**3GPP TSG-SA5 Meeting #133e *S5-206311***

**e-meeting 12th – 21st October 2020**

|  |
| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **28.541** | **CR** | **0386** | **rev** | **2** | **Current version:** |  |  |
|  |
| *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 |  |

|  |
| --- |
|  |
| ***Title:***  | Move Distributed PCI control IOC from DU to CU |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | SON\_5G |  | ***Date:*** | 2020-11-13 |
|  |  |  |  |  |
| ***Category:*** | **A** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | The IOC for control attributes for PCI optimization is incorrectly placed on a DU instead of a CU IOC. The PCI reconfiguration is controlled by the CU, as evident from TS 38.473 clause 9.2.1.10, Information Element *NR PCI* |
|  |  |
| ***Summary of change:*** | Move IOC with control attributes for PCI optimization from DU to CU. |
|  |  |
| ***Consequences if not approved:*** | TS 28.541 will not be aligned with RAN3 specification 38.473. Interoperability of configuration of PCI optimization in the CU-DU split scenario will not be possible.  |
|  |  |
| ***Clauses affected:*** | 4.2.1.1, C.4.3, D.4.3, E.5.19, E.5.20, E.5.32 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***affected:*** |  | **X** |  Test specifications |  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | CR 0385 |
|  |  |
| ***Other comments:*** | *https://forge.3gpp.org/rep/sa5/MnS/tree/S5-206068\_Rel-17\_CR\_28.541\_Move\_Distributed\_PCI\_control\_IOC\_from\_DU\_to\_CU* |
|  |  |
| ***This CR's revision history:*** | S5-205143 |

**First change**

### 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 and <<IOC>>BWP for all deployment scenarios



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

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



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

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



Figure 4.2.1.1-6: NRM fragment for RRM Policies



Figure 4.2.1.1-7: NRM fragment to support RIM

The Figure 4.2.1.1-8 shows the NRM fragment for configurable 5QIs in NG-RAN.



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



Figure 4.2.1.1-9: NRM fragment for DANR Management

 

**Figure 4.2.1.1-10: NRM fragment for DES Management**



**Figure 4.2.1.1-11: NRM fragment for DRACH Management**



Figure 4.2.1.1-12: NRM fragment for DMRO Management



Figure 4.2.1.1-13: NRM fragment for DPCI Management



Figure 4.2.1.1-14: NRM fragment for CES Management



Figure 4.2.1.1-15: NRM fragment for CPCI Management

The Figure 4.2.1.1-16 shows the NRM fragment for dynamic 5QIs in NG-RAN.



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

**Next change**

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

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

<!--

 3GPP TS 28.541 NR Network Resource Model

 XML schema definition

 nrNrm.xsd

-->

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

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

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

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

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

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

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

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

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

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

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

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

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

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

<simpleType name="GnbId">

 <restriction base="unsignedLong">

 <maxInclusive value="4294967295"/>

 </restriction>

</simpleType>

<simpleType name="GnbIdLength">

 <restriction base="integer">

 <minLength value="22"/>

 <maxLength value="32"/>

 </restriction>

</simpleType>

<simpleType name="Nci">

 <restriction base="unsignedLong">

 <maxInclusive value="68719476735"/>

 </restriction>

</simpleType>

<simpleType name="Pci">

 <restriction base="unsignedShort">

 <maxInclusive value="503"/>

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

 </restriction>

</simpleType>

<simpleType name="NrTac">

 <restriction base="unsignedLong">

 <maxInclusive value="16777215"/>

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

 </restriction>

</simpleType>

<simpleType name="GnbDuId">

 <restriction base="unsignedLong">

 <maxInclusive value="68719476735"/>

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

 </restriction>

</simpleType>

<simpleType name="GnbCuupId">

 <restriction base="unsignedLong">

 <maxInclusive value="68719476735"/>

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

 </restriction>

</simpleType>

<simpleType name="GnbName">

 <restriction base="string">

 <minLength value="1"/>

 <maxLength value="150"/>

 </restriction>

</simpleType>

<simpleType name="CyclicPrefix">

 <restriction base="integer">

 <enumeration value="15"/>

 <enumeration value="30"/>

 <enumeration value="60"/>

 <enumeration value="120"/>

 </restriction>

</simpleType>

<simpleType name="QuotaType">

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 <enumeration value="STRICT"/>

 <enumeration value="FLOAT"/>

 </restriction>

</simpleType>

<simpleType name="CellState">

 <restriction base="string">

 <enumeration value="IDLE"/>

 <enumeration value="INACTIVE"/>

 <enumeration value="ACTIVE"/>

 </restriction>

</simpleType>

<simpleType name="BwpContext">

 <restriction base="string">

 <enumeration value="DL"/>

 <enumeration value="UL"/>

 <enumeration value="SUL"/>

 </restriction>

</simpleType>

<simpleType name="IsInitialBwp">

 <restriction base="string">

 <enumeration value="INITIAL"/>

 <enumeration value="OTHER"/>

 </restriction>

</simpleType>

<simpleType name="qOffsetRangeList">

 <restriction base="string">

 <enumeration value="dB-24"/>

 <enumeration value="dB-22"/>

 <enumeration value="dB-20"/>

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 <enumeration value="dB-16"/>

 <enumeration value="dB-14"/>

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 <enumeration value="dB20"/>

 <enumeration value="dB22"/>

 <enumeration value="dB24"/>

 </restriction>

</simpleType>

<simpleType name="isESCoveredBy">

 <restriction base="string">

 <enumeration value="NO"/>

 <enumeration value="PARTIAL"/>

 <enumeration value="FULL"/>

 </restriction>

</simpleType>

<simpleType name="cellReselectionPriority">

 <restriction base="unsignedLong">

 <minInclusive value="0"/>

 <maxInclusive value="16"/>

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

 </restriction>

</simpleType>

<simpleType name="cellReselectionSubPriority">

 <restriction base="unsignedLong">

 <minInclusive value="0"/>

 <maxInclusive value="16"/>

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

 </restriction>

</simpleType>

<simpleType name="PMaxRangeType">

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 <maxInclusive value="33"/>

 </restriction>

</simpleType>

<simpleType name="qOffsetFreq">

 <restriction base="short">

 <minInclusive value="-24"/>

 <maxInclusive value="24"/>

 </restriction>

</simpleType>

<simpleType name="qQualMin">

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</simpleType>

<simpleType name="qRxLevMin">

 <restriction base="integer">

 <minInclusive value="-140"/>

 <maxInclusive value="-44"/>

 </restriction>

</simpleType>

<simpleType name="Thresxhighp">

 <restriction base="integer">

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 </restriction>

</simpleType>

<simpleType name="Threshxhighq">

 <restriction base="integer">

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 </restriction>

</simpleType>

<simpleType name="Threshxlowp">

 <restriction base="integer">

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 </restriction>

</simpleType>

<simpleType name="Threshxlowq">

 <restriction base="integer">

 <minInclusive value="0"/>

 <maxInclusive value="62"/>

 </restriction>

</simpleType>

<simpleType name="Treselectionnr">

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 <minInclusive value="0"/>

 <maxInclusive value="7"/>

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</simpleType>

<simpleType name="Treselectionnrsfhigh">

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 <enumeration value="25"/>

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 <enumeration value="75"/>

 <enumeration value="100"/>

 </restriction>

</simpleType>

<simpleType name="Treselectionnrsfmedium">

 <restriction base="string">

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 <enumeration value="75"/>

 <enumeration value="100"/>

 </restriction>

</simpleType>

<simpleType name="Absolutefrequencyssb">

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 <maxInclusive value="3279165"/>

 </restriction>

</simpleType>

<simpleType name="Ssbsubcarrierspacing">

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 <enumeration value="15"/>

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 <enumeration value="120"/>

 <enumeration value="240"/>

 </restriction>

</simpleType>

<simpleType name="Multifrequencybandlistnr">

 <restriction base="integer">

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 <maxInclusive value="256"/>

 </restriction>

</simpleType>

<simpleType name="beamType">

 <restriction base="string">

 <enumeration value="SSB-BEAM"/>

 </restriction>

</simpleType>

<simpleType name="beamAzimuth">

 <restriction base="integer">

 <minInclusive value="-1800"/>

 <maxInclusive value="1800"/>

 </restriction>

</simpleType>

<simpleType name="beamTilt">

 <restriction base="integer">

 <minInclusive value="-900"/>

 <maxInclusive value="900"/>

 </restriction>

</simpleType>

<simpleType name="beamHorizWidth">

 <restriction base="integer">

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<simpleType name="beamVertWidth">

 <restriction base="integer">

 <minInclusive value="0"/>

 <maxInclusive value="1800"/>

 </restriction>

</simpleType>

<simpleType name="coverageShapeType">

 <restriction base="integer">

 <minInclusive value="0"/>

 <maxInclusive value="65535"/>

 </restriction>

</simpleType>

<simpleType name="resourceType">

 <restriction base="string">

 <enumeration value="PRB"/>

 <enumeration value="RRC"/>

 <enumeration value="DRB"/>

 </restriction>

</simpleType>

<complexType name="LocalEndPoint">

 <sequence>

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

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

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

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

 </sequence>

</complexType>

<complexType name="RemoteEndPoint">

 <sequence>

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

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

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

 </sequence>

</complexType>

<complexType name="blackListEntry">

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

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

 </sequence>

</complexType>

<complexType name="blackListEntryIdleMode">

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

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

 </sequence>

</complexType>

<complexType name="PLMNIdList">

 <sequence>

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

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

 </sequence>

</complexType>

<complexType name="cellIndividualOffset">

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

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

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

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

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

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

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 </complexType>

 <complexType name="PLMNInfoType">

 <sequence>

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

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

 </sequence>

</complexType>

 <complexType name="PLMNInfoListType">

 <sequence>

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

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</complexType>

<simpleType name="maximumDeviationHoTrigger">

 <restriction base="integer">

 <minInclusive value="-20"/>

 <maxInclusive value="20"/>

 </restriction>

</simpleType>

<simpleType name="minimumTimeBetweenHoTriggerChange">

 <restriction base="integer">

 <minInclusive value="0"/>

 <maxInclusive value="604800"/>

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</simpleType>

<simpleType name="tstoreUEcntxt">

 <restriction base="integer">

 <minInclusive value="0"/>

 <maxInclusive value="1023"/>

 </restriction>

</simpleType>

<simpleType name="loadThreshold">

 <restriction base="integer">

 <minInclusive value="0"/>

 <maxInclusive value="100"/>

 </restriction>

</simpleType>

<simpleType name="timeDuration">

 <restriction base="integer">

 <minInclusive value="0"/>

 <maxInclusive value="900"/>

 </restriction>

</simpleType>

<simpleType name="energySavingControl">

 <restriction base="string">

 <enumeration value="toBeEnergySaving"/>

 <enumeration value="toBeNotEnergySaving"/>

 </restriction>

</simpleType>

<simpleType name="energySavingState">

 <restriction base="string">

 <enumeration value="isNotEnergySaving"/>

 <enumeration value="isEnergySaving"/>

 </restriction>

</simpleType>

<simpleType name="isProbingCapable">

 <restriction base="string">

 <enumeration value="yes"/>

 <enumeration value="no"/>

 </restriction>

</simpleType>

<simpleType name="AccessDelayRange">

 <restriction base="unsignedShort">

 <minInclusive value="10"/>

 <maxInclusive value="560"/>

 </restriction>

</simpleType>

<simpleType name="NumberOfPreambleRange">

 <restriction base="unsignedShort">

 <minInclusive value="1"/>

 <maxInclusive value="200"/>

 </restriction>

</simpleType>

<simpleType name="RachProbability">

 <restriction base="unsignedShort">

 <enumeration value="25"/>

 <enumeration value="50"/>

 <enumeration value="75"/>

 <enumeration value="90"/>

 </restriction>

</simpleType>

<complexType name="UeAccDelayProbilityDistPerSSB">

 <sequence>

 <element name="Probability" type="sp:RachProbability"/>

 <element name="AccessDelay" type="sp:AccessDelayRange"/>

 </sequence>

</complexType>

<complexType name="UeAccDelayProbilityDistPerSSBlist">

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 <element name="NumberOfPreamble" type="sp:NumberOfPreambleRange"/>

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</complexType>

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 <maxInclusive value="1007"/>

 </restriction>

</simpleType>

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 <element name="nRPci" type="en:NRPci" maxOccurs="1008"/>

 </sequence>

</complexType>

<simpleType name="NRPci">

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 <maxInclusive value="1007"/>

 </restriction>

</simpleType>

<complexType name="CSonPciList">

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 <element name="nRPci" type="en:NRPci" maxOccurs="1008"/>

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</complexType>

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

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 <complexContent>

 <extension base="xn:NrmClass">

 <sequence>

 <element name="attributes">

 <complexType>

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 <!-- Inherited attributes from ManagedFunction -->

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

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

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

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

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

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

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

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

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

 <element name="x2Blacklist" type="string" minOccurs="0"/>

 <element name="x2Whitelist" type="string" minOccurs="0"/>

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

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

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

 <element name="x2HOBlackList" type="string" minOccurs="0"/>

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

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

 </all>

 </complexType>

 </element>

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

 <element ref="nn:NRCellDU"/>

 <element ref="nn:BWP"/>

 <element ref="nn:NRSectorCarrier"/>

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

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

 </choice>

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

 <element ref="xn:MeasurementControl"/>

 </choice>

 </sequence>

 </extension>

 </complexContent>

 </complexType>

</element>

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

 <complexType>

 <complexContent>

 <extension base="xn:NrmClass">

 <sequence>

 <element name="attributes">

 <complexType>

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

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

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

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

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

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

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

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

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

 <element name="x2Blacklist" type="string" minOccurs="0"/>

 <element name="x2Whitelist" type="string" minOccurs="0"/>

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

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

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

 <element name="x2HOBlackList" type="string" minOccurs="0"/>

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

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

 <element name="dynamic5QISetRef" type="xn:dn" minOccurs="0"/>

 </all>

 </complexType>

 </element>

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

 <element ref="nn:NRCellCU"/>

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

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

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

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

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

 <element ref="xn:VsDataContainer"/>

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 <element ref="DESManagementFunction"/>

 <element ref="DRACHOptimizationFunction"/>

 <element ref="DMROFunction"/>

 <element ref="DANRManagementFunction"/>

 </choice>

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

 <element ref="xn:MeasurementControl"/>

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 <extension base="xn:NrmClass">

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 <extension base="RRMPolicy\_">

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 <element name="rRMPolicyMaxRatio" type="integer" minOccurs="1"/>

 <element name="rRMPolicyMinRatio" type="integer" minOccurs="1"/>

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

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 </element>

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

 <element ref="xn:VsDataContainer"/>

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

 <element ref="sp:EnergySavingProperties"/>

 <element ref="sp:ESPolicies"/>

 </choice>

 </sequence>

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<element name="NRFrequency" substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass">

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 <extension base="xn:NrmClass">

 <sequence>

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 <complexType>

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 <!-- Inherited attributes from ManagedFunction -->

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

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

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

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

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

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

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

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

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

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 <element ref="sp:ESPolicies"/>

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 <extension base="xn:NrmClass">

 <sequence>

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 <complexType>

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 <element name="setID" type="nn:SetId" />

 <element name="backhaulAdress" type="BackhaulAddress" minOccurs="0"/>

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

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

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 <element name="intraRatEsActivationOriginalCellLoadParameters" type="IntraRatEsActivationOriginalCellLoadParameters " minOccurs="0"/>

 <element name="intraRatEsActivationCandidateCellsLoadParameters" type="IntraRatEsActivationCandidateCellsLoadParameters" minOccurs="0"/>

 <element name="intraRatEsDeactivationCandidateCellsLoadParameters" type="IntraRatEsDeactivationCandidateCellsLoadParameters" minOccurs="0"/>

 <element name="esNotAllowedTimePeriod" type="EsNotAllowedTimePeriod" minOccurs="0"/>

 <element name="interRatEsActivationOriginalCellParameters" type="InterRatEsActivationOriginalCellParameters" minOccurs="0"/>

 <element name="interRatEsActivationCandidateCellParameters" type="InterRatEsActivationCandidateCellParameters" minOccurs="0"/>

 <element name="interRatEsDeactivationCandidateCellParameters" type="InterRatEsDeactivationCandidateCellParameters" minOccurs="0"/>

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

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

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 <sequence>

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 </sequence>

 </extension>

 </complexContent>

 </complexType>

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<element name="EsNotAllowedTimePeriod">

 <complexType>

 <complexContent>

 <extension base="xn:NrmClass">

 <sequence>

 <element name="attributes">

 <complexType>

 <all>

 <element name="startTimeandendTime" type="nn:startTimeandendTime" />

 <element name="periodOfDay" type="nn:startTimeandendTime" />

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

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

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 <extension base="xn:NrmClass">

 <sequence>

 <element name="attributes">

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 <element name="attributes">

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 <extension base="xn:NrmClass">

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 <element name="ueAccProbilityDistPerSSBlist" type="UeAccProbilityDistPerSSBlist" minOccurs="0"/>

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 <element name="drachOptimizationControl" type="boolean" minOccurs="0"/>

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<element name="DMROFunction">

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 <complexContent>

 <extension base="xn:NrmClass">

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 <element name="attributes">

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 <element name="dmroControl" type=" boolean" minOccurs="0"/>

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

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

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

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<element name="DPCIConfigurationFunction">

 <complexType>

 <complexContent>

 <extension base="xn:NrmClass">

 <sequence>

 <element name="attributes">

 <complexType>

 <all>

 <element name="nRPciList" type="NRPciList" minOccurs="0"/>

 <element name="dPciConfigurationControl" type="boolean" minOccurs="0"/>

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<element name="CPCIConfigurationFunction">

 <complexType>

 <complexContent>

 <extension base="xn:NrmClass">

 <sequence>

 <element name="attributes">

 <complexType>

 <all>

 <element name="cSonPciList" type="CSonPciList" minOccurs="0"/>

 <element name="cPciConfigurationControl" type="boolean" minOccurs="0"/>

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<element name="CESManagementFunction">

 <complexType>

 <complexContent>

 <extension base="xn:NrmClass">

 <sequence>

 <element name="attributes">

 <complexType>

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 <element name="cesSwitch" type="boolean" minOccurs="0"/>

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

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

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</schema>

**Next change**

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

openapi: 3.0.1

info:

 title: NR NRM

 version: 16.6.0

 description: >-

 OAS 3.0.1 specification of the NR NRM

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externalDocs:

 description: 3GPP TS 28.541 V16.6.0; 5G NRM, NR NRM

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

paths: {}

components:

 schemas:

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

 GnbId:

 type: string

 GnbIdLength:

 type: integer

 minimum: 22

 maximum: 32

 GnbName:

 type: string

 maxLength: 150

 GnbDuId:

 type: number

 minimum: 0

 maximum: 68719476735

 GnbCuUpId:

 type: number

 minimum: 0

 maximum: 68719476735

 Sst:

 type: integer

 maximum: 255

 Snssai:

 type: object

 properties:

 sst:

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

 sd:

 type: string

 SnssaiList:

 type: array

 items:

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

 Mnc:

 type: string

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

 PlmnId:

 type: object

 properties:

 mcc:

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

 mnc:

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

 PlmnIdList:

 type: array

 items:

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

 PlmnInfo:

 type: object

 properties:

 plmnId":

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

 snssai:

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

 PlmnInfoList:

 type: array

 items:

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

 GGnbId:

 type: string

 pattern: '^[0-9]{3}[0-9]{2,3}-(22|23|24|25|26|27|28|29|30|31|32)-[0-9]{1,10}'

 GEnbId:

 type: string

 pattern: '^[0-9]{3}[0-9]{2,3}-(18|20|21|22)-[0-9]{1,7}'

 GGnbIdList:

 type: array

 items:
 $ref: '#/components/schemas/GGnbId'

 GEnbIdList:

 type: array

 items:
 $ref: '#/components/schemas/GEnbId'

 NrPci:

 type: integer

 maximum: 503

 NrTac:

 type: integer

 maximum: 16777215

 Tai:

 type: object

 properties:

 plmnId:

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

 nrTac:

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

 BackhaulAddress:

 type: object

 properties:

 gnbId:

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

 tai:

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

 MappingSetIDBackhaulAddress:

 type: object

 properties:

 setID:

 type: integer

 backhaulAddress:

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

 IntraRatEsActivationOriginalCellLoadParameters:

 type: object

 properties:

 loadThreshold:

 type: integer

 timeDuration:

 type: integer

 IntraRatEsActivationCandidateCellsLoadParameters:

 type: object

 properties:

 loadThreshold:

 type: integer

 timeDuration:

 type: integer

 IntraRatEsDeactivationCandidateCellsLoadParameters:

 type: object

 properties:

 loadThreshold:

 type: integer

 timeDuration:

 type: integer

 EsNotAllowedTimePeriod:

 type: object

 properties:

 startTimeandendTime:

 type: string

 periodOfDay:

 type: string

 daysOfWeekList:

 type: string

 listoftimeperiods:

 type: string

 InterRatEsActivationOriginalCellParameters:

 type: object

 properties:

 loadThreshold:

 type: integer

 timeDuration:

 type: integer

 InterRatEsActivationCandidateCellParameters:

 type: object

 properties:

 loadThreshold:

 type: integer

 timeDuration:

 type: integer

 InterRatEsDeactivationCandidateCellParameters:

 type: object

 properties:

 loadThreshold:

 type: integer

 timeDuration:

 type: integer

 UeAccProbilityDistPerSSB:

 type: object

 properties:

 targetProbability:

 type: integer

 numberofpreamblessent:

 type: integer

 UeAccDelayProbilityDistPerSSB:

 type: object

 properties:

 targetProbability:

 type: integer

 accessdelay:

 type: integer

 NRPciList:

 type: object

 properties:

 NRPci:

 type: integer

 CSonPciList:

 type: object

 properties:

 NRPci:

 type: integer

 MaximumDeviationHoTrigger:

 type: integer

 minimum: -20

 maximum: 20

 MinimumTimeBetweenHoTriggerChange:

 type: integer

 minimum: 0

 maximum: 604800

 TstoreUEcntxt:

 type: integer

 minimum: 0

 maximum: 1023

 CellState:

 type: string

 enum:

 - IDLE

 - INACTIVE

 - ACTIVE

 CyclicPrefix:

 type: string

 enum:

 - '15'

 - '30'

 - '60'

 - '120'

 TxDirection:

 type: string

 enum:

 - DL

 - UL

 - DL and UL

 BwpContext:

 type: string

 enum:

 - DL

 - UL

 - SUL

 IsInitialBwp:

 type: string

 enum:

 - INITIAL

 - OTHER

 - SUL

 QuotaType:

 type: string

 enum:

 - STRICT

 - FLOAT

 IsESCoveredBy:

 type: string

 enum:

 - NO

 - PARTIAL

 - FULL

 RrmPolicyMember:

 type: object

 properties:

 plmnId:

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

 snssai:

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

 RrmPolicyMemberList:

 type: array

 items:

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

 AddressWithVlan:

 type: object

 properties:

 ipv4Address:

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

 ipv6Address:

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

 vlanId:

 type: integer

 minimum: 0

 maximum: 4096

 LocalAddress:

 type: object

 properties:

 addressWithVlan:

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

 port:

 type: integer

 minimum: 0

 maximum: 65535

 RemoteAddress:

 type: object

 properties:

 ipv4Address:

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

 ipv6Address:

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

 CellIndividualOffset:

 type: object

 properties:

 rsrpOffsetSSB:

 type: integer

 rsrqOffsetSSB:

 type: integer

 sinrOffsetSSB:

 type: integer

 rsrpOffsetCSI-RS:

 type: integer

 rsrqOffsetCSI-RS:

 type: integer

 sinrOffsetCSI-RS:

 type: integer

 QOffsetRange:

 type: integer

 enum:

 - -24

 - -22

 - -20

 - -18

 - -16

 - -14

 - -12

 - -10

 - -8

 - -6

 - -5

 - -4

 - -3

 - -2

 - -1

 - 0

 - 24

 - 22

 - 20

 - 18

 - 16

 - 14

 - 12

 - 10

 - 8

 - 6

 - 5

 - 4

 - 3

 - 2

 - 1

 QOffsetRangeList:

 type: object

 properties:

 rsrpOffsetSSB:

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

 rsrqOffsetSSB:

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

 sinrOffsetSSB:

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

 rsrpOffsetCSI-RS:

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

 rsrqOffsetCSI-RS:

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

 sinrOffsetCSI-RS:

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

 QOffsetFreq:

 type: number

 TReselectionNRSf:

 type: integer

 enum:

 - 25

 - 50

 - 75

 - 100

 SsbPeriodicity:

 type: integer

 enum:

 - 5

 - 10

 - 20

 - 40

 - 80

 - 160

 SsbDuration:

 type: integer

 enum:

 - 1

 - 2

 - 3

 - 4

 - 5

 SsbSubCarrierSpacing:

 type: integer

 enum:

 - 15

 - 30

 - 120

 - 240

 CoverageShape:

 type: integer

 maximum: 65535

 DigitalTilt:

 type: integer

 minimum: -900

 maximum: 900

 DigitalAzimuth:

 type: integer

 minimum: -1800

 maximum: 1800

 RSSetId:

 type: integer

 maximum: 4194303

 RSSetType:

 type: string

 enum:

 - RS1

 - RS2

 FrequencyDomainPara:

 type: object

 properties:

 rimRSSubcarrierSpacing:

 type: integer

 rIMRSBandwidth:

 type: integer

 nrofGlobalRIMRSFrequencyCandidates:

 type: integer

 rimRSCommonCarrierReferencePoint:

 type: integer

 rimRSStartingFrequencyOffsetIdList:

 type: array

 items:

 type: integer

 SequenceDomainPara:

 type: object

 properties:

 nrofRIMRSSequenceCandidatesofRS1:

 type: integer

 rimRSScrambleIdListofRS1:

 type: array

 items:

 type: integer

 nrofRIMRSSequenceCandidatesofRS2:

 type: integer

 rimRSScrambleIdListofRS2:

 type: array

 items:

 type: integer

 enableEnoughNotEnoughIndication:

 type: string

 enum:

 - ENABLE

 - DISABLE

 RIMRSScrambleTimerMultiplier:

 type: integer

 RIMRSScrambleTimerOffset:

 type: integer

 TimeDomainPara:

 type: object

 properties:

 dlULSwitchingPeriod1:

 type: string

 enum:

 - MS0P5

 - MS0P625

 - MS1

 - MS1P25

 - MS2

 - MS2P5

 - MS3

 - MS4

 - MS5

 - MS10

 - MS20

 symbolOffsetOfReferencePoint1:

 type: integer

 dlULSwitchingPeriod2:

 type: string

 enum:

 - MS0P5

 - MS0P625

 - MS1

 - MS1P25

 - MS2

 - MS2P5

 - MS3

 - MS4

 - MS5

 - MS10

 - MS20

 symbolOffsetOfReferencePoint2:

 type: integer

 totalnrofSetIdofRS1:

 type: integer

 totalnrofSetIdofRS2:

 type: integer

 nrofConsecutiveRIMRS1:

 type: integer

 nrofConsecutiveRIMRS2:

 type: integer

 consecutiveRIMRS1List:

 type: array

 items:

 type: integer

 consecutiveRIMRS2List:

 type: array

 items:

 type: integer

 enablenearfarIndicationRS1:

 type: string

 enum:

 - ENABLE

 - DISABLE

 enablenearfarIndicationRS2:

 type: string

 enum:

 - ENABLE

 - DISABLE

 RimRSReportInfo:

 type: object

 properties:

 detectedSetID:

 type: integer

 propagationDelay:

 type: integer

 functionalityOfRIMRS:

 type: string

 enum:

 - RS1

 - RS2

 - RS1forEnoughMitigation

 - RS1forNotEnoughMitigation

 RimRSReportConf:

 type: object

 properties:

 reportIndicator:

 type: string

 enum:

 - ENABLE

 - DISABLE

 reportInterval:

 type: integer

 nrofRIMRSReportInfo:

 type: integer

 maxPropagationDelay:

 type: integer

 rimRSReportInfoList:

 type: array

 items:

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

 TceMappingInfo:

 type: object

 properties:

 TceIPAddress:

 oneOf:

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

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

 TceID:

 type: integer

 PlmnTarget:

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

 TceMappingInfoList:

 type: array

 items:

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

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

 RrmPolicy\_-Attr:

 type: object

 properties:

 resourceType:

 type: string

 rRMPolicyMemberList:

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

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

 SubNetwork-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

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

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

 - type: object

 properties:

 SubNetwork:

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

 ManagedElement:

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

 NRFrequency:

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

 ExternalGnbCuCpFunction:

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

 ExternalENBFunction:

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

 EUtranFrequency:

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

 DESManagementFunction:

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

 DRACHOptimizationFunction:

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

 DMROFunction:

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

 DPCIConfigurationFunction:

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

 CPCIConfigurationFunction:

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

 CESManagementFunction:

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

 Configurable5QISet:

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

 RimRSGlobal:

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

 Dynamic5QISet:

 $ref: '5gcNrm.yaml#/components/schemas/Dynamic5QISet-Multiple'

 ManagedElement-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

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

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

 - type: object

 properties:

 GnbDuFunction:

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

 GnbCuUpFunction:

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

 GnbCuCpFunction:

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

 DESManagementFunction:

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

 DRACHOptimizationFunction:

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

 DMROFunction:

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

 DPCIConfigurationFunction:

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

 CPCIConfigurationFunction:

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

 CESManagementFunction:

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

 Configurable5QISet:

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

 Dynamic5QISet:

 $ref: '5gcNrm.yaml#/components/schemas/Dynamic5QISet-Multiple'

 GnbDuFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 gnbDuId:

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

 gnbDuName:

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

 gnbId:

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

 gnbIdLength:

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

 rimRSReportConf:

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

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

 - type: object

 properties:

 RRMPolicyRatio:

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

 NrCellDu:

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

 Bwp-Multiple:

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

 NrSectorCarrier-Multiple:

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

 EP\_F1C:

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

 EP\_F1U:

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

 GnbCuUpFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 gnbId:

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

 gnbIdLength:

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

 gnbCuUpId:

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

 plmnInfoList:

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

 configurable5QISetRef:

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

 dynamic5QISetRef:

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

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

 - type: object

 properties:

 RRMPolicyRatio:

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

 EP\_E1:

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

 EP\_XnU:

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

 EP\_F1U:

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

 EP\_NgU:

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

 EP\_X2U:

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

 EP\_S1U:

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

 GnbCuCpFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 gnbId:

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

 gnbIdLength:

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

 gnbCuName:

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

 plmnId:

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

 x2BlackList:

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

 xnBlackList:

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

 x2WhiteList:

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

 xnWhiteList:

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

 xnHOBlackList:

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

 x2HOBlackList:

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

 mappingSetIDBackhaulAddress:

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

 tceMappingInfoList:

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

 configurable5QISetRef:

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

 dynamic5QISetRef:

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

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

 - type: object

 properties:

 RRMPolicyRatio:

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

 NrCellCu:

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

 EP\_XnC:

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

 EP\_E1:

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

 EP\_F1C:

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

 EP\_NgC:

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

 EP\_X2C:

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

 DANRManagementFunction:

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

 DESManagementFunction:

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

 DRACHOptimizationFunction:

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

 DMROFunction:

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

 NrCellCu-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 cellLocalId:

 type: integer

 plmnInfoList:

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

 nRFrequencyRef:

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

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

 - type: object

 properties:

 RRMPolicyRatio:

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

 NRCellRelation:

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

 EUtranCellRelation:

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

 NRFreqRelation:

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

 EUtranFreqRelation:

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

 DESManagementFunction:

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

 DRACHOptimizationFunction:

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

 DMROFunction:

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

 CESManagementFunction:

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

 DPCIConfigurationFunction:

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

 NrCellDu-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 administrativeState:

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

 operationalState:

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

 cellLocalId:

 type: integer

 cellState:

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

 plmnInfoList:

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

 nrPci:

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

 nrTac:

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

 arfcnDL:

 type: integer

 arfcnUL:

 type: integer

 arfcnSUL:

 type: integer

 bSChannelBwDL:

 type: integer

 bSChannelBwUL:

 type: integer

 bSChannelBwSUL:

 type: integer

 ssbFrequency:

 type: integer

 minimum: 0

 maximum: 3279165

 ssbPeriodicity:

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

 ssbSubCarrierSpacing:

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

 ssbOffset:

 type: integer

 minimum: 0

 maximum: 159

 ssbDuration:

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

 nrSectorCarrierRef:

 type: array

 items:

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

 bwpRef:

 type: array

 items:

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

 nRFrequencyRef:

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

 victimSetRef:

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

 aggressorSetRef:

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

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

 - type: object

 properties:

 RRMPolicyRatio:

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

 CPCIConfigurationFunction:

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

 NRFrequency-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 absoluteFrequencySSB:

 type: integer

 minimum: 0

 maximum: 3279165

 ssbSubCarrierSpacing:

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

 multiFrequencyBandListNR:

 type: integer

 minimum: 1

 maximum: 256

 EUtranFrequency-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 earfcnDL:

 type: integer

 minimum: 0

 maximum: 262143

  multiBandInfoListEutra:

 type: integer

 minimum: 1

 maximum: 256

 NrSectorCarrier-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 txDirection:

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

 configuredMaxTxPower:

 type: integer

 arfcnDL:

 type: integer

 arfcnUL:

 type: integer

 bSChannelBwDL:

 type: integer

 bSChannelBwUL:

 type: integer

 sectorEquipmentFunctionRef:

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

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

 - type: object

 properties:

 CommonBeamformingFunction:

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

 Bwp-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 bwpContext:

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

 isInitialBwp:

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

 subCarrierSpacing:

 type: integer

 cyclicPrefix:

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

 startRB:

 type: integer

 numberOfRBs:

 type: integer

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

 CommonBeamformingFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

 - type: object

 properties:

 coverageShape:

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

 digitalAzimuth:

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

 digitalTilt:

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

 - type: object

 properties:

 Beam:

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

 Beam-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

 - type: object

 properties:

 beamIndex:

 type: integer

 beamType:

 type: string

 enum:

 - SSB-BEAM

 beamAzimuth:

 type: integer

 minimum: -1800

 maximum: 1800

 beamTilt:

 type: integer

 minimum: -900

 maximum: 900

 beamHorizWidth:

 type: integer

 minimum: 0

 maximum: 3599

 beamVertWidth:

 type: integer

 minimum: 0

 maximum: 1800

 RRMPolicyRatio-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 rRMPolicyMaxRatio:

 type: integer

 rRMPolicyMinRatio:

 type: integer

 rRMPolicyDedicatedRatio:

 type: integer

 NRCellRelation-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 nRTCI:

 type: integer

 cellIndividualOffset:

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

 adjacentNRCellRef:

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

 nRFrequencyRef:

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

 isRemoveAllowed:

 type: boolean

 isHOAllowed:

 type: boolean

 isESCoveredBy:

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

 isENDCAllowed:

 type: boolean

 isMLBAllowed:

 type: boolean

 EUtranCellRelation-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 adjacentEUtranCellRef:

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

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

 NRFreqRelation-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 offsetMO:

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

 blackListEntry:

 type: array

 items:

 type: integer

 minimum: 0

 maximum: 1007

 blackListEntryIdleMode:

 type: integer

 cellReselectionPriority:

 type: integer

 cellReselectionSubPriority:

 type: number

 minimum: 0.2

 maximum: 0.8

 multipleOf: 0.2

 pMax:

 type: integer

 minimum: -30

 maximum: 33

 qOffsetFreq:

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

 qQualMin:

 type: number

 qRxLevMin:

 type: integer

 minimum: -140

 maximum: -44

 threshXHighP:

 type: integer

 minimum: 0

 maximum: 62

 threshXHighQ:

 type: integer

 minimum: 0

 maximum: 31

 threshXLowP:

 type: integer

 minimum: 0

 maximum: 62

 threshXLowQ:

 type: integer

 minimum: 0

 maximum: 31

 tReselectionNr:

 type: integer

 minimum: 0

 maximum: 7

 tReselectionNRSfHigh:

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

 tReselectionNRSfMedium:

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

 nRFrequencyRef:

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

 EUtranFreqRelation-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 cellIndividualOffset:

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

 blackListEntry:

 type: array

 items:

 type: integer

 minimum: 0

 maximum: 1007

 blackListEntryIdleMode:

 type: integer

 cellReselectionPriority:

 type: integer

 cellReselectionSubPriority:

 type: number

 minimum: 0.2

 maximum: 0.8

 multipleOf: 0.2

 pMax:

 type: integer

 minimum: -30

 maximum: 33

 qOffsetFreq:

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

 qQualMin:

 type: number

 qRxLevMin:

 type: integer

 minimum: -140

 maximum: -44

 threshXHighP:

 type: integer

 minimum: 0

 maximum: 62

 threshXHighQ:

 type: integer

 minimum: 0

 maximum: 31

 threshXLowP:

 type: integer

 minimum: 0

 maximum: 62

 threshXLowQ:

 type: integer

 minimum: 0

 maximum: 31

 tReselectionEutran:

 type: integer

 minimum: 0

 maximum: 7

 tReselectionNRSfHigh:

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

 tReselectionNRSfMedium:

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

 eUTranFrequencyRef:

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

 DANRManagementFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 intrasystemANRManagementSwitch:

 type: boolean

 intersystemANRManagementSwitch:

 type: boolean

 DESManagementFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 desSwitch:

 type: boolean

 intraRatEsActivationOriginalCellLoadParameters:

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

 intraRatEsActivationCandidateCellsLoadParameters:

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

 intraRatEsDeactivationCandidateCellsLoadParameters:

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

 esNotAllowedTimePeriod:

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

 interRatEsActivationOriginalCellParameters:

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

 interRatEsActivationCandidateCellParameters:

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

 interRatEsDeactivationCandidateCellParameters:

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

 isProbingCapable:

 type: string

 enum:

 - yes

 - no

 energySavingState:

 type: string

 enum:

 - isNotEnergySaving

 - isEnergySaving

 DRACHOptimizationFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 drachOptimizationControl:

 type: boolean

 ueAccProbilityDistPerSSB:

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

 ueAccDelayProbilityDistPerSSB:

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

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

 DMROFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 dmroControl:

 type: boolean

 maximumDeviationHoTrigger:

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

 minimumTimeBetweenHoTriggerChange:

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

 tstoreUEcntxt:

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

 DPCIConfigurationFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 dPciConfigurationControl:

 type: boolean

 nRPciList:

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

 CPCIConfigurationFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 cPciConfigurationControl:

 type: boolean

 cSonPciList:

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

 CESManagementFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 cesSwitch:

 type: boolean

 energySavingControl:

 type: string

 enum:

 - toBeEnergySaving

 - toBeNotEnergySaving

 energySavingState:

 type: string

 enum:

 - isNotEnergySaving

 - isEnergySaving

 RimRSGlobal-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 frequencyDomainPara:

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

 sequenceDomainPara:

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

 timeDomainPara:

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

 RimRSSet:

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

 RimRSSet-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 setId:

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

 setType:

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

 rimRSMonitoringStartTime:

 type: string

 rimRSMonitoringStopTime:

 type: string

 rimRSMonitoringWindowDuration:

 type: integer

 rimRSMonitoringWindowStartingOffset:

 type: integer

 rimRSMonitoringWindowPeriodicity:

 type: integer

 rimRSMonitoringOccasionInterval:

 type: integer

 rimRSMonitoringOccasionStartingOffset:

 type: integer

 nRCellDURefs:

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

 ExternalGnbDuFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 gnbId:

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

 gnbIdLength:

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

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

 - type: object

 properties:

 EP\_F1C:

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

 EP\_F1U:

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

 ExternalGnbCuUpFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 gnbId:

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

 gnbIdLength:

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

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

 - type: object

 properties:

 EP\_E1:

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

 EP\_F1U:

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

 EP\_XnU:

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

 ExternalGnbCuCpFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

 - $ref: >-

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

 - type: object

 properties:

 gnbId:

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

 gnbIdLength:

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

 plmnId:

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

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

 - type: object

 properties:

 ExternalNrCellCu:

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

 EP\_XnC:

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

 EP\_E1:

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

 EP\_F1C:

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

 ExternalNrCellCu-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 cellLocalId:

 type: integer

 nrPci:

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

 plmnIdList:

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

 nRFrequencyRef:

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

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

 ExternalENBFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 eNBId:

 type: integer

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

 - type: object

 properties:

 ExternalEUTranCell:

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

 ExternalEUTranCell-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 EUtranFrequencyRef:

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

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

 EP\_XnC-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 localAddress:

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

 remoteAddress:

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

 EP\_E1-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 localAddress:

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

 remoteAddress:

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

 EP\_F1C-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 localAddress:

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

 remoteAddress:

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

 EP\_NgC-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 localAddress:

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

 remoteAddress:

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

 EP\_X2C-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 localAddress:

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

 remoteAddress:

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

 EP\_XnU-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 localAddress:

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

 remoteAddress:

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

 EP\_F1U-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 localAddress:

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

 remoteAddress:

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

 EP\_NgU-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 localAddress:

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

 remoteAddress:

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

 epTransportRefs:

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

 EP\_X2U-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 localAddress:

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

 remoteAddress:

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

 EP\_S1U-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 localAddress:

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

 remoteAddress:

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

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

 SubNetwork-Multiple:

 type: array

 items:

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

 ManagedElement-Multiple:

 type: array

 items:

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

 GnbDuFunction-Multiple:

 type: array

 items:

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

 GnbCuUpFunction-Multiple:

 type: array

 items:

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

 GnbCuCpFunction-Multiple:

 type: array

 items:

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

 NrCellDu-Multiple:

 type: array

 items:

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

 NrCellCu-Multiple:

 type: array

 items:

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

 NRFrequency-Multiple:

 type: array

 minItems: 1

 items:

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

 EUtranFrequency-Multiple:

 type: array

 minItems: 1

 items:

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

 NrSectorCarrier-Multiple:

 type: array

 items:

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

 Bwp-Multiple:

 type: array

 items:

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

 Beam-Multiple:

 type: array

 items:

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

 RRMPolicyRatio-Multiple:

 type: array

 items:

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

 NRCellRelation-Multiple:

 type: array

 items:

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

 EUtranCellRelation-Multiple:

 type: array

 items:

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

 NRFreqRelation-Multiple:

 type: array

 items:

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

 EUtranFreqRelation-Multiple:

 type: array

 items:

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

 RimRSSet-Multiple:

 type: array

 items:

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

 ExternalGnbDuFunction-Multiple:

 type: array

 items:

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

 ExternalGnbCuUpFunction-Multiple:

 type: array

 items:

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

 ExternalGnbCuCpFunction-Multiple:

 type: array

 items:

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

 ExternalNrCellCu-Multiple:

 type: array

 items:

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

 ExternalENBFunction-Multiple:

 type: array

 items:

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

 ExternalEUTranCell-Multiple:

 type: array

 items:

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

 EP\_E1-Multiple:

 type: array

 items:

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

 EP\_XnC-Multiple:

 type: array

 items:

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

 EP\_F1C-Multiple:

 type: array

 items:

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

 EP\_NgC-Multiple:

 type: array

 items:

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

 EP\_X2C-Multiple:

 type: array

 items:

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

 EP\_XnU-Multiple:

 type: array

 items:

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

 EP\_F1U-Multiple:

 type: array

 items:

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

 EP\_NgU-Multiple:

 type: array

 items:

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

 EP\_X2U-Multiple:

 type: array

 items:

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

 EP\_S1U-Multiple:

 type: array

 items:

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

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

 resources-nrNrm:

 oneOf:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Next change**

## E.5.19 module \_3gpp-nr-nrm-nrcellcu.yang

module \_3gpp-nr-nrm-nrcellcu {

 yang-version 1.1;

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

 prefix "nrcellcu3gpp";

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

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

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

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

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

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

 organization "3GPP SA5";

 contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

 description "Defines the YANG mapping of the NRCellCU 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 2020-11-25 { reference CR-0386 ; }

 revision 2020-05-08 { reference S5-203316 ; }

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

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

 revision 2019-06-17 {

 description "Initial revision";

 }

 feature DPCIConfigurationFunction {

 description "Classs representing Distributed SON or Domain-Centralized SON

 function of PCI configuration feature";

 }

 feature DESManagementFunction {

 description "Classs representing Distributed SON or Domain-Centralized SON Energy Saving feature";

 }

 feature DRACHOptimizationFunction {

 description "Classs representing D-SON function of RACH optimization feature";

 }

 feature DMROFunction {

 description "Classs representing D-SON function of MRO feature";

 }

 feature CESManagementFunction {

 description "Classs representing Cross Domain-Centralized SON Energy Saving feature";

 }

 grouping NRCellCUGrp {

 description "Represents the NRCellCU IOC.";

 reference "3GPP TS 28.541";

 uses mf3gpp:ManagedFunctionGrp;

 leaf cellLocalId {

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

 gNB ID it forms the NR Cell Identifier (NCI).";

 mandatory true;

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

 }

 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.";

 // Note: Whether the attribute pLMNId in the pLMNInfo can be writable depends on the implementation.

 key "mcc mnc";

 min-elements 1;

 uses nrcommon3gpp:PLMNInfo;

 }

 leaf nRFrequencyRef {

 description "Reference to corresponding NRFrequency instance.";

 config false;

 type types3gpp:DistinguishedName;

 }

 }

 augment "/me3gpp:ManagedElement/gnbcucp3gpp:GNBCUCPFunction" {

 list NRCellCU {

 description "Represents the information required by CU that is

 responsible for the management of inter-cell mobility and neighbour

 relations via ANR.";

 reference "3GPP TS 28.541";

 key id;

 uses top3gpp:Top\_Grp;

 container attributes {

 uses NRCellCUGrp;

 }

 uses mf3gpp:ManagedFunctionContainedClasses;

 }

 }

}

**Next change**

## E.5.20 module \_3gpp-nr-nrm-nrcelldu.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";

 contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

 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 2020-11-25 { reference CR-0386 ; }

 revision 2020-05-08 { reference S5-203316 ; }

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

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

 revision 2019-09-03 {

 description "Initial revision";

 }

 feature CPCIConfigurationFunction {

 description "Classs representing Cross Domain-Centralized SON function of PCI configuration feature";

 }

 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.5.32 module \_3gpp-nr-nrm-dpciconfigurationfunction.yang

module \_3gpp-nr-nrm-dpciconfigurationfunction {

 yang-version 1.1;

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

 prefix "dpciconfigurationfunction3gpp";

 import \_3gpp-common-subnetwork { prefix subnet3gpp; }

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

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

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

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

 organization "3GPP SA5";

 contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

 description "Defines the YANG mapping of the DPCIConfigurationFunction 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 2020-11-25 { reference CR-0386 ; }

 revision 2020-05-08 { reference S5-203316; }

 grouping DPCIConfigurationFunctionGrp {

 description "Represents the DPCICONFIGURATIONFunction IOC.";

 reference "3GPP TS 28.541";

 uses top3gpp:Top\_Grp;

 list nRPciList {

 key NRPci;

 description "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 or domain Centralized SON PCI configuration function is supported.";

 leaf NRPci {type int32;}

 container attributes {

 uses NRPciListGrp;

 }

 }

 leaf dPciConfigurationControl {

 description " This attribute determines whether the Distributed SON or Domain-Centralized SON PCI configuration Function is enabled or disabled.";

 type boolean;

 }

 }

 grouping NRPciListGrp {

 description "Represents the NR PCI list for the PCI configuration function.";

 leaf NRPci {

 description "This attribute determines the NR PCI.";

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

 units "1";

 }

 }

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

 if-feature nrcellcu3gpp:DPCIConfigurationFunction;

 uses DPCIConfigurationFunctionGrp;

 }

 augment "/me3gpp:ManagedElement" {

 if-feature me3gpp:DPCIConfigurationFunction;

 uses DPCIConfigurationFunctionGrp;

 }

 augment "/subnet3gpp:SubNetwork" {

 if-feature subnet3gpp:DPCIConfigurationFunction;

 uses DPCIConfigurationFunctionGrp;

 }

}

**End of changes**