP-201045	0407	-	F	Add subclause reference of MRO related attribute	17.1.0
2020-12	SA#90e	SP-201089	0410	1	A	Correction of NRM YANG errors	17.1.0
2020-12	SA#90e	SP-201089	0412	-	A	YANG improvements	17.1.0
2020-12	SA#90e	SP-201056	0414	-	A	Add serviceProfileId and sliceProfileId to stage 3 yaml	17.1.0
2020-12	SA#90e	SP-201089	0419	-	A	Update notifyThresholdCrossing to be a common notification.	17.1.0
2020-12	SA#90e	SP-201089	0421	-	A	pLMNInfoList faulty attribute definition	17.1.0
2020-12	SA#90e	SP-201089	0423	-	A	Fix containment relationship for EP_Transport IOC	17.1.0
2021-03	SA#91e	SP-210153	0432	1	A	Correction on Dynamic5QISet IOC based on LS reply from SA2	17.2.0
2021-03	SA#91e	SP-210154	0435	3	A	Correct the NF name in definition of EP_NgU	17.2.0
2021-03	SA#91e	SP-210153	0440	-	A	Add missing inheritance description information in the attribute definition for several IOCs	17.2.0
2021-03	SA#91e	SP-210153	0442	2	A	Correct multiplicity issue for several attributes of NR NRM	17.2.0
2021-03	SA#91e	SP-210146	0445	2	A	Fix containment relationship for EP_Transport IOC	17.2.0
2021-03	SA#91e	SP-210155	0457	-	C	Remove the XML Solution set	17.2.0
2021-03	SA#91e	SP-210144	0459	1	B	Update the information model definitions for network slice NRM	17.2.0
2021-03	SA#91e	SP-210143	0461	1	A	Update of the PCI and DESManagementFunction	17.2.0
2021-03	SA#91e	SP-210154	0467	1	A	Correction to NSI and NSSI state management	17.2.0
2021-03	SA#91e	SP-210155	0472	-	A	YANG compilation error and missing stage 2 corrections	17.2.0
2021-03	SA#91e	SP-210146	0474	-	A	Fix compilation and other errors	17.2.0
2021-03	SA#91e					Fixing CR implementation error in E.5.13	17.2.1
2021-06	SA#92e	SP-210407	0430	4	F	Correction of ServiceProfile attributes	17.3.0
2021-06	SA#92e	SP-210410	0479	1	B	Add positioning support in RANSliceSubnetProfile	17.3.0
2021-06	SA#92e	SP-210410	0480	1	B	OpenAPI of adding positioning support in RANSliceSubnetProfile	17.3.0
2021-06	SA#92e	SP-210410	0481	1	B	Add synchronicity support in RANSliceSubnetProfile	17.3.0
2021-06	SA#92e	SP-210410	0482	1	B	OpenAPI of adding synchronicity support in RANSliceSubnetProfile	17.3.0
2021-06	SA#92e	SP-210410	0485	1	C	perfReq mapping to domain specific attributes	17.3.0
2021-06	SA#92e	SP-210410	0486	1	B	Add reliability to CN SliceProfile	17.3.0
2021-06	SA#92e	SP-210401	0487	1	B	Enhancement of NRM definition for the NWDAF - Stage 2	17.3.0
2021-06	SA#92e	SP-210401	0488	1	B	OpenAPI Enhancement of NRM definition for the NWDAF	17.3.0
2021-06	SA#92e	SP-210411	0490	-	A	Correct the description for GNBDUFunction and EP_NgC	17.3.0
2021-06	SA#92e	SP-210401	0491	1	F	Improve the readability of EP_Transport	17.3.0
2021-06	SA#92e	SP-210465	0493	2	B	Add energyEfficiency attribute	17.3.0
2021-06	SA#92e	SP-210410	0495	1	B	enhance 5GC NRM to support network slice admission control	17.3.0
2021-06	SA#92e	SP-210407	0498	1	F	Add note for RRMPolicy	17.3.0
2021-06	SA#92e	SP-210467	0499	1	F	Inclusive language review	17.3.0
2021-06	SA#92e	SP-210406	0501	1	A	Fix editorial issue of network slice NRM	17.3.0
2021-06	SA#92e	SP-210406	0503	1	A	fix inheritance relation of network slice NRM	17.3.0

2021-06	SA#92e	SP-210406	0506	1	C	Correction of 5QI definitions in NRM	17.3.0
2021-06	SA#92e	SP-210410	0508	-	F	Correction on mapping GST attributes	17.3.0
2021-06	SA#92e	SP-210411	0510	-	A	Correct inconsistencies in definitions around network slice management	17.3.0
2021-06	SA#92e	SP-210406	0514	1	A	Correction to definition for domain centralized SON	17.3.0
2021-09	SA#93e	SP-210871	0518	-	A	YANG NR-NRM model structure repair and cleanup	17.4.0
2021-09	SA#93e	SP-210870	0520	-	C	Use of TopSliceSubnetProfile	17.4.0
2021-09	SA#93e	SP-210885	0522	-	A	Deprecate Top-Attr and use Top instead	17.4.0
2021-09	SA#93e	SP-210885	0524	-	A	Fix incorrect attributes inheritance description	17.4.0
2021-09	SA#93e	SP-210870	0525	-	B	Add survival time to CNSliceProfile	17.4.0
2021-09	SA#93e	SP-210867	0526	1	B	Add NRM IOC definitions for N5, N70 and N71 reference points	17.4.0
2021-09	SA#93e	SP-210867	0527	1	B	Adding NRM for N33	17.4.0
2021-09	SA#93e	SP-210867	0528	-	B	Enhance 5GC NRM to support 5G_DDNMF	17.4.0
2021-09	SA#93e	SP-210871	0530	-	A	Remove the attribute definition which is not used	17.4.0
2021-09	SA#93e	SP-210882	0531	1	B	Add NPN Identity on NR cell to support access control for NPN UEs	17.4.0
2021-09	SA#93e	SP-210871	0534	1	A	Fix the issue caused by the updated NetworkSliceSubnet inheritence relationship	17.4.0
2021-09	SA#93e	SP-210867	0535	1	F	Update logicInterfaceId of EP_transport	17.4.0
2021-09	SA#93e	SP-210870	0539	1	B	Add radio spectrum support in slicing profiles	17.4.0
2021-09	SA#93e	SP-210870	0542	-	C	Update maxPktSize and determinComm to support UL and DL requirements	17.4.0
2021-09	SA#93e	SP-210870	0543	-	F	Remove obsolete coverageArea attribute in TopSliceSubnetProfile	17.4.0
2021-09	SA#93e	SP-210871	0545		A	Correction for attribute description of servAttrCom	17.4.0
2021-09	SA#93e	SP-210871	0547	-	A	Correcion of YAML references	17.4.0
2021-09	SA#93e	SP-210871	0548	-	F	Revise description of NextHopInfo and qosProfileRefList attribute in EP_transport IOC	17.4.0
2021-09	SA#93e	SP-210867	0549		C	Update resourceType PRB for UL (Uplink) and DL (Downlink)	17.4.0
2021-09	SA#93e	SP-210887	0551	-	F	Correction of ServiceProfile	17.4.0
2021-09	SA#93e	SP-210887	0554	-	B	Enhance 5G Core AMF NRM fragment	17.4.0
2021-09	SA#93e	SP-210885	0555	-	A	Remove isINEF attribute from NEFFunction IOC	17.4.0
2021-09	SA#93e	SP-210871	0556	-	A	YANG updates to correct YANG merging problems	17.4.0
2021-09	SA#93e	SP-210885	0557	1	A	Fix inconsistent clauses and attributes used in TS 38.211 and TS 28.541	17.4.0
2021-09	SA#93e	SP-210871	0558	1	A	Moving RIM monitoring related attributes to NRCellDU	17.4.0
2021-09	SA#93e	SP-210867	0559	1	C	Extend NRM fragment to support EP_transport for mid-haul	17.4.0
2021-09	SA#93e	SP-210867	0562	-	B	Enhance 5G Core managed NF Profile NRM fragment	17.4.0
2021-09	SA#93e	SP-210867	0564	-	F	Delete AMFInfo datatype in NRM fragment	17.4.0
2021-09	SA#93e	SP-210867	0566	1	F	Correction of YANG Solution set	17.4.0
2021-09	SA#93e	SP-210867	0568	-	F	Add missing openAPI definition update for S5-213508	17.4.0
2021-12	SA#94e	SP-211471	0468	3	B	Update NR NRM to support MOCN network sharing scenario	17.5.0
2021-12	SA#94e	SP-211472	0571	-	A	Align different (abbreviated) names for support qualifier to S	17.5.0
2021-12	SA#94e	SP-211454	0575	1	A	Clarify the usage of pLMNId in first entry in pLMNInfoList	17.5.0
2021-12	SA#94e	SP-211452	0576	1	B	Add Stage 2 solutions to support D-LBO	17.5.0
2021-12	SA#94e	SP-211452	0577	1	B	Add Stage 3 solutions to support D-LBO	17.5.0
2021-12	SA#94e	SP-211466	0578	-	C	Update latency to support UL and DL requirements	17.5.0
2021-12	SA#94e	SP-211466	0579	-	F	Align attribute names for CNSliceSubnetProfile	17.5.0
2021-12	SA#94e	SP-211473	0580	-	F	YAML update for RRMPolicy	17.5.0
2021-12	SA#94e	SP-211473	0581	1	B	Add attribute networkSliceSubnetType for NetworkSliceSubnet IOC	17.5.0
2021-12	SA#94e	SP-211473	0582	1	C	Add maxnumber of PDU Sessions in NsacfInfoSnssai	17.5.0
2021-12	SA#94e	SP-211473	0583	1	C	Add serving area information for NSACF discovery and selection	17.5.0
2021-12	SA#94e	SP-211473	0584	1	C	Enhance NRM to support local NEF selection	17.5.0
2021-12	SA#94e	SP-211473	0585	1	C	Update NRM to support EASDF	17.5.0
2021-12	SA#94e	SP-211466	0587	1	F	Update relationship between GST and Network Slice NRM fragment	17.5.0
2021-12	SA#94e	SP-211454	0589	1	A	cNSIId description clarificaiton	17.5.0
2021-12	SA#94e	SP-211454	0591	1	A	Correct NRM for AMFRegion and AMFSet	17.5.0
2021-12	SA#94e	SP-211457	0592		B	Adding transport view NRM from 5GC to EDN	17.5.0
2021-12	SA#94e	SP-211462	0595	1	A	DMRO correction	17.5.0
2021-12	SA#94e	SP-211466	0599	1	D	Introduce missing GST references	17.5.0
2021-12	SA#94e	SP-211473	0600	1	B	Enhance 5G Core managed NF Profile NRM fragment (Stage 2)	17.5.0
2021-12	SA#94e	SP-211473	0601	1	B	5GC NRM enhancements for AMFFunction and ManagedNFProfile (Stage 3)	17.5.0
2021-12	SA#94e	SP-211473	0602	1	B	NR NRM additions to support 5GC enhancements (Stage 3)	17.5.0
2021-12	SA#94e	SP-211454	0604	-	A	Correct PLMNInfo support qualifier	17.5.0
2021-12	SA#94e	SP-211464	0606	1	A	Clarify tenant relationship with ServiceProfileId	17.5.0
2021-12	SA#94e	SP-211473	0607	-	F	Correction of YANG Solution set	17.5.0

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2021-12	SA#94e	SP-211474	0608	1	B	NRM for CHO	17.5.0
2021-12	SA#94e	SP-211474	0609	1	B	NRM for CHO Stage 3	17.5.0
2021-12	SA#94e	SP-211474	0610	1	B	NRM for DAPS handover	17.5.0
2021-12	SA#94e	SP-211474	0611	1	B	NRM for DAPS Stage 3	17.5.0
2021-12	SA#94e	SP-211466	0612	-	F	Remove editor notes	17.5.0
2021-12	SA#94e	SP-211473	0613	-	F	Update 5GC NRM for 5G_DDNMF reference point	17.5.0
2021-12	SA#94e	SP-211463	0619	1	D	Update inclusive language modification for TS 28.541	17.5.0
2021-12	SA#94e	SP-211475	0621	-	A	Correct the wrong reference for TS 32.160	17.5.0
2021-12	SA#94e	SP-211471	0622	-	B	Add YAML solution set for NG-RAN MOCN network sharing scenarios	17.5.0
2021-12	SA#94e	SP-211472	0624	-	A	Fix stage3 definition for plmnId	17.5.0
2021-12	SA#94e	SP-211466	0626	1	B	network slice protection on N6 interface	17.5.0
2021-12	SA#94e	SP-211466	0627	1	B	network slice specific authentication	17.5.0
2021-12	SA#94e	SP-211473	0629	1	B	Enhance NRM of UDM function	17.5.0
2021-12	SA#94e	SP-211473	0630	1	F	Stage3 Update for UPF and PCF	17.5.0
2021-12	SA#94e	SP-211473	0631	1	F	Introduce missing attribute nRFreqRelationRef in table of attribute properties (stage 2)	17.5.0
2021-12	SA#94e	SP-211473	0634	1	F	Correct attribute in IOC NRCellRelation (stage 3)	17.5.0
2021-12	SA#94e	SP-211473	0636	1	B	Enhance 5G Core managed NF Profile NRM fragment (Stage 2)	17.5.0
2021-12	SA#94e	SP-211473	0637	1	B	5GC NRM enhancements for ManagedNFProfile (Stage 3)	17.5.0
2021-12	SA#94e	SP-211475	0638	-	A	Correct spelling of Attribute properties	17.5.0
2022-03	SA#95e	SP-220182	0633	2	C	Update maximumDeviationHoTrigger	17.6.0
2022-03	SA#95e	SP-220168	0641	-	F	Fix stage3 definition for 5G_DDNMF	17.6.0
2022-03	SA#95e	SP-220168	0643	-	F	YANG corrections	17.6.0
2022-03	SA#95e	SP-220168	0644	-	F	Fixing lists errors in AmfFunction-Single (stage 3)	17.6.0
2022-03	SA#95e	SP-200176	0645	1	F	Update RANSliceSubnetProfile attributes	17.6.0
2022-03	SA#95e	SP-220182	0649	-	F	Correct NRM fragment for DMRO Management	17.6.0
2022-03	SA#95e	SP-220173	0650	1	B	Add Stage 2 solutions to support ECM	17.6.0
2022-03	SA#95e	SP-220176	0651	1	F	Update energy efficiency attribute	17.6.0
2022-03	SA#95e	SP-220184	0652	1	F	Alignment on NR NRM for MOCN network sharing	17.6.0
2022-03	SA#95e	SP-220184	0653	1	B	Add administrativeState attribute in NROperatorCellDU	17.6.0
2022-03	SA#95e	SP-220179	0655	-	A	Remove incorrect reference to TS 22.104	17.6.0
2022-03	SA#95e	SP-220168	0658	1	B	NRM enhacements for SMFFunction	17.6.0
2022-03	SA#95e	SP-220182	0659	1	B	Add C-SON CCO NRM model stage3	17.6.0
2022-03	SA#95e	SP-220182	0660	1	B	Add C-SON CCO NRM model stage2	17.6.0
2022-03	SA#95e	SP-220176	0666	1	F	Clean up of eMA5SLA	17.6.0
2022-03	SA#95e	SP-200168	0667	-	F	Update 5G NRM to solve CR clash in Figure 5.2.1.2-2	17.6.0
2022-03	SA#95e	SP-200168	0670	1	B	NRM enhancements for the SMFFunction (stage 3)	17.6.0
2022-03	SA#95e	SP-220178	0672	-	F	Correct YANG Network Slice NRM solution set reference	17.6.0
2022-03	SA#95e	SP-200168	0674	1	F	Update 5GC NRM for 5G_DDNMF	17.6.0
2022-03	SA#95e	SP-220179	0678	-	A	Correct YANG mapping in TS document	17.6.0
2022-03	SA#95e	SP-220168	0679	-	F	Correct NR YAML in TS document	17.6.0
2022-03	SA#95e	SP-220168	0680	-	F	Correct 5GC YAML in TS document	17.6.0
2022-03	SA#95e	SP-220168	0681	-	F	Correct Network Slicing YAML in TS document	17.6.0
2022-03	SA#95e	SP-220173	0682	-	B	Add Stage 3 solutions to support ECM	17.6.0
2022-03	SA#96	SP-220507	0642	2	F	Update Figure L.2.1 and accompanying paragraph.	17.7.0
2022-03	SA#96	SP-220508	0683	-	F	Correct maximumDeviationHoTrigger for D-LBO	17.7.0
2022-03	SA#96	SP-220497	0685	-	A	Diagram fix for NRM fragment for RRM policies	17.7.0
2022-03	SA#96	SP-220497	0689	-	A	Fixing OpenAPI Discoverability issue in stage 3 5gcNrm.yaml	17.7.0
2022-03	SA#96	SP-220497	0690	-	A	Fixing OpenAPI Discoverability issue in stage 3- nrNrm.yaml	17.7.0
2022-03	SA#96	SP-220497	0691	-	A	Fixing OpenAPI Discoverability issue in stage 3 sliceNrm.yaml	17.7.0
2022-03	SA#96	SP-220498	0693	-	A	CT OpenAPI file relative-path URI references and dependence change for 5gcNrm.yaml	17.7.0
2022-03	SA#96	SP-220564	0694	-	F	Fixing a few issues with attribute related to nextHopInfoList in EP_transport	17.7.0
2022-03	SA#96	SP-220498	0698	1	A	OpenAPI file name and dependence change for 5gcNrm.yaml	17.7.0
2022-03	SA#96	SP-220498	0699	1	A	OpenAPI file name and dependence change for nrNrm.yaml	17.7.0
2022-03	SA#96	SP-220498	0700	1	A	OpenAPI file name and dependence change for sliceNrm.yaml	17.7.0
2022-03	SA#96	SP-220498	0702	-	A	Correction to RRMPolicy_ IOC reference in RRMPolicyRatio IOC	17.7.0
2022-03	SA#96	SP-220498	0704	-	A	Add attribute properties for NetworkSliceSubnet attribute priorityLabel	17.7.0
2022-03	SA#96	SP-220564	0705	-	F	Fix to change Support Qualifier to S	17.7.0
2022-03	SA#96	SP-220564	0706	-	F	Define LogicInterfaceInfo datatype and fix attribute properties for logicInterfaceInfo	17.7.0
2022-03	SA#96	SP-220564	0708	1	F	Fixing attribute properties for ServiceProfile attribute networkSliceSharingIndicator	17.7.0
2022-03	SA#96	SP-220510	0710	1	A	Correct isOrdered-isUnique for multivalue attributes	17.7.0
2022-03	SA#96	SP-220499	0712	1	B	Network slice subnet provider capability IOC	17.7.0
2022-03	SA#96	SP-220507	0715	-	F	Correction on two SLA attributes	17.7.0
2022-03	SA#96	SP-220507	0716	-	F	Correction on attribute latency of SubnetProfiles	17.7.0

2022-03	SA#96	SP-220510	0719	-	A	Correction on minor errors in nrNRM.yaml	17.7.0
2022-03	SA#96	SP-220510	0721	-	A	Correction on the attribution definition in the wrong yaml file	17.7.0
2022-03	SA#96	SP-220499	0722	-	B	Add feasibility check NRM fragment	17.7.0
2022-03	SA#96	SP-220509	0723	-	F	Address the unnecessary reference for the yaml file	17.7.0
2022-03	SA#96	SP-220510	0727	-	A	Fix BWP association in NRCellDU	17.7.0
2022-03	SA#96	SP-220510	0729	-	A	Update 5QI set description - YANG module	17.7.0
2022-03	SA#96	SP-220510	0731	-	A	Update 5QI set reference attribute definition	17.7.0
2022-03	SA#96	SP-220511	0711	-	B	Access specific GST configuration	18.0.0
2022-09	SA#97e	SP-220847	0732	-	B	Enhance 5G Core managed NF Profile NRM fragment	18.1.0
2022-09	SA#97e	SP-220847	0733	-	B	NRM enhancements for UPFFunction	18.1.0
2022-09	SA#97e	SP-220847	0734	-	C	NRM enhancements for NSSFFunction	18.1.0
2022-09	SA#97e	SP-220847	0735	1	B	NRM enhancements for PCFFunction	18.1.0
2022-09	SA#97e	SP-220847	0736	1	B	NRM enhancements for UDMFunction	18.1.0
2022-09	SA#97e	SP-220847	0737	1	B	NRM enhancements for UDRFunction	18.1.0
2022-09	SA#97e	SP-220849	0741	1	A	FiveQICharacteristics inheritance issue and reference issue in stage 3	18.1.0
2022-09	SA#97e	SP-220859	0743	1	A	Fix inconsistency in AMFFunction stage 2 and stage 3	18.1.0
2022-09	SA#97e	SP-220849	0745	-	A	Correction to DESManagementFunction and CESManagementFunction	18.1.0
2022-09	SA#97e	SP-220849	0748	1	A	Correction to serviceType attribute	18.1.0
2022-09	SA#97e	SP-220847	0755	1	B	Add BWP Set configuration support in NRM (stage 2)	18.1.0
2022-09	SA#97e	SP-220847	0756	-	B	Add BWP Set configuration support in NRM (stage 3, YANG)	18.1.0
2022-09	SA#97e	SP-220859	0758	1	A	Update stage2 and stage3 definition for FeasibilityCheckAndReservationJob	18.1.0
2022-09	SA#97e	SP-220859	0760	-	A	Add missing notifyMOIChanges in configuration notification table	18.1.0
2022-09	SA#97e	SP-220861	0762	-	A	Correction on two SLA attributes	18.1.0
2022-09	SA#97e	SP-220847	0764	1	B	Add BWP set support to NRM (Stage3, YAML)	18.1.0
2022-09	SA#97e	SP-220847	0765	1	B	Update NWDAFFunction IOC to support management and control purpose	18.1.0
2022-09	SA#97e	SP-220859	0767	1	A	Update EASDF IOC	18.1.0
2022-09	SA#97e	SP-220849	0770	-	F	YANG Corrections	18.1.0
2022-09	SA#97e	SP-220849	0772	-	A	Add missing attributes n6Protection and nssaaSupport defined in CNSliceSubnetProfile to TopSliceSubnetProfile	18.1.0
2022-09	SA#97e	SP-220849	0774	-	A	fix TaiList issues in stage 3 in TS28541_5gcNrm.yaml	18.1.0
2022-09	SA#97e	SP-220849	0784	-	A	Correction to coverageAreaTAList	18.1.0
2022-09	SA#97e					Removing duplicated content due to CRs including duplicated changes (MCC).	18.1.1
2022-09	SA#97e					Aligning OpenAPI code from FORGE	18.1.2
2023-01	SA#98e	SP-221188	0753	3	C	Add Enhanced QoS support in NRM (stage 2)	18.2.0
2023-01	SA#98e	SP-221188	0754	3	C	Add Enhanced QoS support in NRM (stage 3, YANG)	18.2.0
2023-01	SA#98e	SP-221172	0785	-	F	YANG Corrections in Word TS	18.2.0
2023-01	SA#98e	SP-221188	0787	-	B	NRM enhancements for AUSFFunction	18.2.0
2023-01	SA#98e	SP-221188	0788	1	B	NRM enhancements for NEFFunction	18.2.0
2023-01	SA#98e	SP-221188	0789	-	B	NRM enhancements for NSACFFunction	18.2.0
2023-01	SA#98e	SP-221188	0790	1	B	NRM enhancements for NWDAFFunction	18.2.0
2023-01	SA#98e	SP-221188	0791	1	B	NRM enhancements for SCPFunction	18.2.0
2023-01	SA#98e	SP-221188	0792	1	B	NRM enhancements for SEPPFunction	18.2.0
2023-01	SA#98e	SP-221188	0793	-	B	NRM enhancements for UDSFFunction	18.2.0
2023-01	SA#98e	SP-221169	0796	-	A	Correcting name of nSInstanceId	18.2.0
2023-01	SA#98e	SP-221167	0803	2	A	Correction to multiplicity of relation between NetworkSlice IOC and NetworkSliceSubnet IOC	18.2.0
2023-01	SA#98e	SP-221169	0806	-	A	Correction to GSMA NG 116 reference for KPIMonitoring	18.2.0
2023-01	SA#98e	SP-221169	0809	-	A	Correction to ServiceProfile attribute v2XCommModels name in YAML defintion	18.2.0
2023-01	SA#98e	SP-221169	0812	-	A	Correction to inconsistencies in GNBCUCPFunction definition	18.2.0
2023-01	SA#98e	SP-221173	0816	1	A	Adding YANG begin and End markers	18.2.0
2023-01	SA#98e	SP-221167	0820	1	A	Address Editor's Note for the description of FeasibilityCheckAndReservationJob (6.3.9)	18.2.0
2023-01	SA#98e	SP-221180	0822	-	A	Correct the definition for cellLocalId to support MOCN network sharing sceanrio (6.3.11)	18.2.0
2023-01	SA#98e	SP-221188	0823	1	B	Update NWDAFFunction IOC to support management and control purpose	18.2.0
2023-01	SA#98e	SP-221181	0825	-	A	Correct the misalignment information between stage2 and stage3	18.2.0
2023-01	SA#98e	SP-221167	0828	-	A	Replacing Support Qualifier with S	18.2.0
2023-01	SA#98e	SP-221182	0834	-	A	Consistency in use of servAttrCom	18.2.0
2023-01	SA#98e	SP-221182	0837	1	A	Correct kPIList	18.2.0
2023-01	SA#98e	SP-221182	0840	2	A	Correct periodicityList	18.2.0
2023-01	SA#98e	SP-221167	0843	1	A	Correct network slice state management table	18.2.0
2023-01	SA#98e					Fixing some implementation errors	18.2.1
2023-02						Removing revision marks	18.2.2

2023-03	SA#99	SP-230196	0855	-	A	Fix missing reference to mid-haul interface for EP Transport	18.3.0
2023-03	SA#99	SP-230196	0857	-	A	Fix duplicated SST attribute in RANSliceSubnetProfile	18.3.0
2023-03	SA#99	SP-230206	0859	1	B	NRM enhancements for SMSFFunction	18.3.0
2023-03	SA#99	SP-230206	0860	1	B	NRM enhancements for NRFFunction	18.3.0
2023-03	SA#99	SP-230206	0861	1	B	NRM enhancements for LMFFunction	18.3.0
2023-03	SA#99	SP-230206	0862	1	B	NRM enhancements for AFFunction	18.3.0
2023-03	SA#99	SP-230206	0863	-	B	NRM enhancements for EASDFFunction	18.3.0
2023-03	SA#99	SP-230206	0864	1	B	NRM enhancements for NSSAAFFunction	18.3.0
2023-03	SA#99	SP-230199	0867	1	A	Remove redundant stage 3 definition for Mnc and PlmnId	18.3.0
2023-03	SA#99	SP-230196	0870	1	A	Fix IpAddr definition and references	18.3.0
2023-03	SA#99	SP-230207	0872	-	A	ManagedNFProfile stage3 not consistent with Stage 2	18.3.0
2023-03	SA#99	SP-230207	0874	1	A	Correct issues for feasibility check and resource reservation NRM fragment	18.3.0
2023-03	SA#99	SP-230206	0875	1	B	Add Enhanced QoS support in NRM (stage 3, YAML)	18.3.0
2023-03	SA#99	SP-230206	0876	1	F	Update NRM fragment for 5QI configuration for NG-RAN	18.3.0
2023-03	SA#99	SP-230206	0877	1	F	Correct the description and definition for NWDAFFunction IOC	18.3.0
2023-03	SA#99	SP-230200	0881	1	A	Clarify Monut information clauses	18.3.0
2023-03	SA#99	SP-230206	0882	-	F	Correct the RRMPolicyRatio Description	18.3.0
2023-03	SA#99	SP-230206	0888	1	C	Add Annex recommending QoS model usage	18.3.0
2023-03	SA#99	SP-230196	0890	2	A	fixing coverageArea	18.3.0
2023-03	SA#99	SP-230208	0891	-	F	YANG Corrections	18.3.0
2023-04	SA#99					Editorial corrections in H.5.12	18.3.1
2023-06	SA#100	SP-230653	0800	5	B	Add NetworkSliceController and NetworkSliceSubnetController IOCs to support asynchronous LCM operations	18.4.0
2023-06	SA#100	SP-230657	0894	1	B	NRM enhancements for NRFFunction	18.4.0
2023-06	SA#100	SP-230657	0895	1	B	NRM enhancements for CHFFunction	18.4.0
2023-06	SA#100	SP-230657	0896	1	B	NRM enhancements for MFAFFunction	18.4.0
2023-06	SA#100	SP-230657	0897	-	B	NRM enhancements for DCCFFunction	18.4.0
2023-06	SA#100	SP-230657	0898	-	B	NRM enhancements for class diagram	18.4.0
2023-06	SA#100	SP-230649	0900	-	A	Correction to dCHOControl by adding definition to attribute properties table	18.4.0
2023-06	SA#100	SP-230681	0903	1	A	Correction to multiplicity definition to nRPciList and stage 3 implementation of both NRPciList and CSonPciList	18.4.0
2023-06	SA#100	SP-230657	0904	-	F	Corrections to missing properties for a few attributes	18.4.0
2023-06	SA#100	SP-230657	0905	1	C	Improve EP Transport model to clarify connection point info	18.4.0
2023-06	SA#100	SP-230648	0908	1	A	clean up of incorrect use of multiplicity isOrdered isUnique and isNullable in attribute properties table	18.4.0
2023-06	SA#100	SP-230658	0910	1	A	Correct the feasibility check and resource reservation NRM fragment	18.4.0
2023-06	SA#100	SP-230658	0912	-	A	Correct issues for NR NRM	18.4.0
2023-06	SA#100	SP-230658	0914	-	A	Update SliceNRM YAML to align with stage2	18.4.0
2023-06	SA#100	SP-230651	0916	-	F	YANG Corrections	18.4.0
2023-06	SA#100	SP-230657	0921	-	F	Update NRM enhancements for NWDAFFunction	18.4.0
2023-06	SA#100	SP-230658	0927	1	A	Fixing coverageArea	18.4.0
2023-06	SA#100	SP-230651	0931	1	F	Several editorial Corrections	18.4.0
2023-06	SA#100					Various CR implementation corrections in YANG code	18.4.1
2023-09	SA#101	SP-230953	0944		A	Correct attribute name for frequency prediction	18.5.0
2023-09	SA#101	SP-230964	0950	1	A	Update Annex L with mapping table	18.5.0
2023-09	SA#101	SP-230953	0952		A	Update reference to GST	18.5.0
2023-09	SA#101	SP-230941	0955	1	A	Rel-18 CR TS 28.541 Correction to type defintion of coverageAreaTAList	18.5.0
2023-09	SA#101	SP-230947	0961		B	TS28.541 Rel18 NRM enhancements for NRFFunction	18.5.0
2023-09	SA#101	SP-230947	0962		B	TS28.541 Rel18 NRM enhancements for BSFFunction	18.5.0
2023-09	SA#101	SP-230947	0963		B	TS28.541 Rel18 NRM enhancements for AANFFunction	18.5.0
2023-09	SA#101	SP-230947	0964		B	TS28.541 Rel18 NRM enhancements for TSCTSFFunction	18.5.0
2023-09	SA#101	SP-230947	0965		B	TS28.541 Rel18 NRM enhancements for GMLCFunction	18.5.0
2023-09	SA#101	SP-230947	0966	1	B	TS28.541 Rel18 NRM enhancements for class Diagram	18.5.0
2023-09	SA#101	SP-230941	0969	1	A	TS28.541 Rel18 Removing redundant Tai definition in NR NRM	18.5.0
2023-09	SA#101	SP-230947	0970	2	C	TS28.541 Rel18 Improve LogicalInterfaceInfo model to add support of static route	18.5.0
2023-09	SA#101	SP-230941	0973	1	A	TS28.541 Rel18 fix small inconsistent issues in stage2, typo in stage 2 and 3	18.5.0
2023-09	SA#101	SP-230941	0976	2	A	TS28.541 Rel18 fix a few inheritance diagram issues in NR NRM	18.5.0
2023-09	SA#101	SP-230941	0979	1	A	Update RRMPolicyRatio	18.5.0
2023-09	SA#101	SP-230944	0981		A	Rel-18 CR for TS28.541 Fix wrong annex reference	18.5.0
2023-09	SA#101	SP-230941	0984		A	Remove duplicated notifications	18.5.0
2023-09	SA#101	SP-230965	0986		A	Re-15 CR TS 28.541 Correct issues for NRM fragment for NG-RAN MOCN sharing	18.5.0
2023-09	SA#101	SP-230958	0989	1	A	Rel-18 CR TS 28.541 Correct the issues for the attribute with the ENUM type for network slicing NRM fragment	18.5.0

2023-09	SA#101	SP-230966	0990	1	C	Rel-18 CR 28.541 Update recommended QoS model usage for Shared RAN	18.5.0
2023-09	SA#101	SP-230966	0991	1	C	Rel-18 CR 28.541 Update NRM for operator specific QoS model for RAN Sharing	18.5.0
2023-09	SA#101	SP-230947	0992		F	Rel-18 CR TS28.541 Correct the stage2 and stage3 issues for BWP configuration	18.5.0
2023-09	SA#101	SP-230947	0993	1	B	Rel-18 CR TS28.541 Update the feasiibility check NRM fragment to support the missing requirements	18.5.0
2023-09	SA#101	SP-230941	0997	1	A	Correction on DeterministicComm data type	18.5.0
2023-09	SA#101	SP-230949	0999		A	Correction of EcmConnectionInfo	18.5.0
2023-09	SA#101	SP-230947	1001	1	B	Rel-18 CR 28.541 Non IP Support Stage-2	18.5.0
2023-09	SA#101	SP-230947	1002	1	B	Rel-18 CR 28.541 Non IP Support Stage-3	18.5.0
2023-09	SA#101	SP-230973	1005	1	B	Rel-18 CR 28.541 NTN Location Restriction Stage-2	18.5.0
2023-09	SA#101	SP-230973	1006	1	B	Rel-18 CR 28.541 NTN Location Restriction Stage 3	18.5.0
2023-09	SA#101	SP-230973	1007	1	B	Rel-18 CR TS 28.541 Add NRM Info Model definitions for NTN management(stage2)	18.5.0
2023-09	SA#101	SP-230973	1008	1	B	Rel-18 CR TS 28.541 Add NRM Info Model definitions for NTN management(Stage3 Yaml)	18.5.0
2023-09	SA#101	SP-230967	1012	1	B	Update NRM enhancements for NWDAFFunction	18.5.0
2023-09	SA#101	SP-230973	1013	1	B	Rel-18 CR 28.541 NTN Coverage Availability Information Configuration Stage 2	18.5.0
2023-09	SA#101	SP-230947	1014	1	F	Rel-18 CR TS 28.541 Add missing Attribute Constraints for NROperatorCellDU	18.5.0
2023-09	SA#101	SP-230975	1015	1	B	Rel-18 CR TS 28.541 UL and DL reliability configuration in slice and subnet profiles	18.5.0
2023-09	SA#101	SP-230973	1016	1	B	Rel-18 CR TS 28.541 NTN Coverage Availability Information Configuration Stage 3	18.5.0
2024-01	SA#102	SP-231481	0858	9	B	Rel-18 CR TS 28.541 Add NRM for network slice isolation	18.6.0
2024-01	SA#102	SP-231458	1018	-	B	TS28.541 Rel18 NRM enhancements for NRFFunction and AmfInfo and SmfInfo	18.6.0
2024-01	SA#102	SP-231458	1019	-	B	TS28.541 Rel18 NRM enhancements for UpfInfo and PcfInfo and NetInfo	18.6.0
2024-01	SA#102	SP-231458	1020	-	B	TS28.541 Rel18 NRM enhancements for MBUPFFunction	18.6.0
2024-01	SA#102	SP-231458	1021	-	B	TS28.541 Rel18 NRM enhancements for MBSMFFunction	18.6.0
2024-01	SA#102	SP-231458	1022	1	B	TS28.541 Rel18 NRM enhancements for class diagram	18.6.0
2024-01	SA#102	SP-231492	1024	-	A	TS28.541 Rel18 correction to stage3 of NROperatorCellDU containment	18.6.0
2024-01	SA#102	SP-231492	1026	-	A	TS28.541 Rel18 correction to NPNIdentity stage2 stage 3 issue	18.6.0
2024-01	SA#102	SP-231458	1027	1	C	TS28.541 Rel18 Move normative OpenAPI and YANG code to Forge	18.6.0
2024-01	SA#102	SP-231477	1029	-	B	Rel-18 CR TS 28.541 Add YAML solution set for NRM for operator specific QoS model for RAN sharing	18.6.0
2024-01	SA#102	SP-231477	1030	-	F	Rel-18 CR TS28.541 Udpate clause O.3 RAN Sharing usage recommendation	18.6.0
2024-01	SA#102	SP-231458	1033	-	B	Rel-18 CR TS 28.541 Fix inconsitencies related to network slice SLA attribute availability	18.6.0
2024-01	SA#102	SP-231458	1034	1	B	Rel-18 CR TS 28.541 Fix inconsitencies related to network slice SLA attribute kPIMonitoring	18.6.0
2024-01	SA#102	SP-231458	1036	-	B	Rel-18 CR TS 28.541 Fix inconsitencies related to network slice SLA attribute maxDLDataVolume and maxULDataVolume	18.6.0
2024-01	SA#102	SP-231458	1038	2	B	Rel-18 CR TS 28.541 Add support for GSMA attributes related to data networks	18.6.0
2024-01	SA#102	SP-231487	1041	1	A	TS28.541 Rel18 correction to data type property for sD	18.6.0
2024-01	SA#102	SP-231494	1043	1	F	Rel-18 CR 28.541 YANG Corrections and inVariant	18.6.0
2024-01	SA#102	SP-231457	1045	1	A	Rel-18 CR TS 28.541 Correct issues for the attribute with the ENUM type for NR NRM fragment	18.6.0
2024-01	SA#102	SP-231498	1046	-	C	Rel-18 CR TS 28.541 Fix Slice NRM YAML definition for dLReliability and uLReliability	18.6.0
2024-01	SA#102	SP-231477	1048	1	C	Rel-18 CR 28.541 Update recommended QoS model usage for Shared RAN (yang update)	18.6.0
2024-01	SA#102	SP-231458	1058	-	B	TS28.541 Rel18 NRM enhancements for NRFFunction phase 4	18.6.0
2024-01	SA#102	SP-231458	1059	-	B	TS28.541 Rel18 NRM enhancements for MNPFFunction	18.6.0
2024-01	SA#102	SP-231487	1061	-	A	TS28.541 Rel18 correction to NSSF interface between NWDAF and NSSF	18.6.0
2024-01	SA#102	SP-231487	1066	-	A	TS28.541 Rel18 correction to DRACHOptimizationFunction stage 3 issue	18.6.0
2024-01	SA#102	SP-231487	1069	-	A	TS28.541 Rel18 correction to 5GC resourceType allowed values	18.6.0
2024-01	SA#102	SP-231493	1086	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in DelayTolerance	18.6.0
2024-01	SA#102	SP-231493	1087	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in DeterministicComm	18.6.0

2024-01	SA#102	SP-231493	1088	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in XLThpt	18.6.0
2024-01	SA#102	SP-231493	1089	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in MaxPktSize	18.6.0
2024-01	SA#102	SP-231492	1090	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in MaxNumberofPDUSessions	18.6.0
2024-01	SA#102	SP-231492	1091	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in KPIMonitoring	18.6.0
2024-01	SA#102	SP-231493	1092	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in TermDensity	18.6.0
2024-01	SA#102	SP-231492	1093	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in Positioning	18.6.0
2024-01	SA#102	SP-231492	1094	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in Synchronicity	18.6.0
2024-01	SA#102	SP-231493	1095	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in EnergyEfficiency	18.6.0
2024-01	SA#102	SP-231493	1096	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in NSSAASupport	18.6.0
2024-01	SA#102	SP-231494	1097	-	F	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in MaxNumberofUEs	18.6.0
2024-01	SA#102	SP-231493	1098	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in RadioSpectrum	18.6.0
2024-01	SA#102	SP-231494	1099	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in UserMgmtOpen	18.6.0
2024-01	SA#102	SP-231493	1100	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in V2XCommMode	18.6.0
2024-01	SA#102	SP-231493	1101	-	A	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in NBIoT	18.6.0
2024-01	SA#102	SP-231494	1102	-	F	Rel-18 CR TS 28.541 Corrections to servAttrCom attribute in NonIPSupport	18.6.0
2024-01	SA#102	SP-231457	1103	1	A	Rel-18 Correct dnai and dnaiList attribute definitions	18.6.0
2024-01	SA#102	SP-231457	1105	-	A	Rel-18 CR TS 28.541 Correct the issues for NrNrm YAML file	18.6.0
2024-01	SA#102	SP-231459	1106	1	B	Add NRM for AnLF	18.6.0
2024-01	SA#102	SP-231458	1107	-	F	Clarification on the usage of sNssaiInfoList in multiple places	18.6.0
2024-01	SA#102	SP-231458	1108	-	F	Update description of ExtSnssai	18.6.0
2024-01	SA#102	SP-231465	1109	1	B	Rel-18 CR 28.541 Add energy saving attributes to IOC UPFFunction	18.6.0
2024-01	SA#102	SP-231483	1110	1	B	Update definitions of Ephemeris	18.6.0
2024-01	SA#102	SP-231478	1111	-	B	Stage 3 Add FL related attributes in NWDAFFunction	18.6.0
2024-01	SA#102	SP-231478	1112	-	B	Add FL related attributes in NWDAFFunction	18.6.0
2024-01	SA#102	SP-231498	1114	1	B	Rel-18 CR 28.541 Modify the attributes of UL and DL latency in RAN	18.6.0
2024-01	SA#102	SP-231478	1120	-	F	Correction of attributes defined in NWDAFFunction	18.6.0
2024-01	SA#102	SP-231463	1121	2	B	Add satellite backhaul information for QoS monitoring per QoS flow per UE	18.6.0
2024-01	SA#102	SP-231458	1127	1	F	Rel-18 CR 28.541 Correct redundant attribute definitions	18.6.0
2024-01	SA#102	SP-231492	1129	-	A	Rel-18 Ts 28.541 Correction of yang code for sliceprofile	18.6.0
2024-01	SA#102	SP-231486	1135	1	A	Rel-18 CR 28.541 Correction of attribute properties	18.6.0
2024-01	SA#102	SP-231494	1136	-	F	Rel-18 CR 28.541 YANG Corrections (SA5#152)	18.6.0
2024-01	SA#102					Correct reference number for TS 38.331, update figure and clause numbering	18.6.1
2024-03	SA#103	SP-240171	1031	5	B	Rel-18 CR TS 28.541 Address EP_F1 issue for MOCN RAN sharing scenario	18.7.0
2024-03	SA#103	SP-240186	1138	1	B	Rel-18 CR TS28.541 Adding MCE ID	18.7.0
2024-03	SA#103	SP-240186	1140		F	TS28.541 Rel18 correction to Schema definition Issues for SubNetwork and ManagedElement of OpenAPI SS	18.7.0
2024-03	SA#103	SP-240395	1141		B	TS28.541 Rel18 NRM enhancements for NfInfo and PcscfInfo	18.7.0
2024-03	SA#103	SP-240395	1142	1	C	Rel-18 CR TS 28.541 Enhancement to clarify Network slice SLA requirement for inter-packet delay variation	18.7.0
2024-03	SA#103	SP-240186	1143	1	F	Rel-18 CR TS 28.541 Correction to attribute constraints of IsolationProfile	18.7.0
2024-03	SA#103	SP-240185	1145	1	A	Rel-18 CR TS 28.541 Clarify attribute constraints for SliceProfile	18.7.0
2024-03	SA#103	SP-240155	1146	1	B	Add AIML support for legacy features	18.7.0
2024-03	SA#103	SP-240149	1147	1	B	Rel-18 CR TS 28.541 Add new attribute to describe the mapping relationship between DNAI and satellite ID	18.7.0
2024-03	SA#103	SP-240149	1148	1	B	Rel-18 CR 28.541 Add satellite backhaul information to AMFFunction	18.7.0
2024-03	SA#103	SP-240183	1151		A	TS28.541 Rel18 correction to QFPacketDelayThresholdsType	18.7.0
2024-03	SA#103	SP-240183	1154		A	TS28.541 Rel18 corrections to ManagedFunction containment implementation in OpenAPI SS	18.7.0
2024-03	SA#103	SP-240186	1155	1	F	R18 CR TS 28.541 Correct the expression of parameter S in Attribute constraints	18.7.0
2024-03	SA#103	SP-240186	1156		F	R18 CR TS 28.541 Remove the duplications in attributes constraints of NRCellDU	18.7.0

2024-03	SA#103	SP-240185	1158		A	Rel-18 CR TS 28.541 Correct the referece in attributes of qOffsetRangeList and beamIndex	18.7.0
2024-03	SA#103	SP-240186	1159	1	F	R18 CR TS 28.541 Correct the clauses' number in Clause 5.3	18.7.0
2024-03	SA#103	SP-240395	1160	1	C	Rel-18 CR TS 28.541 Slice Validity	18.7.0
2024-03	SA#103	SP-240395	1161	1	F	Rel-18 CR TS 28.541 Correct definition for FeasibilityCheckAndReservationJob	18.7.0
2024-03	SA#103	SP-240395	1162	1	B	Rel-18 CR TS 28.541 Add missing name contain information for ExternalGNBCUCPFunction and ExtenralGNBDUFunction (satge2 and stage3 yaml)	18.7.0
2024-03	SA#103	SP-240186	1167	1	F	Rel-18 CR 28.541 YANG Corrections	18.7.0
2024-03	SA#103	SP-240179	1170	1	F	Correction of inheritance relationships figure name for NTN management support	18.7.0
2024-03	SA#103	SP-240164	1171	1	F	Rel-18 CR TS 28.541 Align Annex P with Serviceprofile	18.7.0
2024-03	SA#103	SP-240164	1172	1	F	Rel-18 CR TS 28.541 Align slice imported information table with the class diagram	18.7.0
2024-06	SA#104	SP-240804	1175	1	A	Rel-18 CR TS 28.541 add missing attributes of ManagedNFProfile	18.8.0
2024-06	SA#104	SP-240814	1178	1	A	Rel-18 CR TS 28.541 Correct support qualifier condition in ServAttrCom data type	18.8.0
2024-06	SA#104	SP-240822	1182	1	A	Rel-18 CR TS 28.541 Remove presence defintion from support qualifier condition in NetworkSliceSubnet IOC	18.8.0
2024-06	SA#104	SP-240821	1187	-	F	Rel-18 CR TS 28.541 Update the description of uLPktDelayVariation and dLPktDelayVariation	18.8.0
2024-06	SA#104	SP-240839	1197	-	F	Rel-18 CR TS 28.541 Correct attribute names servingNfTypeList and servingNfSetIdList	18.8.0
2024-06	SA#104	SP-240839	1204	-	F	Rel-18 CR TS 28.541 Add and update attribute descriptions	18.8.0
2024-06	SA#104	SP-240809	1206	1	F	TS28.541 Rel18 correction to Forge reference - MCC: the change is Annex D could not be implemented due to Void clause	18.8.0
2024-06	SA#104	SP-240809	1207	-	F	TS28.541 Rel18 Rapporteur clean up for general and small issues	18.8.0
2024-06	SA#104	SP-240814	1208	1	A	TS28.541 Rel18 correction to using ENUM as dataType	18.8.0
2024-06	SA#104	SP-240821	1211	1	F	Rel-18 CR 28.541 Add missing datatype import, fix attribute properties	18.8.0
2024-06	SA#104	SP-240804	1213	1	A	Rel-18 CR TS 28.541 Correct some type errors of attribute properties in 5.4	18.8.0
2024-06	SA#104	SP-240809	1214	1	B	Rel-18 CR TS28.541 Adding Mapped cell ID	18.8.0
2024-06	SA#104	SP-240809	1215	1	B	Rel-18 CR TS28.541 Adding NTN fragments for LMF on UE location verification	18.8.0
2024-06	SA#104	SP-240821	1216	1	F	Rel-18 CR for TS28.541 add missing Attribute properties for NrfInfo	18.8.0
2024-06	SA#104	SP-240809	1218	-	F	Rel-18 CR 28.541 YANG Corrections	18.8.0
2024-06	SA#104	SP-240804	1225	-	A	Rel-18 CR TS 28.541 correction for allowedSNPNs	18.8.0
2024-06	SA#104	SP-240821	1227	1	F	Rel-18 CR TS 28.541 corrections for PCFInfo	18.8.0
2024-06	SA#104	SP-240821	1228	1	F	Rel-18 CR TS 28.541 corrections for SMFInfo	18.8.0
2024-06	SA#104	SP-240821	1229	1	F	Rel-18 CR TS 28.541 corrections for UPFInfo	18.8.0
2024-06	SA#104	SP-240821	1230	1	F	Rel-18 CR TS 28.541 corrections of attributes of amfInfo	18.8.0
2024-06	SA#104	SP-240804	1236	-	A	Rel-18 CR TS 28.541 Remove presence defintion from support qualifier condition in data types of network slice NRM	18.8.0
2024-06	SA#104	SP-240804	1243	-	A	Rel-18 CR TS 28.541 Correct undefined dataType of attribute properties in clause 6.4	18.8.0
2024-06	SA#104	SP-240809	1244	1	F	Rel-18 CR TS 28.541 Remove duplicate definition of NPNIdentity with TS 28.622	18.8.0
2024-06	SA#104	SP-240821	1245	-	F	Rel-18 CR TS 28.541 add missing definition for attributes of BsfInfo	18.8.0
2024-06	SA#104	SP-240809	1247	-	F	TS28.541 Rel18 remove MnS root in stage 3-yaml	18.8.0
2024-06	SA#104	SP-240809	1248	-	F	TS28.541 Rel18 CR Adding MCE ID Yaml SS	18.8.0
2024-06	SA#104	SP-240814	1251	-	A	Rel18 correction to use 'data type' as a dataType in Attribute properties in NR NRM	18.8.0
2024-06	SA#104	SP-240814	1254	1	A	Rel-18 CR 28.541 correction on PredefinedPccRuleSet	18.8.0
2024-06	SA#104	SP-240814	1257	1	A	Rel-18 CR TS 28.541 Add missing definition of RIM related parameters	18.8.0
2024-06	SA#104	SP-240814	1260	1	A	Rel-18 CR TS 28.541 corrections on the inconsistent attribute names	18.8.0
2024-06	SA#104	SP-240830	1261	1	F	Rel-18 CR TS 28.541 updates to the terminology for ML entity	18.8.0
2024-06	SA#104	SP-240824	1264	-	F	Rel-18 CR TS 28.541 Stage 3 Add mdtUserConsentReqList attribute to YAML	18.8.0
2024-06	SA#104	SP-240804	1269	1	A	Rel-18 CR 28.541 Add missing NRNetwork and EUTraNetwork definitions	18.8.0
2024-06	SA#104	SP-240809	1273	-	F	Rel-18 CR 28.541 YANG Corrections	18.8.0
2024-06	SA#104	SP-240830	1274	1	F	Rel-18 CR TS 28.541 Add missing AIML support for AnLFFunction	18.8.0
2024-09	SA#105	SP-241163	1276	-	A	Rel-18 CR 28.541 Update the definition for NRNetwork and EUtraNetwork	18.9.0

2024-09	SA#105	SP-241163	1289	1	A	Rel-18 CR TS 28.541 Correct the capitalisation of stereotype in figure 5.2.1.1-25	18.9.0
2024-09	SA#105	SP-241173	1291	1	F	Rel-18 CR TS 28.541 Correct some type errors of attribute names	18.9.0
2024-09	SA#105	SP-241169	1295	-	A	Rel-18 CR TS 28.541 Align data types for attributes rimRSMonitoringStartTime and rimRSMonitoringStopTime - Stage 2 and Stage 3	18.9.0
2024-09	SA#105	SP-241169	1299	-	A	Rel18 correction to NFProfile used in NRFFunction	18.9.0
2024-09	SA#105	SP-241173	1301	1	F	Rel18 correction to attribute definition to InterfaceUpfInfoItem and IpInterface	18.9.0
2024-09	SA#105	SP-241169	1311	1	A	Rel-18 CR 28.541 correction on LMF related interface	18.9.0
2024-09	SA#105	SP-241163	1316	-	A	Rel-18 CR 28.541 YANG mount information for MeContext	18.9.0
2024-09	SA#105	SP-241169	1321	1	A	Rel-18 CR TS 28.541 Correct the NRM for RACH function	18.9.0
2024-09	SA#105	SP-241196	1327	1	F	Rel-18 CR TS 28.541 correct the description of NTN	18.9.0
2024-09	SA#105	SP-241190	1330	1	F	Rel-18 TS 28.541 Correct attribute constraints	18.9.0
2024-09	SA#105	SP-241181	1332	1	F	Rel-18 TS 28.541 Correct AIML associations	18.9.0
2024-09	SA#105	SP-241163	1334		A	Rel-18 CR TS 28.541 Move InterPlmnFQDN to ManagedNFProfile	18.9.0
2024-09	SA#105	SP-241173	1336	2	F	Rel-18 CR TS 28.541 Align with TS 38.423 to introduce NRM definitions for NG-RAN energy cost Reporting supporting	18.9.0
2024-09	SA#105	SP-241199	1338	1	F	Rel-18 CR TS 28.541 correction to misalignment of stage 3 for qFMonitoredSatelliteBackhaulCategories	18.9.0
2024-09	SA#105	SP-241169	1342	1	A	Rel-18 CR TS 28.541 Fix allowedValues property issues	18.9.0
2024-09	SA#105	SP-241195	1347	1	F	Rel-18 CR TS 28.541 Fix wrong attributes	18.9.0
2024-12	SA#106	SP-241635	1305	3	A	Correction to misalignment of stage 2 and stage 3 for CellIndividualOffset and QOffsetRangeList	18.10.0
2024-12	SA#106	SP-241651	1355	-	F	Rel-18 CR TS 28.541 Correct both stage2 and stage3 for NRNetwork and EUtraNetwork NRM fragement	18.10.0
2024-12	SA#106	SP-241635	1365	1	A	Rel-18 CR TS 28.541 Align allowed value for ueAccProbabilityDist	18.10.0
2024-12	SA#106	SP-241651	1367	1	F	Rel-18 CR TS 28.541 Correct the reference of alarm notifications	18.10.0
2024-12	SA#106	SP-241632	1375	-	A	Rel-18 CR TS 28.541 Correction on the property of attibutes	18.10.0
2024-12	SA#106	SP-241641	1377	-	F	Rel-18 CR TS 28.541 Correction to sliceAvailability and sliceSubnetAvailability	18.10.0
2024-12	SA#106	SP-241641	1379	1	B	Rel-18 CR TS 28.541 OpenAPI SS Stage 3 for energy cost mapping rule	18.10.0
2024-12	SA#106	SP-241641	1381	1	B	Rel-18 CR TS 28.541 Corrections to energy cost mapping rule description	18.10.0
2024-12	SA#106	SP-241632	1387	-	A	Rel-18 CR TS28.541 Fix Documentation column of NRCellDU.pLMNInfoList	18.10.0
2024-12	SA#106	SP-241641	1389	1	F	Rel-18 CR 28.541 YANG Corrections SA5-157	18.10.0
2024-12	SA#106	SP-241632	1395	-	A	Rel-18 CR TS 28.541 Correct isWritable property for Slicing NRM	18.10.0
2024-12	SA#106	SP-241651	1398	-	F	Rel-18 CR TS 28.541 Correct the openAPI definition for maxNumberofUEs to align with satge 2 definition	18.10.0
2024-12	SA#106	SP-241635	1402	-	A	Rel-18 CR TS 28.541 Corrections on PLMNInfo DataType	18.10.0
2024-12	SA#106	SP-241641	1409	1	F	Rel18 CR TS28.541 correction to default value	18.10.0
2024-12	SA#106	SP-241641	1411	-	F	Rel18 CR TS28.541 correction to stage 2 and stage 3 attribute name inconsistence	18.10.0
2024-12	SA#106	SP-241632	1414	1	A	Rel-18 CR TS 28.541 Update configuration parameters for GST translation	18.10.0
2024-12	SA#106	SP-241641	1416	-	F	Rel18 CR TS28541 correction to stage 2 and stage 3 for blockListEntry and blockListEntryIdleMode	18.10.0
2024-12	SA#106	SP-241641	1419	-	F	Rel-18 CR TS 28.541 Fix some incorrect reference numbers	18.10.0
2024-12	SA#106	SP-241632	1428	-	A	Rel-18 CR 28.541 correction on DefaultNotificationSubscription	18.10.0
2024-12	SA#106	SP-241651	1430	1	F	Rel-18 CR 28.541 correction on dnnInfoList	18.10.0
2024-12	SA#106	SP-241650	1436	1	F	Rel-18 CR TS 28.541 Correction of attributes	18.10.0
2024-12	SA#106	SP-241657	1438	1	F	Rel-18 CR TS28.541 Delete unused attributes blockedDurStartTime and blockedDurEndTime	18.10.0
2025-01	SA#106					Adding YANG files as attachments	18.10.1

History

Document history		
V18.7.0	May 2024	Publication
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