**3GPP TSG-SA5 Meeting #129-e *S5-201363***

**Online, , 24th Feb 2020 - 4th Mar 2020**

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| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **28.541** | **CR** | **0253** | **rev** | **-** | **Current version:** | **16.3.0** |  |
|  |
| *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 |  |

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|  |
| ***Title:***  | Rel-16 CR TS 28.541 Add Stage 3 NRM Info Model definitions for RRMPolicy and PLMNInfo related CRs |
|  |  |
| ***Source to WG:*** | Ericsson, Nokia, Huawei  |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | eNRM |  | ***Date:*** | 2020-02-14 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories 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 Stage 3 for the Stage 2 CRs listed below are missing.The conditionally agreed Stage 2 CRs in #128 meeting:* Update of RRM Policy (S5-197638 CR0179 rev- 2)
* Correct the parameter sNSSAIList (S5-197634 CR0163 rev- 2)

The submitted Stage 2 CR for this #129e meeting:Update of GNBCUUPFunction NRM (S5-201278 CR 0250) |
|  |  |
| ***Summary of change:*** | Added the missing Stage 3 Solution Sets (XML, JSON, & YANG) for those CRs:* Update of RRM Policy (S5-201317 CR0179 rev- 3)
* Correct the parameter sNSSAIList (S5-201334 CR0163 rev- 3)
* Update of GNBCUUPFunction NRM (S5-201278 CR0250)
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|  |  |
| ***Consequences if not approved:*** | There will not be possible to configure any RRMPolicys in gNB and it will not be possible to relate what PLMN an S-NSSAI belongs to in 5GS. |
|  |  |
| ***Clauses affected:*** | C.4.3 (XML), D.4.3 (JSON), E.5.16, E.5.17, E.5.18, E.5.19, E.5.20, E.5.25, E.5.26, E7 |
|  |  |
|  | **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 define the stage 3, is one of the package together with the stage 2 CRs (CR#0179/0163/0250) that defines the stage 2 NRMs. (Depending on the CR0250 agreement in this #129e meeting, this CR might need update) |
|  |  |
| ***This CR's revision history:*** |  |

|  |
| --- |
| **1st modified section** |

## 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"/>

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 <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">

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 <minLength value="1"/>

 <maxLength value="150"/>

 </restriction>

</simpleType>

<simpleType name="CyclicPrefix">

 <restriction base="integer">

 <enumeration value="15"/>

 <enumeration value="30"/>

 <enumeration value="60"/>

 <enumeration value="120"/>

 </restriction>

</simpleType>

<simpleType name="QuotaType">

 <restriction base="string">

 <enumeration value="STRICT"/>

 <enumeration value="FLOAT"/>

 </restriction>

</simpleType>

<simpleType name="CellState">

 <restriction base="string">

 <enumeration value="IDLE"/>

 <enumeration value="INACTIVE"/>

 <enumeration value="ACTIVE"/>

 </restriction>

</simpleType>

<simpleType name="BwpContext">

 <restriction base="string">

 <enumeration value="DL"/>

 <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"/>

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 <enumeration value="dB-18"/>

 <enumeration value="dB-16"/>

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 <enumeration value="dB20"/>

 <enumeration value="dB22"/>

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 </restriction>

</simpleType>

<simpleType name="cellReselectionPriority">

 <restriction base="unsignedLong">

 <minInclusive value="0"/>

 <maxInclusive value="16"/>

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

 </restriction>

</simpleType>

<simpleType name="cellReselectionSubPriority">

 <restriction base="unsignedLong">

 <minInclusive value="0"/>

 <maxInclusive value="16"/>

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

 </restriction>

</simpleType>

<simpleType name="PMaxRangeType">

 <restriction base="short">

 <minInclusive value="-30"/>

 <maxInclusive value="33"/>

 </restriction>

</simpleType>

<simpleType name="qOffsetFreq">

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 <minInclusive value="-24"/>

 <maxInclusive value="24"/>

 </restriction>

</simpleType>

<simpleType name="qQualMin">

 <restriction base="integer">

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<simpleType name="qRxLevMin">

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<simpleType name="Thresxhighp">

 <restriction base="integer">

 <minInclusive value="0"/>

 <maxInclusive value="62"/>

 </restriction>

</simpleType>

<simpleType name="Threshxhighq">

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</simpleType>

<simpleType name="Threshxlowp">

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<simpleType name="Threshxlowq">

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</simpleType>

<simpleType name="Treselectionnr">

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 <maxInclusive value="7"/>

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</simpleType>

<simpleType name="Treselectionnrsfhigh">

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</simpleType>

<simpleType name="Treselectionnrsfmedium">

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 <enumeration value="50"/>

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 <enumeration value="100"/>

 </restriction>

</simpleType>

<simpleType name="Absolutefrequencyssb">

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 <restriction base="string">

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 <enumeration value="30"/>

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 <enumeration value="240"/>

 </restriction>

</simpleType>

<simpleType name="Multifrequencybandlistnr">

 <restriction base="integer">

 <minInclusive value="1"/>

 <maxInclusive value="256"/>

 </restriction>

</simpleType>

<simpleType name="beamType">

 <restriction base="string">

 <enumeration value="SSB-BEAM"/>

 </restriction>

</simpleType>

<simpleType name="beamAzimuth">

 <restriction base="integer">

 <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">

 <minInclusive value="0"/>

 <maxInclusive value="3599"/>

 </restriction>

</simpleType>

<simpleType name="beamVertWidth">

 <restriction base="integer">

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 <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">

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 </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">

 <sequence>

 <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"/>

 </sequence>

 </complexType>

 <complexType name="PLMNInfoType">

 <sequence>

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

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

 </sequence>

</complexType>

 <complexType name="PLMNInfoListType">

 <sequence>

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

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</complexType>

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

 <complexType>

 <complexContent>

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

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

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

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

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

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

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

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

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

 </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>

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

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

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

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

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

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

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

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

 </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"/>

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 <element ref="xn:MeasurementControl"/>

 </choice>

 </sequence>

 </extension>

 </complexContent>

 </complexType>

</element>

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

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

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

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

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

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

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

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

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

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

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

 <element ref="xn:VsDataContainer"/>

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

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 </extension>

 </complexContent>

 </complexType>

</element>

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 <extension base="xn:NrmClass">

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

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

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

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

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

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

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

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

 <element ref="xn:VsDataContainer"/>

 <element ref="nRCellRelation"/>

 <element ref="nRFreqRelation"/>

 <element ref="eUtranCellRelation"/>

 <element ref="eUtranFreqRelation"/>

 </choice>

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

 <element ref="xn:MeasurementControl"/>

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

 <element ref="sp:EnergySavingProperties"/>

 <element ref="sp:ESPolicies"/>

 </choice>

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

 <element ref= "RRMPolicyRatio"/>

 </choice>

 </sequence>

 </extension>

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 </complexType>

</element>

<element name="NRCellDU">

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 <extension base="xn:NrmClass">

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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 </choice>

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

 <element ref="xn:MeasurementControl"/>

 </choice>

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

 <element ref="sp:EnergySavingProperties"/>

 <element ref="sp:ESPolicies"/>

 </choice>

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

 <element ref="RRMPolicyRatio"/>

 </choice>

 </sequence>

 </extension>

 </complexContent>

 </complexType>

</element>

<element name="NRSectorCarrier">

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 <complexContent>

 <extension base="xn:NrmClass">

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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="txDirection" type="nn:TxDirection"/>

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

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

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

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

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

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

 </all>

 </complexType>

 </element>

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

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 </choice>

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

 <element ref="xn:VsDataContainer"/>

 </choice>

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| **Next modified section** |

D.4.3 JSON schema "nrNrm.json"

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 "description": "OAS 3.0.1 specification compatible schema for 3GPP NR NRM"

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 "bSChannelBwUL": {

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 "threshXHighP": {

 "type": "integer",

 "minimum": 0,

 "maximum": 62

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 "threshXHighQ": {

 "type": "integer",

 "minimum": 0,

 "maximum": 31

 },

 "threshXLowP": {

 "type": "integer",

 "minimum": 0,

 "maximum": 62

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 "threshXLowQ": {

 "type": "integer",

 "minimum": 0,

 "maximum": 31

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 "type": "integer",

 "minimum": 0,

 "maximum": 7

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 "tReselectionNRSfHigh": {

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

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 "tReselectionNRSfMedium": {

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

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 "nRFrequencyRef": {

 "$ref": "genericNrm.json#/components/schemas/Dn"

 }

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 "$ref": "genericNrm.json#/components/schemas/ManagedFunction-ContainingObjects"

 }

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 "NRFrequency": {

 "allOf": [

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 "$ref": "genericNrm.json#/components/schemas/Top-Attributes"

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 {

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 "properties": {

 "attributes": {

 "allOf": [

 {

 "$ref": "genericNrm.json#/components/schemas/ManagedFunction-Attributes"

 },

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 "properties": {

 "absoluteFrequencySSB": {

 "type": "integer",

 "minimum": 0,

 "maximum": 3279165

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 "ssbSubCarrierSpacing": {

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

 },

 "multiFrequencyBandListNR": {

 "type": "integer",

 "minimum": 1,

 "maximum": 256

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 "$ref": "genericNrm.json#/components/schemas/ManagedFunction-ContainingObjects"

 }

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 },

 "ExternalENBFunction": {

 "allOf": [

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 "$ref": "genericNrm.json#/components/schemas/Top-Attributes"

 },

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 "properties": {

 "attributes": {

 "allOf": [

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 "$ref": "genericNrm.json#/components/schemas/ManagedFunction-Attributes"

 },

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 "properties": {

 "eNBId": {

 "type": "integer"

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 "$ref": "genericNrm.json#/components/schemas/ManagedFunction-ContainingObjects"

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 "properties": {

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 "type": "array",

 "items": {

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

 }

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 }

 }

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 "$ref": "genericNrm.json#/components/schemas/Top-Attributes"

 },

 {

 "type": "object",

 "properties": {

 "attributes": {

 "allOf": [

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 "$ref": "genericNrm.json#/components/schemas/ManagedFunction-Attributes"

 },

 {

 "type": "object",

 "properties": {

 "EUtranFrequencyRef": {

 "$ref": "genericNrm.json#/components/schemas/Dn"

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 "$ref": "genericNrm.json#/components/schemas/ManagedFunction-ContainingObjects"

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 "properties": {

 "attributes": {

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 "properties": {

 "adjacentEUtranCellRef": {

 "$ref": "genericNrm.json#/components/schemas/Dn"

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 "$ref": "genericNrm.json#/components/schemas/ManagedFunction-ContainingObjects"

 }

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 "EUtranFreqRelation": {

 "allOf": [

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 "$ref": "genericNrm.json#/components/schemas/Top-Attributes"

 },

 {

 "type": "object",

 "properties": {

 "attributes": {

 "allOf": [

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 "$ref": "genericNrm.json#/components/schemas/ManagedFunction-Attributes"

 },

 {

 "type": "object",

 "properties": {

 "eUTranFrequencyRef": {

 "$ref": "genericNrm.json#/components/schemas/Dn"

 }

 }

 }

 ]

 }

 }

 },

 {

 "$ref": "genericNrm.json#/components/schemas/ManagedFunction-ContainingObjects"

 }

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 "EUtranFrequency": {

 "allOf": [

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 "properties": {

 "attributes": {

 "allOf": [

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 "$ref": "genericNrm.json#/components/schemas/ManagedFunction-Attributes"

 },

 {

 "type": "object",

 "properties": {}

 }

 ]

 }

 }

 },

 {

 "$ref": "genericNrm.json#/components/schemas/ManagedFunction-ContainingObjects"

 }

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 },

 "RrmPolicy\_": {

 "allOf": [

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 "$ref": "genericNrm.json#/components/schemas/Top-Attributes"

 },

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 "properties": {

 "attributes": {

 "type": "object",

 "properties": {

 "resourceType": {

 "type": "string"

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 "rRMPolicyMemberList": {

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

 }

 }

 }

 }

 }

 ]

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 "RrmPolicy-Multiple": {

 "type": "array",

 "items": {

 "$ref": "#/components/schemas/RrmPolicy\_"

 }

 },

 "RrmPolicyRatio": {

 "allOf": [

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 "$ref": "#/components/schemas/RrmPolicy\_"

 },

 {

 "type": "object",

 "properties": {

 "attributes": {

 "type": "object",

 "properties": {

 "quotaType": {

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

 },

 "rRMPolicyMaxRation": {

 "type": "integer"

 },

 "rRMPolicyMarginMaxRation": {

 "type": "integer"

 },

 "rRMPolicyMinRation": {

 "type": "integer"

 },

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 "type": "integer"

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 "ManagedElement-Single": {

 "allOf": [

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 "$ref": "genericNrm.json#/components/schemas/Top-Attributes"

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 "properties": {

 "attributes": {

 "allOf": [

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 "$ref": "genericNrm.json#/components/schemas/ManagedElement-Attributes"

 }

 ]

 }

 }

 },

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 "$ref": "genericNrm.json#/components/schemas/ManagedElement-ContainingObjects"

 },

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 "type": "object",

 "properties": {

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 "type": "array",

 "items": {

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

 }

 },

 "GnbCuCpFunction": {

 "type": "array",

 "items": {

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

 }

 },

 "GnbCuUpFunction": {

 "type": "array",

 "items": {

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

 }

 }

 }

 }

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 "type": "array",

 "items": {

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

 }

 },

 "SubNetwork-Single": {

 "allOf": [

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 "$ref": "genericNrm.json#/components/schemas/Top-Attributes"

 },

 {

 "type": "object",

 "properties": {

 "attributes": {

 "allOf": [

 {

 "$ref": "genericNrm.json#/components/schemas/SubNetwork-Attributes"

 }

 ]

 }

 }

 },

 {

 "$ref": "genericNrm.json#/components/schemas/SubNetwork-ContainingObjects"

 },

 {

 "type": "object",

 "properties": {

 "SubNetwork": {

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

 },

 "ManagedElement": {

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

 },

 "ExternalGnbCuCpFunction": {

 "type": "array",

 "items": {

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

 }

 },

 "ExternalENBFunction": {

 "type": "array",

 "items": {

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

 }

 },

 "NRFrequency": {

 "type": "array",

 "items": {

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

 }

 },

 "EUtranFrequency": {

 "type": "array",

 "items": {

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

 }

 }

 }

 }

 ]

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 "SubNetwork-Multiple": {

 "type": "array",

 "items": {

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

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 "allOf": [

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 },

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 "properties": {

 "attributes": {

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 "properties": {

 "userLabel": {

 "type": "string"

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 "farEndEntity": {

 "type": "string"

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 "localAddress": {

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

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 "remoteAddress": {

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

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 "EP\_XnC": {

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 "EP\_XnU": {

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 "EP\_F1C": {

 "$ref": "#/components/schemas/EP\_RP"

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 "EP\_F1U": {

 "$ref": "#/components/schemas/EP\_RP"

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 "EP\_S1U": {

 "$ref": "#/components/schemas/EP\_RP"

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 "EP\_X2C": {

 "$ref": "#/components/schemas/EP\_RP"

 },

 "EP\_X2U": {

 "$ref": "#/components/schemas/EP\_RP"

 }

 }

 }

}

|  |
| --- |
| **Next modified section** |

E.5.16 module\_3gpp-nr-nrm-gnbcucpfunction@2020-02-14.yang

module \_3gpp-nr-nrm-gnbcucpfunction {

 yang-version 1.1;

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

 prefix "gnbcucp3gpp";

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

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

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

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

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

 organization "3GPP SA5";

 description "Defines the YANG mapping of the GNBCUCPFunction Information

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

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

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

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

 revision 2019-06-17 {

 description "Initial revision";

 }

 grouping GNBCUCPFunctionGrp {

 description "Represents the GNBCUCPFunction IOC.";

 reference "3GPP TS 28.541";

 uses mf3gpp:ManagedFunctionGrp;

 uses nrrrmpolicy3gpp:RRMPolicy\_Grp;

 leaf gNBId {

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

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

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

 mandatory true;

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

 }

 leaf gNBIdLength {

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

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

 mandatory true;

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

 }

 leaf gNBCUName {

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

 reference "3GPP TS 38.473";

 mandatory true;

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

 }

 list pLMNId {

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

 node identity.";

 key "mcc mnc";

 min-elements 1;

 max-elements 1;

 uses types3gpp:PLMNId;

 }

 leaf-list x2BlackList {

 type types3gpp:DistinguishedName;

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

 }

 leaf-list x2WhiteList {

 type types3gpp:DistinguishedName;

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

 }

 leaf-list xnBlackList {

 type types3gpp:DistinguishedName;

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

 }

 leaf-list xnWhiteList {

 type types3gpp:DistinguishedName;

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

 }

 leaf-list x2XnHOBlackList {

 type types3gpp:DistinguishedName;

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

 }

 }

 augment "/me3gpp:ManagedElement" {

 list GNBCUCPFunction {

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

 reference "3GPP TS 28.541";

 key id;

 uses top3gpp:Top\_Grp;

 container attributes {

 uses GNBCUCPFunctionGrp;

 }

 uses mf3gpp:ManagedFunctionContainedClasses;

 }

 }

}

|  |
| --- |
| **Next modified section** |

E.5.17 module\_3gpp-nr-nrm-gnbcuupfunction@2020-02-14.yang

module \_3gpp-nr-nrm-gnbcuupfunction {

 yang-version 1.1;

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

 prefix "gnbcuup3gpp";

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

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

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

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

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

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

 organization "3GPP SA5";

 description "Defines the YANG mapping of the GNBCUUPFunction Information

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

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

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

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

 revision 2019-08-21 {

 description "Initial revision";

 }

 grouping GNBCUUPFunctionGrp {

 description "Represents the GNBCUUPFunction IOC.";

 reference "3GPP TS 28.541";

 uses mf3gpp:ManagedFunctionGrp;

 uses nrrrmpolicy3gpp:RRMPolicy\_Grp;

 leaf gNBCUUPId {

 type uint64 {

 range "0..68719476735" ;

 }

 config false;

 mandatory true;

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

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

 }

 leaf gNBId {

 mandatory true;

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

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

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

 }

 list pLMNInfoList {

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

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

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

 key "mcc mnc";

 uses nrcommon3gpp:PLMNInfo;

 }

 }

 augment "/me3gpp:ManagedElement" {

 list GNBCUUPFunction {

 key id;

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

 reference "3GPP TS 28.541";

 uses top3gpp:Top\_Grp;

 container attributes {

 uses GNBCUUPFunctionGrp;

 }

 uses mf3gpp:ManagedFunctionContainedClasses;

 }

 }

}

|  |
| --- |
| **Next modified section** |

E.5.18 module\_3gpp-nr-nrm-gnbdufunction@2020-02-14.yang

module \_3gpp-nr-nrm-gnbdufunction {

 yang-version 1.1;

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

 prefix "gnbdu3gpp";

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

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

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

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

 organization "3GPP SA5";

 description "Defines the YANG mapping of the GNBDUFunction 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 2019-08-21 {

 description "Initial revision.";

 }

 grouping GNBDUFunctionGrp {

 description "Represents the GNBDUFunction IOC.";

 reference "3GPP TS 28.541";

 uses mf3gpp:ManagedFunctionGrp;

 uses nrrrmpolicy3gpp:RRMPolicy\_Grp;

 leaf gNBId {

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

 mandatory true;

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

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

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

 }

 leaf gNBIdLength {

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

 mandatory true;

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

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

 }

 leaf gNBDUId {

 type int64 { range "0..68719476735"; }

 mandatory true;

 description "Uniquely identifies the DU at least within a gNB.";

 reference "3GPP TS 38.473";

 }

 leaf gNBDUName {

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

 description "Identifies the Distributed Unit of an NR node";

 reference "3GPP TS 38.473";

 }

 }

 augment "/me3gpp:ManagedElement" {

 list GNBDUFunction {

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

 reference "3GPP TS 28.541";

 uses top3gpp:Top\_Grp;

 container attributes {

 uses GNBDUFunctionGrp;

 }

 uses mf3gpp:ManagedFunctionContainedClasses;

 }

 }

}

|  |
| --- |
| **Next modified section** |

E.5.19 module\_3gpp-nr-nrm-nrcellcu@2020-02-14.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";

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

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

 revision 2019-06-17 {

 description "Initial revision";

 }

 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 modified section** |

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, 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 modified section** |

E.5.X module \_3gpp-nr-nrm-rrmpolicy@2020-02-14.yang

module \_3gpp-nr-nrm-rrmpolicy {

 yang-version 1.1;

 namespace "urn:3gpp:sa5:3gpp-nr-nrm-nrnetwork-rrmpolicy";

 prefix "nrrrmpolicy3gpp";

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

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

 organization "3GPP SA5";

 description "Defines the YANG mapping of the RRMPolicy abstract class that is part of the NR Network Resource Model (NRM).";

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

 revision 2020-02-14 {

 description "Initial revision";

 }

 grouping rRMPolicyMemberGrp {

 description "This data type represents an RRM Policy member that will be part of a

 rRMPolicyMemberList. A RRMPolicyMember is defined by its pLMNId and sNSSAI (S-NSSAI).

 The members in a rRMPolicyMemberList are assigned a specific amount of RRM resources

 based on settings in RRMPolicy.";

 uses types3gpp:PLMNId;

 leaf sNSSAI {

 type types3gpp:SNssai;

 }

 }

 typedef QuotaType {

 type enumeration {

 enum STRICT;

 enum FLOAT;

 }

 }

 typedef CyclicPrefix {

 type enumeration {

 enum NORMAL;

 enum EXTENDED;

 }

 }

 grouping RRMPolicy\_Grp {

 description "This IOC represents the properties of an abstract RRMPolicy. The RRMPolicy\_ IOC

 needs to be subclassed to be instantiated. It defines two attributes apart from those

 inherited from Top IOC, the resourceType attribute defines type of resource (PRB, RRC

 connected users, DRB usage etc.) and the rRMPolicyMemberList attribute defines the

 RRMPolicyMember(s)that are subject to this policy. An RRM resource (defined in resourceType

 attribute) is located in NRCellDU, NRCellCU, GNBDUFunction, GNBCUCPFunction or in

 GNBCUUPFunction. The RRMPolicyRatio IOC is one realization of a RRMPolicy\_ IOC, see the

 inheritance in TS 28.541 Figure 4.2.1.2-1. This RRM framework allows adding new policies,

 both standardized (like RRMPolicyRatio) or as vendor specific, by inheriting from the

 abstract RRMPolicy\_ IOC.";

 leaf resourceType {

 description "The resourceType attribute defines type of resource (PRB, RRC connected users,

 DRB usage etc.) that is subject to policy. Valid values are 'PRB', 'RRC' or 'DRB'";

 mandatory true;

 type string;

 }

 list rRMPolicyMemberList{

 description "It represents the list of RRMPolicyMember (s) that the managed object

 is supporting. A RRMPolicyMember <<dataType>> include the PLMNId <<dataType>>

 and S-NSSAI <<dataType>>."

 min-elements 1;

   key "idx";

   leaf idx { type uint32; }

 uses rRMPolicyMemberGrp;

 }

 } // grouping

 grouping RRMPolicyRatioGrp {

 description "Represents the RRMPolicyRatio concrete IOC.";

 uses RRMPolicy\_Grp; \_ // Inherits RRMPolicy\_

 leaf quotaType {

 description "The type of the quota which allows to allocate resources as

 strictly usable for defined slice(s) (strict quota) or allows that

 resources to be used by other slice(s) when defined slice(s) do not

 need them (float quota).";

 mandatory true;

 type QuotaType;

 }

 leaf rRMPolicyMaxRatio {

 description "The RRM policy setting the maximum percentage of radio

 resources to be allocated to the corresponding S-NSSAI list. This

 quota can be strict or float quota. Strict quota means resources are

 not allowed for other sNSSAIs even when they are not used by the

 defined sNSSAIList. Float quota resources can be used by other sNSSAIs

 when the defined sNSSAIList do not need them. Value 0 indicates that

 there is no maximum limit.";

 mandatory true;

 type uint8 { range "0..100"; }

 units percent;

 }

 leaf rRMPolicyMarginMaxRatio {

 description "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 specified S-NSSAI list. With the margin ratio, unused resources

 of the maximum resource quota can be allocated to other S-NSSAIs when

 the free resources are more than resource amount indicated by the

 margin. The margin resource quota can only be used for the specific

 S-NSSAI list. Value 0 indicates that no margin is used.";

 type uint8 { range "0..100"; }

 units percent;

 }

 leaf rRMPolicyMinRatio {

 description "The RRM policy setting the minimum percentage of radio

 resources to be allocated to the corresponding S-NSSAI list. This

 quota can be strict or float quota. Strict quota means resources are

 not allowed for other sNSSAIs even when they are not used by the

 defined sNSSAIList. Float quota resources can be used by other sNSSAIs

 when the defined sNSSAIList do not need them. Value 0 indicates that

 there is no minimum limit.";

 mandatory true;

 type uint8 { range "0..100"; }

 units percent;

 }

 leaf rRMPolicyMarginMinRatio {

 description "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 specified S-NSSAI list. With the margin ratio, unused resources

 of the minimum resource quota can be allocated to other S-NSSAIs when

 the free resources are more than resource amount indicated by the

 margin. The margin resource quota can only be used for the specific

 S-NSSAI list. Value 0 indicates that no margin is used. Value 0

 indicates that there is no minimum limit.";

 type uint8 { range "0..100"; }

 units percent;

 }

 list RRMPolicyRatio {

 description " The RRMPolicyRatio IOC is one realization of a RRMPolicy\_ IOC, see the

 inheritance in Figure 4.2.1.2-1. This RRM framework allows adding new policies, both

 standardized (like RRMPolicyRatio) or as vendor specific, by inheriting from the

 abstract RRMPolicy\_ IOC. For details see subclause 4.3.36.";

 key id;

 uses top3gpp:Top\_Grp;

 container attributes {

 uses RRMPolicyRatioGrp;

 }

 }

}

|  |
| --- |
| **Next modified section** |

E.5.Y module \_3gpp-nr-nrm-common@2020-02-14.yang

module \_3gpp-nr-nrm-common {

 yang-version 1.1;

 namespace "urn:3gpp:sa5:3gpp-nr-nrm-common";

 prefix "nrcommon3gpp";

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

 organization "3GPP SA5";

 description "Defines the YANG mapping of comon parts for 3GPP TS 28.541.";

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

 revision 2020-02-14 {

 description "Initial revision";

 }

 grouping PLMNInfo {

 description "The PLMNInfo data type define a S-NSSAI member in a specific PLMNId, and it have

 two attributes PLMNId and S-NSSAI (PLMNId, S-NSSAI). The PLMNId represents a data type that

 is comprised of mcc (mobile country code) and mnc (mobile network code), (See TS 23.003

 subclause 2.2 and 12.1) and S-NSSAI represents an data type, that is comprised of an SST

 (Slice/Service type) and an optional SD (Slice Differentiator) field, (See TS 23.003 [13]).";

 uses types3gpp:PLMNId;

 leaf sNssai {

 type types3gpp:SNssai;

 }

 }

}

|  |
| --- |
| **Next modified section** |

E.7 Mount information

At the mountpoint "children-of-SubNetwork" in the YANG module \_3gpp-common-subnetwork, the following YANG modules may be mounted if the class ManagedElement and the underlying hierarchy is contained under a SubNetwork.

See [45] that describes the mechanism that adds the schema trees defined by a set of YANG modules onto a mount point defined in the schema tree in another YANG module.

\_3gpp-common-ep-rp.yang

\_3gpp-common-managed-element.yang

\_3gpp-common-managed-function.yang

\_3gpp-common-measurements.yang

\_3gpp-common-subnetwork.yang

\_3gpp-common-top.yang

\_3gpp-common-yang-extensions.yang

\_3gpp-common-yang-types.yang

\_3gpp-nr-nrm-bwp.yang

\_3gpp-nr-nrm-ep.yang

\_3gpp-nr-nrm-eutrancellrelation.yang

\_3gpp-nr-nrm-gnbcucpfunction.yang

\_3gpp-nr-nrm-gnbcuupfunction.yang

\_3gpp-nr-nrm-gnbdufunction.yang

\_3gpp-nr-nrm-nrcellcu.yang

\_3gpp-nr-nrm-nrcelldu.yang

\_3gpp-nr-nrm-nrcellrelation.yang

\_3gpp-nr-nrm-nrfreqrelation.yang

\_3gpp-nr-nrm-nrfrequency.yang

\_3gpp-nr-nrm-nrnetwork.yang

\_3gpp-nr-nrm-nrsectorcarrier.yang

\_3gpp-nr-nrm-beam.yang

\_3gpp-nr-nrm-commonbeamformingfunction.yang

\_3gpp-nr-nrm-rrmpolicy.yang

ietf-inet-types.yang

ietf-yang-types.yang

If the above files are mounted the yang files described in clause H.7 shall also be mounted.

|  |
| --- |
| **End of modified section** |