**3GPP TSG-SA5 Meeting #131e *S5-203195Rev1***

**e-meeting 25th May-3rd June 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.541** | **CR** | **0305** | **rev** | **-** | **Current version:** | **16.4.1** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

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| ***Title:*** | Correction of references | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Oy LM Ericsson AB | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI15 | | | | |  | ***Date:*** | | | 2020-05-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **A** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Several references are not correct or not exist, or TS withdrawn (examples: TS 38.101 is withdrawn, reference [45] is not valid, clause H.6 which contained the reference is removed in Rel 16…) | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Correct faulty references | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Specification will continue to have wrong references. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 4.4.1, 4.5, 5.4.1, 5.5, E.5.5, E.5.20, E.5.22 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

***First change***

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

[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 2.0 (2019-10-16).

[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".

***Next change***

## 4.4 Attribute definitions

### 4.4.1 Attribute properties

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

***Next change***

## 4.5 Common notifications

This subclause presents a list of notifications, defined in TS 28.532 [35], that provisioning management service consumer can receive. The notification parameter objectClass/objectInstance, defined in TS 28.531 [26], would capture the DN of an instance of an IOC defined in the present document.

| Name | Qualifier | Notes |
| --- | --- | --- |
| notifyMOIAttributeValueChanges | O |  |
| notifyMOICreation | O |  |
| notifyMOIDeletion | O |  |

***Next change***

### 5.4.1 Attribute properties

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

| Attribute Name | Documentation and Allowed Values | | Properties | |
| --- | --- | --- | --- | --- |
| aMFIdentifier | The AMFI is constructed from an AMF Region ID, an AMF Set ID and an AMF Pointer. The AMF Region ID identifies the region, the AMF Set ID uniquely identifies the AMF Set within the AMF Region, and the AMF Pointer uniquely identifies the AMF within the AMF Set. (Ref. 3GPP TS 23.003 [13]) | | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| aMFSetId | It represents the AMF Set ID, which is uniquely identifies the AMF Set within the AMF Region.  allowedValues: defined in subclause 2.10.1 of 3GPP TS 23.003 [13]. | | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| aMFSetMemberList | It is the list of DNs of AMFFunction instances of the AMFSet.  allowedValues: N/A | | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False | |
| aMFRegionId | It represents the AMF Region ID, which identifies the region.  allowedValues: defined in subclause 2.10.1 of 3GPP TS 23.003 [13]. | | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| localAddress | This parameter specifies the localAddress including IP address and VLAN ID used for initialization of the underlying transport.  First string is IP address, IP address can be an IPv4 address (See RFC 791 [37]) or an IPv6 address (See RFC 2373 [38]).  Second string is VLAN Id (See IEEE 802.1Q [39]). | type: String  multiplicity: 2  isOrdered: True  isUnique: N/A  defaultValue: None  isNullable: False | |
| remoteAddress | Remote address including IP address used for initialization of the underlying transport.  IP address can be an IPv4 address (See RFC 791 [37]) or an IPv6 address (See RFC 2373 [38]). | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | |
| nfProfileList | It is a set of NFProfile(s) to be registered in the NRF instance. NFProfile is defined in 3GPP TS 29.510 [23]. | | type: <<dataType>>  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| nSIIdList | It is a set of NSI Id. The NSI ID is defined in subclause 6.1.6.3.2 of 3GPP TS 29.531 [24]. | | type: String  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| sNSSAIList | See subclause 4.4.1. | |  | |
| sBIFQDN | It is used to indicate the FQDN of the registered NF instance in service-based interface, for example, NF instance FQDN structure is:  nftype<nfnum>.slicetype<sliceid>.mnc<MNC>.mcc<MCC>.3gppnetwork.org | | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| sBIServiceList | It is used to indicate the all supported NF services registered on service-based interface. | | type: String  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| nRTACList | It is the list of Tracking Area Codes (either legacy TAC or extended TAC).  allowedValues:  Legacy TAC and Extended TAC are defined in clause 9.3.3.10 of TS 38.413 [5]. | | type: Integer  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| supportedBMOList | It is used to indicate the list of supported BMOs (Bridge Managed Objects) required for integration with TSN system. | | type: String  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| managedNFProfile | This parameter defines profile for managed NF (See TS 23.501 [22]).  allowedValues: N/A | type: ManagedNFProfile  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| nfInstanceID | This parameter defines unique identity of the NF Instance. The format of the NF Instance ID shall be a Universally Unique Identifier (UUID) version 4, as described in IETF RFC 4122 [44]  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False | |
| nfType | This parameter defines type of Network Function  allowedValues: See TS 23.501[22] for NF types | type: ENUM  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | |
| fqdn | This parameter defines FQDN of the Network Function (See TS 23.003 [5])  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False | |
| ipAddress | This parameter defines IP Address of the Network Function. It can be IPv4 address (See RFC 791 [37]) or IPv6 address (See RFC 2373 [38]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False | |
| authzInfo | This parameter defines NF Specific Service authorization information. It shall include the NF type (s) and NF realms/origins allowed to consume NF Service(s) of NF Service Producer (See TS 23.501[22]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: True | |
| locality | The parameter defines information about the location of the NF instance (e.g. geographic location, data center) defined by operator (See TS 29.510[23]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: True | |
| capacity | This parameter defines static capacity information in the range of 0-65535, expressed as a weight relative to other NF instances of the same type; if capacity is also present in the nfServiceList parameters, those will have precedence over this value (See TS 29.510[23])  allowedValues: 0-65535 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| nFInfo | This parameter includes NF specific data in Managed NF profile  allowedValues: N/A | type: NFInfo  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| hostAddr | This parameter defines host address of a NF  allowedValues: N/A | type: HostAddr  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| priority | This parameter defines Priority (relative to other NFs of the same type) in the range of 0-65535, to be used for NF selection; lower values indicate a higher priority. If priority is also present in the nfServiceList parameters, those will have precedence over this value (See TS 29.510[23]).  allowedValues: 0-65535 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| supportedDataSetIds | This parameter defines list of supported data sets in the UDR instance (See TS 29.510[23]).  allowedValues: "SUBSCRIPTION", "POLICY", EXPOSURE", "APPLICATION" | type: ENUM  multiplicity: 1..\*  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False | |
| nFSrvGroupId | This parameter defines identity of the group that is served by the NF instance (See TS 29.510[23]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False | |
| smfServingAreas | This parameter defines the SMF service area(s) the UPF can serve (See TS 29.510[23]).  allowedValues: N/A | type: String  multiplicity: 1..\*  isOrdered: F  isUnique: True  defaultValue: None  isNullable: False | |
| isRemoveAllowed | This indicates if the subject NRCellRelation can be removed (deleted) or not.  If TRUE, the subject NRCellRelation instance can be removed (deleted).  If FALSE, the subject NRCellRelation instance shall not be removed (deleted) by any entity but an MnS consumer.  allowedValues: TRUE,FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | |
| isHOAllowed | This indicates if HO is allowed or prohibited.  If TRUE, handover is allowed from source cell to target cell. The source cell is identified by the name-containing NRCellCU of the NRCellRelation that contains the isHOAllowed. The target cell is referenced by the NRCellRelation that contains this isHOAllowed.  If FALSE, handover shall not be allowed.  allowedValues: TRUE,FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | |
| x2BlackList | This is a list of DNs of NRCellCU and ExternalNRCellCU. If the target node DN is a member of the source node’s NRCellCU.x2BlackList, the source node is:  1) Prohibited from sending X2 connection request to target node;  2) Forced to tear down established X2 connection to target node  3) Not allowed to accept incoming X2 connection request from target node.  The same DN may appear here and in NRCellCU.x2WhiteList. In such case, the DN in x2WhiteList shall be treated as if it is absent. | type: DN  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False | |
| xnBlackList | This is a list of DNs of NRCellCU and ExternalNRCellCU. If the target node DN is a member of the source node’s NRCellCU.xnBlackList, the source node is:  1) Prohibited from sending Xn connection request to target node;  2) Forced to tear down established Xn connection to target node  3) Not allowed to accept incoming Xn connection request from target node.  The same DN may appear here and in NRCellCU.xnWhiteList. In such case, the DN in xnWhiteList shall be treated as if it is absent. | type: DN  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False | |
| x2WhiteList | This is a list of DNs of NRCellCU and ExternalNRCellCU. If the target node DN is a member of the source node’s NRCellCU.x2WhiteList, the source node:  - is allowed to request the establishment of X2 connection with the target node;  - is not allowed to initiate the tear down of established X2 connection to target node  The same DN may appear here and in NRCellCU.x2BlackList. In such case, the DN here shall be treated as if it is absent. | type: String  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False | |
| xnWhiteList | This is a list of DNs of NRCellCU and ExternalNRCellCU. If the target node DN is a member of the source node’s NRCellCU.xnWhiteList, the source node:  - is allowed to request the establishment of Xn connection with the target node;  - is not allowed to initiate the tear down of established Xn connection to target node  The same DN may appear here and in NRCellCU.xnBlackList. In such case, the DN here shall be treated as if it is absent. | type: String  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False | |
| x2XnHOBlackList | This is a list of DNs of any number and combination of cells represented by the following IoCs:  NRCellCU  ExternalNRCellCU.  ExternalEUtranCellTDD  ExternalEUtranCellFDD  EUtranCellTDD  EUtranCellFDD  For all the entries in NRCellCU.x2XnHOBlackList, the subject NRCellCU is prohibited to use the X2 or Xn interface for HOs even if an X2 or Xn interface exists to the target cell. | type: DN  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False | |
| groupId | This parameter identiies a list of target NF services on which the same communication model is applied to.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False | |
| commModelType | This parameter defines communication model used by a NF to interact with NF service(s) (See TS 23.501 [2]).  allowedValues:”DIRECT\_COMMUNICATION\_WO\_NRF”, “DIRECT\_COMMUNICATION\_WITH\_NRF”, “INDIRECT\_COMMUNICATION\_WO\_DEDICATED\_DISCOVERY”, “INDIRECT\_COMMUNICATION\_WITH\_DEDICATED\_DISCOVERY” | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| targetNFServiceList | This parameter lists target NF services sharing same communication model and configuration.  allowedValues: N/A | type: DN  multiplicity: 1..\*  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False | |
| commModelConfiguration | This parameter defines configuration parameters for specific communication model for a group of NF Services.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| supportedFuncList | This parameter lists functionalities supported by a SCP. Refer to TS 23.501 [2]. | type: SupportedFunction  multiplicity: 1..\*  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False | |
| address | This parameter defines address of a SCP instance, it can be IP address (either IPv4 address (See RFC 791 [37]) or IPv6 address (See RFC 2373 [38])) or FQDN (See TS 23.003 [5]). | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| function | This parameter defines name of a functionality supported by a SCP. | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False | |
| policy | This parameter defines configuration policies of a functionality supported by a SCP. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| capabilityList | This parameter lists capabilities supported by a NEF. Refer to TS 23.501 [2].  allowedValues: N/A | type: String  multiplicity: 1..\*  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False | |
| isINEF | This parameter defines if the NEF is an Intermediate NEF.  allowedValues: TRUE, FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| isCAPIFSup | This parameter defines if the NEF support Common API Framework.  allowedValues: TRUE, FALSE | type: Boolean  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False | |
| sEPPType | This parameter defines the type of a SEPP entity. Refer to TS 33.501 [52].  allowedValues: “CSEPP”, “PSEPP” | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: False  defaultValue: None  isNullable: False | |
| sEPPId | This parameter is identifier of a SEPP, it is unique inside a PLMN.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| remotePlmnId | This parameter defines PLMNId of the remote SEPP.  allowedValues: N/A | Type: PLMNId  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | |
| remoteSeppAddress | This parameter defines address of the remote SEPP. It can be IP address (either IPv4 address (See RFC 791 [37]) or IPv6 address (See RFC 2373 [38])) or FQDN(See TS 23.003 [5]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False | |
| remoteSeppId | This parameter defines identifier of the remote SEPP. it is unique inside a PLMN.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |
| n32cParas | This attribute is used to configure parameters to establish security link between two SEPPs.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False | |
| n32fPolicy | This attribute is used to configure policies to protect the messages exchanged between SEPPs.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: F  isUnique: N/A  defaultValue: None  isNullable: False | |
| withIPX | This attribute defines if there’s an IPX interconnected between two SEPPs.  allowedValues: TRUE, FALSE | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | |

***Next change***

## 5.5 Common notifications

This subclause presents a list of notifications, defined in TS 28.532 [35], that provisioning management service consumer can receive. The notification parameter objectClass/objectInstance, defined in TS 28.531 [26], would capture the DN of an instance of an IOC defined in the present document.

| Name | Qualifier | Notes |
| --- | --- | --- |
| notifyMOIAttributeValueChanges | O |  |
| notifyMOICreation | O |  |
| notifyMOIDeletion | O |  |

***Next change***

## E.5.5 module \_3gpp-nr-nrm-eutranfreqrelation@2019-10-28.yang

module \_3gpp-nr-nrm-eutranfreqrelation {

yang-version 1.1;

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

prefix "eutranfreqrel3gpp";

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

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

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

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

import \_3gpp-nr-nrm-gnbcucpfunction { prefix gnbcucp3gpp; }

import \_3gpp-nr-nrm-nrcellcu { prefix nrcellcu3gpp; }

organization "3GPP SA5";

description "Defines the YANG mapping of the EUtranFreqRelation Information

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

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

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

revision 2019-06-17 {

description "Initial revision";

}

grouping EUtranFreqRelationGrp {

description "Represents the EUtranFreqRelation IOC.";

reference "3GPP TS 28.541";

uses mf3gpp:ManagedFunctionGrp;

leaf cellIndividualOffset {

description "Offset applicable to a neighbouring cell. Used for

evaluating the neighbouring cell for handover in connected mode.

Used by the HandOver parameter Optimization (HOO) function or

Load Balancing Optimization (LBO) function.";

reference "cellIndividualOffset in MeasObjectEUTRA in 3GPP TS 38.331";

default 0;

type types3gpp:QOffsetRange;

}

leaf-list blackListEntry {

description "A list of Physical Cell Identities (PCIs) that are

blacklisted in E-UTRAN measurements.";

reference "3GPP TS 38.331";

min-elements 0;

type uint16 { range "0..1007"; }

}

leaf-list blackListEntryIdleMode {

description "A list of Physical Cell Identities (PCIs) that are

blacklisted in SIB4 and SIB5.";

min-elements 0;

type uint16 { range "0..1007"; }

}

leaf cellReselectionPriority {

description "The absolute priority of the carrier frequency used by the

cell reselection procedure. Value 0 means lowest priority. The value

must not already used by other RAT, i.e. equal priorities between RATs

are not supported. The UE behaviour when no value is entered is

specified in subclause 5.2.4.1 of 3GPP TS 38.304.";

reference "CellReselectionPriority in 3GPP TS 38.331, priority in

3GPP TS 38.304";

mandatory true;

type int32 { range "0..7"; }

}

leaf cellReselectionSubPriority {

description "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.";

reference "3GPP TS 38.331";

type uint8 { range "2 | 4 | 6 | 8"; }

units "0.1";

}

leaf pMax {

description "Used for calculation of the parameter Pcompensation

(defined in 3GPP TS 38.304), at cell reselection to a cell.";

reference "PEMAX in 3GPP TS 38.101-1";

mandatory true;

type int32 { range "-30..33"; }

units dBm;

}

leaf qOffsetFreq {

description "The frequency specific offset applied when evaluating

candidates for cell reselection.";

type int32;

default 0;

}

leaf qQualMin {

description "Indicates the minimum required quality level in the cell.

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.";

reference "qQualMin in TS 38.304";

mandatory true;

type int32 { range "-34..-3 | 0"; }

units dB;

}

leaf qRxLevMin {

description "Indicates the required minimum received Reference Symbol

Received Power (RSRP) level in the (E-UTRA) frequency for cell

reselection. Broadcast in SIB3 or SIB5, depending on whether the

related frequency is intra- or inter-frequency. Resolution is 2.";

reference "Qrxlevmin in 3GPP TS 38.304";

mandatory true;

type int32 { range "-140..-44"; }

units dBm;

}

leaf threshXHighP {

description "Specifies the Srxlev threshold 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. Resolution is 2.";

reference "ThreshX, HighP in 3GPP TS 38.304";

mandatory true;

type int32 { range "0..62"; }

units dB;

}

leaf threshXHighQ {

description "Specifies the Squal threshold 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.";

reference "ThreshX, HighQ in 3GPP TS 38.304";

mandatory true;

type int32 { range 0..31; }

units dB;

}

leaf threshXLowP {

description "Specifies the Srxlev threshold used by the UE when

reselecting towards a lower priority RAT/frequency than the current

serving frequency. Each frequency of NR and E-UTRAN might have a

specific threshold. Resolution is 2.";

reference "ThreshX, LowP in 3GPP TS 38.304";

mandatory true;

type int32 { range "0..62"; }

units dB;

}

leaf threshXLowQ {

description "Specifies the Squal threshold used by the UE when

reselecting towards a lower priority RAT/frequency than the current

serving frequency. Each frequency of NR and E-UTRAN might have a

specific threshold.";

reference "ThreshX, LowQ in 3GPP TS 38.304";

mandatory false;

type int32 { range "0..31"; }

units dB;

}

leaf tReselectionEutra {

description "Cell reselection timer for intra frequency E-UTRA cell

reselection. May be used for Mobility Robustness Optimization.";

reference "t-ReselectionEUTRA in 3GPP TS 36.331 and in 3GPP TS 23.207";

mandatory true;

type uint8 { range "0..7"; }

units s;

}

leaf tReselectionEutraSfHigh {

description "The attribute tReselectionEutra (parameter TreselectionEUTRA

in 3GPP TS 38.304) multiplied with this scaling factor if the UE is in

high mobility state.";

reference "Speed dependent ScalingFactor for TreselectionEUTRA for high

mobility state in 3GPP TS 38.304";

mandatory true;

type uint8 { range "25 | 50 | 75 | 100"; }

units %;

}

leaf tReselectionEutraSfMedium {

description "The attribute tReselectionEutra (parameter TreselectionEUTRA

in 3GPP TS 38.304) multiplied with this scaling factor if the UE is in

medium mobility state.";

reference "Speed dependent ScalingFactor for TreselectionEUTRA for medium

mobility state in 3GPP TS 38.304";

mandatory true;

type uint8 { range "25 | 50 | 75 | 100"; }

units %;

}

leaf eUtranFrequencyRef {

description "Reference to a corresponding EUtranFrequency instance.";

mandatory true;

type types3gpp:DistinguishedName;

}

}

augment /me3gpp:ManagedElement/gnbcucp3gpp:GNBCUCPFunction/nrcellcu3gpp:NRCellCU {

list EUtranFreqRelation {

description "Represents a frequency relation between an NR cell and an

E-UTRAN cell.";

reference "3GPP TS 28.541";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses EUtranFreqRelationGrp;

}

uses mf3gpp:ManagedFunctionContainedClasses;

}

}

}

***Next change***

## E.5.20 module \_3gpp-nr-nrm-nrcelldu@2020-02-14.yang

module \_3gpp-nr-nrm-nrcelldu {

yang-version 1.1;

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

prefix "nrcelldu3gpp";

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

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

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

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

import \_3gpp-nr-nrm-gnbdufunction { prefix gnbdu3gpp; }

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

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

organization "3GPP SA5";

description "Defines the YANG mapping of the NRCellDU Information Object

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

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

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

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

revision 2019-09-03 {

description "Initial revision";

}

grouping NRCellDUGrp {

description "Represents the NRCellDU IOC.";

reference "3GPP TS 28.541";

uses mf3gpp:ManagedFunctionGrp;

uses nrrrmpolicy3gpp:RRMPolicy\_Grp;

leaf cellLocalId {

description "Identifies an NR cell of a gNB. Together with the

corresponding gNB identifier in forms the NR Cell Identity (NCI).";

reference "NCI in 3GPP TS 38.300";

mandatory true;

type int32 { range "0..16383"; }

}

leaf operationalState {

description "Operational state of the NRCellDU instance. Indicates

whether the resource is installed and partially or fully operable

(ENABLED) or the resource is not installed or not operable

(DISABLED).";

config false;

type types3gpp:OperationalState;

}

leaf administrativeState {

description "Administrative state of the NRCellDU. Indicates the

permission to use or prohibition against using the cell, imposed

through the OAM services.";

type types3gpp:AdministrativeState;

default LOCKED;

}

leaf cellState {

description "Cell state of the NRCellDU instance. Indicates whether the

cell is not currently in use (IDLE), or currently in use but not

configured to carry traffic (INACTIVE), or currently in use and is

configured to carry traffic (ACTIVE).";

config false;

type types3gpp:CellState;

}

list pLMNInfoList {

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

can be served by the NR cell, and which S-NSSAIs that 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.";

key "mcc mnc";

min-elements 1;

uses nrcommon3gpp:PLMNInfo;

}

leaf nRPCI {

description "The Physical Cell Identity (PCI) of the NR cell.";

reference "3GPP TS 36.211";

mandatory true;

type int32 { range "0..1007"; }

}

leaf nRTAC {

description "The common 5GS Tracking Area Code for the PLMNs.";

reference "3GPP TS 23.003, 3GPP TS 38.473";

type types3gpp:Tac;

}

leaf arfcnDL {

description "NR Absolute Radio Frequency Channel Number (NR-ARFCN) for

downlink.";

reference "3GPP TS 38.104";

mandatory true;

type int32;

}

leaf arfcnUL {

description "NR Absolute Radio Frequency Channel Number (NR-ARFCN) for

uplink.";

reference "3GPP TS 38.104";

type int32;

}

leaf arfcnSUL {

description "NR Absolute Radio Frequency Channel Number (NR-ARFCN) for

supplementary uplink.";

reference "3GPP TS 38.104";

type int32;

}

leaf bSChannelBwDL {

description "Base station channel bandwidth for downlink.";

reference "3GPP TS 38.104";

type int32;

units MHz;

}

leaf bSChannelBwUL {

description "Base station channel bandwidth for uplink.";

reference "3GPP TS 38.104";

type int32;

units MHz;

}

leaf bSChannelBwSUL {

description "Base station channel bandwidth for supplementary uplink.";

reference "3GPP TS 38.104";

mandatory false;

type int32;

units MHz;

}

leaf ssbFrequency {

description "Indicates cell defining SSB frequency domain position.

Frequency (in terms of NR-ARFCN) of the cell defining SSB transmission.

The frequency 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

3GPP TS 38.101-1, and within bSChannelBwDL.";

mandatory true;

type int32 { range "0..3279165"; }

}

leaf ssbPeriodicity {

description "Indicates cell defined SSB periodicity. The SSB periodicity

is used for the rate matching purpose.";

mandatory true;

type int32 { range "5 | 10 | 20 | 40 | 80 | 160"; }

units "subframes (ms)";

}

leaf ssbSubCarrierSpacing {

description "Subcarrier spacing of SSB. Only the values 15 kHz or 30 kHz

(< 6 GHz), 120 kHz or 240 kHz (> 6 GHz) are applicable.";

reference "3GPP TS 38.211";

mandatory true;

type int32 { range "15 | 30 | 120 | 240"; }

units kHz;

}

leaf ssbOffset {

description "Indicates cell defining SSB time domain position. Defined

as the offset of the measurement window, in which to receive SS/PBCH

blocks, where allowed values depend on the ssbPeriodicity

(ssbOffset < ssbPeriodicity).";

mandatory true;

type int32 { range "0..159"; }

units "subframes (ms)";

}

leaf ssbDuration {

description "Duration of the measurement window in which to receive

SS/PBCH blocks.";

reference "3GPP TS 38.213";

mandatory true;

type int32 { range "1..5"; }

units "subframes (ms)";

}

leaf-list nRSectorCarrierRef {

description "Reference to corresponding NRSectorCarrier instance.";

min-elements 1;

type types3gpp:DistinguishedName;

}

leaf-list bWPRef {

description "Reference to corresponding BWP instance.";

min-elements 0;

type types3gpp:DistinguishedName;

}

leaf-list nRFrequencyRef {

description "Reference to corresponding NRFrequency instance.";

min-elements 0;

type types3gpp:DistinguishedName;

}

}

augment "/me3gpp:ManagedElement/gnbdu3gpp:GNBDUFunction" {

list NRCellDU {

description "Represents the information of a cell known by DU.";

reference "3GPP TS 28.541";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses NRCellDUGrp;

}

uses mf3gpp:ManagedFunctionContainedClasses;

}

}

}

***Next change***

## E.5.22 module \_3gpp-nr-nrm-nrfreqrelation@2019-10-28.yang

module \_3gpp-nr-nrm-nrfreqrelation {

yang-version 1.1;

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

prefix "nrfreqrel3gpp";

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

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

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

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

import \_3gpp-nr-nrm-gnbcucpfunction { prefix gnbcucp3gpp; }

import \_3gpp-nr-nrm-nrcellcu { prefix nrcellcu3gpp; }

organization "3GPP SA5";

description "Defines the YANG mapping of the NRFreqRelation Information

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

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

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

revision 2019-06-17 {

description "Initial revision";

}

grouping NRFreqRelationGrp {

description "Represents the NRFreqRelation IOC.";

reference "3GPP TS 28.541";

uses mf3gpp:ManagedFunctionGrp;

container offsetMO {

description "A set of offset values applicable to all measured cells

with reference signal(s) indicated in corresponding MeasObjectNR. It

is used to indicate a cell, beam or measurement object specific offset

to be applied when evaluating candidates for cell re-selection or when

evaluating triggering conditions for measurement reporting. It is

defined for rsrpOffsetSSB, rsrqOffsetSSB, sinrOffsetSSB,

rsrpOffsetCSI-RS, rsrqOffsetCSI-RS and sinrOffsetCSI-RS.";

reference "offsetMO in MeasObjectNR in 3GPP TS 38.331";

leaf rsrpOffsetSsb {

description "Offset value of rsrpOffsetSSB.";

default 0;

type types3gpp:QOffsetRange;

}

leaf rsrqOffsetSsb {

description "Offset value of rsrqOffsetSSB.";

default 0;

type types3gpp:QOffsetRange;

}

leaf sinrOffsetSsb {

description "Offset value of sinrOffsetSSB.";

default 0;

type types3gpp:QOffsetRange;

}

leaf rsrpOffsetCsiRs {

description "Offset value of rsrpOffsetCSI-RS.";

default 0;

type types3gpp:QOffsetRange;

}

leaf rsrqOffsetCsiRs {

description "Offset value of rsrqOffsetCSI-RS.";

default 0;

type types3gpp:QOffsetRange;

}

leaf sinrOffsetCsiRs {

description "Offset value of sinrOffsetCSI-RS.";

default 0;

type types3gpp:QOffsetRange;

}

}

leaf-list blackListEntry {

description "A list of Physical Cell Identities (PCIs) that are

blacklisted in NR measurements.";

reference "3GPP TS 38.331";

min-elements 0;

type uint16 { range "0..1007"; }

}

leaf-list blackListEntryIdleMode {

description "A list of Physical Cell Identities (PCIs) that are

blacklisted in SIB4 and SIB5.";

min-elements 0;

type uint16 { range "0..1007"; }

}

leaf cellReselectionPriority {

description "The absolute priority of the carrier frequency used by the

cell reselection procedure. Value 0 means lowest priority. The value

must not already used by other RAT, i.e. equal priorities between RATs

are not supported. The UE behaviour when no value is entered is

specified in subclause 5.2.4.1 of 3GPP TS 38.304.";

reference "CellReselectionPriority in 3GPP TS 38.331, priority in

3GPP TS 38.304";

type uint32;

default 0;

}

leaf cellReselectionSubPriority {

description "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.";

reference "3GPP TS 38.331";

type uint8 { range "2 | 4 | 6 | 8"; }

units "0.1";

}

leaf pMax {

description "Used for calculation of the parameter Pcompensation

(defined in 3GPP TS 38.304), at cell reselection to a cell.";

reference "PEMAX in 3GPP TS 38.101-1";

mandatory false;

type int32 { range "-30..33"; }

units dBm;

}

leaf qOffsetFreq {

description "The frequency specific offset applied when evaluating

candidates for cell reselection.";

mandatory false;

type types3gpp:QOffsetRange;

default 0;

}

leaf qQualMin {

description "Indicates the minimum required quality level in the cell.

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.";

reference "3GPP TS 38.304";

type int32 { range "-34..-3 | 0"; }

units dB;

default 0;

}

leaf qRxLevMin {

description "Indicates the required minimum received Reference Symbol

Received Power (RSRP) level in the NR frequency for cell reselection.

Broadcast in SIB3 or SIB5, depending on whether the related frequency

is intra- or inter-frequency. Resolution is 2.";

reference "3GPP TS 38.304";

mandatory true;

type int32 { range "-140..-44"; }

units dBm;

}

leaf threshXHighP {

description "Specifies the Srxlev threshold 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. Resolution is 2.";

reference "ThreshX, HighP in 3GPP TS 38.304";

mandatory true;

type int32 { range "0..62"; }

units dB;

}

leaf threshXHighQ {

description "Specifies the Squal threshold 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.";

reference "ThreshX, HighQ in 3GPP TS 38.304";

mandatory true;

type int32 { range "0..31"; }

units dB;

}

leaf threshXLowP {

description "Specifies the Srxlev threshold used by the UE when

reselecting towards a lower priority RAT/frequency than the current

serving frequency. Each frequency of NR and E-UTRAN might have a

specific threshold. Resolution is 2.";

reference "ThreshX, LowP in 3GPP TS 38.304";

mandatory true;

type int32 { range "0..62"; }

units dB;

}

leaf threshXLowQ {

description "Specifies the Squal threshold used by the UE when

reselecting towards a lower priority RAT/frequency than the current

serving frequency. Each frequency of NR and E-UTRAN might have a

specific threshold.";

reference "ThreshX, LowQ in 3GPP TS 38.304";

mandatory true;

type int32 { range "0..31"; }

units dB;

}

leaf tReselectionNR {

description "Cell reselection timer for NR.";

reference "TreselectionRAT for NR in 3GPP TS 38.331";

mandatory true;

type int32 { range "0..7"; }

units s;

}

leaf tReselectionNRSfHigh {

description "The attribute tReselectionNr (parameter TreselectionNR in

3GPP TS 38.304) is multiplied with this scaling factor if the UE is

in high mobility state.";

reference "Speed dependent ScalingFactor for TreselectionNR for high

mobility state in 3GPP TS 38.304";

mandatory true;

type uint8 { range "25 | 50 | 75 | 100"; }

units %;

}

leaf tReselectionNRSfMedium {

description "The attribute tReselectionNr (parameter TreselectionNR in

3GPP TS 38.304) multiplied with this scaling factor if the UE is in

medium mobility state.";

reference "Speed dependent ScalingFactor for TreselectionNR for medium

mobility state in 3GPP TS 38.304";

mandatory true;

type uint8 { range "25 | 50 | 75 | 100"; }

units %;

}

leaf nRFrequencyRef {

description "Reference to a corresponding NRFrequency instance.";

mandatory true;

type types3gpp:DistinguishedName;

}

}

augment /me3gpp:ManagedElement/gnbcucp3gpp:GNBCUCPFunction/nrcellcu3gpp:NRCellCU {

list NRFreqRelation {

description "Together with the target NRFrequency, it represents the

frequency properties applicable to the referencing NRFreqRelation.";

reference "3GPP TS 28.541";

key id;

uses top3gpp:Top\_Grp;

container attributes {

uses NRFreqRelationGrp;

}

uses mf3gpp:ManagedFunctionContainedClasses;

}

}

}

***End of changes***