**3GPP TSG-SA5 Meeting #131-e *S5-203331***

**Online, , 25th May 2020 - 3rd Jun 2020**

|  |
| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **28.541** | **CR** | **0289** | **rev** | **-** | **Current version:** | **16.4.1** |  |
|  |
| *For* [***HELP***](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:***  | CR TS 28.541 stage3 add the NRM fragment for SON management |
|  |  |
| ***Source to WG:*** | Huawei, Orange, Intel |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | SON\_5G, EE\_5G |  | ***Date:*** | 2020-05-15 |
|  |  |  |  |  |
| ***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:*** | According to the CR S5-203316 in SA5, the new IOC and attribute definitions for DANRManagementFunction, DESManagementFunction, CPCIConfigurationFunction, CESManagementFunction, DRACHOptimizationFunction, DMobilityRobustnessOptimizationFunction and DPCIConfigurationFunction IOCs are added. In order to enable the management of distributed SON functions and centralized SON functions, stage 3 solution sets for the SON NRM are added. |
|  |  |
| ***Summary of change:*** | Add stage 3 solution sets for the SON NRM. |
|  |  |
| ***Consequences if not approved:*** | The management of SON functions would not be possible. |
|  |  |
| ***Clauses affected:*** | C.4.3, D.4.3, E.5.16, E.5.19, E.5.20, E.5.x1, E.5.x2, E.5.x3, E.5.x4, E.5.x5, E.5.x6, E.5.x7, |
|  |  |
|  | **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:*** | It has been checked locally and it is not included in ETSI Forge.Related to the stage2 CR S5-203316.Related to the stage3 CR S5-203371. |
|  |  |
| ***This CR's revision history:*** |  |

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| --- |
| **First 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">

 <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"/>

 <enumeration value="dB-20"/>

 <enumeration value="dB-18"/>

 <enumeration value="dB-16"/>

 <enumeration value="dB-14"/>

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 <enumeration value="dB-6"/>

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 <enumeration value="dB18"/>

 <enumeration value="dB20"/>

 <enumeration value="dB22"/>

 <enumeration value="dB24"/>

 </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">

 <restriction base="short">

 <minInclusive value="-24"/>

 <maxInclusive value="24"/>

 </restriction>

</simpleType>

<simpleType name="qQualMin">

 <restriction base="integer">

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</simpleType>

<simpleType name="qRxLevMin">

 <restriction base="integer">

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 <maxInclusive value="-44"/>

 </restriction>

</simpleType>

<simpleType name="Thresxhighp">

 <restriction base="integer">

 <minInclusive value="0"/>

 <maxInclusive value="62"/>

 </restriction>

</simpleType>

<simpleType name="Threshxhighq">

 <restriction base="integer">

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 <maxInclusive value="31"/>

 </restriction>

</simpleType>

<simpleType name="Threshxlowp">

 <restriction base="integer">

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 <maxInclusive value="62"/>

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</simpleType>

<simpleType name="Threshxlowq">

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<simpleType name="Treselectionnr">

 <restriction base="integer">

 <minInclusive value="0"/>

 <maxInclusive value="7"/>

 </restriction>

</simpleType>

<simpleType name="Treselectionnrsfhigh">

 <restriction base="string">

 <enumeration value="25"/>

 <enumeration value="50"/>

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 <enumeration value="100"/>

 </restriction>

</simpleType>

<simpleType name="Treselectionnrsfmedium">

 <restriction base="string">

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 <enumeration value="50"/>

 <enumeration value="75"/>

 <enumeration value="100"/>

 </restriction>

</simpleType>

<simpleType name="Absolutefrequencyssb">

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 <minInclusive value="0"/>

 <maxInclusive value="3279165"/>

 </restriction>

</simpleType>

<simpleType name="Ssbsubcarrierspacing">

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 <enumeration value="240"/>

 </restriction>

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<simpleType name="Multifrequencybandlistnr">

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 <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">

 <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">

 <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"/>

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 <complexType name="PLMNInfoListType">

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

 </sequence>

</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">

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 <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">

 <sequence>

 <element name="ueAccDelayProbilityDistPerSSB" type="sp:UeAccDelayProbilityDistPerSSB" maxOccurs="4"/>

 </sequence>

</complexType>

<complexType name="UeAccProbilityDistPerSSB">

 <sequence>

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

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

 </sequence>

</complexType>

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 </sequence>

</complexType>

<simpleType name="NRPci">

 <restriction base="unsignedShort">

 <maxInclusive value="1007"/>

 </restriction>

</simpleType>

<complexType name="NRPciList">

 <sequence>

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

 </sequence>

</complexType>

<simpleType name="NRPci">

 <restriction base="unsignedShort">

 <maxInclusive value="1007"/>

 </restriction>

</simpleType>

<complexType name="CSonPciList">

 <sequence>

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

 </sequence>

</complexType>

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

 <complexType>

 <complexContent>

 <extension base="xn:NrmClass">

 <sequence>

 <element name="attributes">

 <complexType>

 <all>

 <!-- 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"/>

 <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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 <!-- 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="gnbCuName" type=" nn:GnbName" minOccurs="0"/>

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

 <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"/>

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

 </choice>

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

 <element ref="DESManagementFunction"/>

 <element ref="DRACHOptimizationFunction"/>

 <element ref="DMROFunction"/>

 <element ref="DANRManagementFunction"/>

 </choice>

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

 <element ref="xn:MeasurementControl"/>

 </choice>

 </sequence>

 </extension>

 </complexContent>

 </complexType>

</element>

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

 <complexType>

 <complexContent>

 <extension base="xn:NrmClass">

 <sequence>

 <element name="attributes">

 <complexType>

 <all>

 <!-- 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="gNBCUUPId" type="nn:GnbCuupId "/>

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

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

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 </element>

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

 <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"/>

 </choice>

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

 <element ref="xn:MeasurementControl"/>

 </choice>

 </sequence>

 </extension>

 </complexContent>

 </complexType>

</element>

<element name="NRCellCU">

 <complexType>

 <complexContent>

 <extension base="xn:NrmClass">

 <sequence>

 <element name="attributes">

 <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="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"/>

 </all>

 </complexType>

 </element>

 <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"/>

 </choice>

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

 <element ref="sp:EnergySavingProperties"/>

 <element ref="sp:ESPolicies"/>

 </choice>

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

 <element ref= "RRMPolicyRatio"/>

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

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 <extension base="xn:NrmClass">

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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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 <extension base="xn:NrmClass">

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 <element name="attributes">

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

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

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<element name="CPCIConfigurationFunction">

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 <element name="attributes">

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 <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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|  |
| --- |
| **Next change** |

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

openapi: 3.0.1

info:

 title: NR NRM

 version: 16.4.0

 description: >-

 OAS 3.0.1 specification of the NR NRM

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externalDocs:

 description: 3GPP TS 28.541 V16.4.0; 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'

 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

 RrmPolicyMember:

 type: object

 properties:

 plmnId:

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

 snssai:

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

 RrmPolicyMemberList:

 type: array

 items:

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

 LocalAddress:

 type: object

 properties:

 ipv4Address:

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

 ipv6Address:

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

 vlanId:

 type: integer

 minimum: 0

 maximum: 4096

 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

#-------- 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'

 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'

 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'

 aggressorSetID:

 type: integer

 victimSetID:

 type: integer

 - $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'

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

 xnWhiteList:

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

 x2XnHOBlackList:

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

 mappingSetIDBackhaulAddress:

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

 - $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'

 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'

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

 - type: object

 properties:

 RRMPolicyRatio:

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

 DPCIConfigurationFunction:

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

 CPCIConfigurationFunction:

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

 NRFrequency-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 absoluteFrequencySSB:

 type: integer

 minimum: 0

 maximum: 3279165

 ssbSubCarrierSpacing:

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

 multiFrequencyBandListNR:

 type: integer

 minimum: 1

 maximum: 256

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

 EUtranFrequency-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

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

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

 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:

 quotaType:

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

 rRMPolicyMaxRatio:

 type: integer

 rRMPolicyMarginMaxRatio:

 type: integer

 rRMPolicyMinRatio:

 type: integer

 rRMPolicyMarginMinRatio:

 type: integer

 NRCellRelation-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - 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

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

 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:

 allOf:

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

 - 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'

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

 EUtranFreqRelation-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'

 DANRManagementFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 intrasystemANRManagementSwitch:

 type: boolean

 intersystemANRManagementSwitch:

 type: boolean

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

 DESManagementFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - 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

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

 DRACHOptimizationFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - 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:

 allOf:

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

 - type: object

 properties:

 dmroControl:

 type: boolean

 maximumDeviationHoTrigger:

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

 minimumTimeBetweenHoTriggerChange:

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

 tstoreUEcntxt:

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

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

 DPCIConfigurationFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 dPciConfigurationControl:

 type: boolean

 nRPciList:

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

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

 CPCIConfigurationFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 cPciConfigurationControl:

 type: boolean

 cSonPciList:

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

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

 CESManagementFunction-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 allOf:

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

 - type: object

 properties:

 cesSwitch:

 type: boolean

 energySavingControl:

 type: string

 enum:

 - toBeEnergySaving

 - toBeNotEnergySaving

 energySavingState:

 type: string

 enum:

 - isNotEnergySaving

 - isEnergySaving

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

 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'

 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'

 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/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.5.16 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";

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

 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 2020-05-08 { 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 DESManagementFunction {

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

 }

 feature DANRManagementFunction {

 description "Classs representing D-SON function of ANR Management feature";

 }

 feature DRACHOptimizationFunction {

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

 }

 feature DMROFunction {

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

 }

 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;

 }

 }

}

## 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 2020-03-12 { reference "SP-200233 S5-201547" ; }

 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"; }

 config false;

 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";

 }

 leaf aggressorSetID {

 type uint32 { range "0..4194304"; }

 config false;

 description "Indicates the associated aggressor gNB Set ID of the cell

 Valid when Remote Interference Management function is supported.";

 reference "3GPP TS 38.211 subclause 7.4.1.6";

 }

 leaf victimSetID {

 type uint32 { range "0..4194304"; }

 config false;

 description "Indicates the associated victim gNB Set ID of the cell

 Valid when Remote Interference Management function is supported.";

 reference "3GPP TS 38.211 subclause 7.4.1.6";

 }

 }

 augment "/me3gpp:ManagedElement" {

 list GNBDUFunction {

 key id;

 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;

 }

 }

}

## 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";

 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 2020-05-08 { 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 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;

 }

 }

}

## 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";

 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 2020-05-08 { 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 DPCIConfigurationFunction {

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

 }

 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, 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;

 }

 }

}

## E.5.x1 module \_3gpp-nr-nrm-danrmanagementfunction.yang

module \_3gpp-nr-nrm-danrmanagementfunction {

 yang-version 1.1;

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

 prefix "danrmanagementfunction3gpp";

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

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

 grouping DANRManagementFunctionGrp {

 description "Represents the DANRManagementFunction IOC.";

 reference "3GPP TS 28.541";

 uses top3gpp:Top\_Grp;

 leaf intrasystemANRManagementSwitch {

 description "This attribute determines whether the intra-system ANR function is activated or deactivated.";

 type boolean;

 }

 leaf intersystemANRManagementSwitch {

 description "This attribute determines whether the inter-system ANR function is activated or deactivated.";

 type boolean;

 }

 }

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

 if-feature gnbcucp3gpp:DANRManagementFunction;

 uses DANRManagementFunctionGrp;

 }

}

## E.5.x2 module \_3gpp-nr-nrm-desmanagementfunction.yang

module \_3gpp-nr-nrm-desmanagementfunction {

 yang-version 1.1;

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

 prefix "desmanagementfunction3gpp";

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

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

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

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

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

 organization "3GPP SA5";

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

 description "Defines the YANG mapping of the DESManagementFunction 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 2020-05-08 { reference S5-203316; }

 grouping DESManagementFunctionGrp {

 description "Represents the DESManagementFunction IOC.";

 reference "3GPP TS 28.541";

 uses top3gpp:Top\_Grp;

 leaf desSwitch {

 description "This attribute determines whether the Distributed SON or Domain-Centralized SON energy saving function is enabled or disabled.";

 type boolean;

 }

 list intraRatEsActivationOriginalCellLoadParameters {

 key loadThreshold;

 description "This attributes is relevant, if the cell acts as an original cell.This attribute indicates the traffic load threshold and the time duration, which are used by distributed ES algorithms to allow a cell to enter the energySaving state.";

 leaf loadThreshold {type int32;}

 container attributes {

 uses IntraRatEsActivationOriginalCellLoadParametersGrp;

 }

 }

 list intraRatEsActivationCandidateCellsLoadParameters {

 key loadThreshold;

 description "This attribute indicates the traffic load threshold and the time duration, which are used by distributed ES algorithms level to allow a n ‘original’ cell to enter the energySaving state.";

 leaf loadThreshold {type int32;}

 container attributes {

 uses IntraRatEsActivationCandidateCellsLoadParametersGrp;

 }

 }

 list intraRatEsDeactivationCandidateCellsLoadParameters {

 key loadThreshold;

 description "This attributes is relevant, if the cell acts as a candidate cell.This attribute indicates the traffic load threshold and the time duration which is used by distributed ES algorithms to allow a cell to leave the energySaving state.";

 leaf loadThreshold {type int32;}

 container attributes {

 uses IntraRatEsDeactivationCandidateCellsLoadParametersGrp;

 }

 }

 list esNotAllowedTimePeriod {

 key startTimeandendTime;

 description "This attribute indicates a list of time periods during which inter-RAT energy saving is not allowed.";

 leaf startTimeandendTime {type string;}

 container attributes {

 uses EsNotAllowedTimePeriodGrp;

 }

 }

 list interRatEsActivationOriginalCellParameters {

 key loadThreshold;

 description "This attribute indicates the traffic load threshold and the time duration, which are used by distributed inter-RAT ES algorithms to allow an original cell to enter the energySaving state.";

 leaf loadThreshold {type int32;}

 container attributes {

 uses InterRatEsActivationOriginalCellParametersGrp;

 }

 }

 list interRatEsActivationCandidateCellParameters {

 key loadThreshold;

 description "This attribute indicates the traffic load threshold and the time duration, which are used by distributed inter-RAT ES algorithms to allow an original cell to enter the energySaving state.";

 leaf loadThreshold {type int32;}

 container attributes {

 uses InterRatEsActivationCandidateCellParametersGrp;

 }

 }

 list interRatEsDeactivationCandidateCellParameters {

 key loadThreshold;

 description "This attribute indicates the traffic load threshold and the time duration which is used by distributed inter-RAT ES algorithms to allow an original cell to leave the energySaving state.";

 leaf loadThreshold {type int32;}

 container attributes {

 uses InterRatEsDeactivationCandidateCellParametersGrp;

 }

 }

 leaf energySavingState {

 description "Specifies the status regarding the energy saving in the cell.";

 type enumeration {

 enum isNotEnergySaving;

 enum isEnergySaving;

 }

 }

 leaf isProbingCapable {

 description " This attribute indicates whether this cell is capable of performing the ES probing procedure.";

 type enumeration{

 enum yes;

 enum no;

 }

 }

 }

 grouping IntraRatEsActivationOriginalCellLoadParametersGrp {

 description "Represents the the traffic load threshold and the time duration.";

 leaf loadThreshold {

 description "This attribute is used by distributed ES algorithms to allow a cell to enter the energySaving state.";

 type int32 { range "0..10000"; }

 units "1";

 }

 leaf timeDuration {

 description " The time duration indicates how long the load needs to have been below the threshold.";

 type int32 { range "0..900"; }

 units "1";

 }

 }

 grouping IntraRatEsActivationCandidateCellsLoadParametersGrp {

 description "Represents the the traffic load threshold and the time duration.";

 leaf loadThreshold {

 description "This attribute is used by distributed ES algorithms to allow a cell to enter the energySaving state.";

 type int32 { range "0..10000"; }

 units "1";

 }

 leaf timeDuration {

 description " The time duration indicates how long the load needs to have been below the threshold.";

 type int32 { range "0..900"; }

 units "1";

 }

 }

 grouping IntraRatEsDeactivationCandidateCellsLoadParametersGrp {

 description "Represents the the traffic load threshold and the time duration.";

 leaf loadThreshold {

 description "This attribute is used by distributed ES algorithms to allow a cell to enter the energySaving state.";

 type int32 { range "0..10000"; }

 units "1";

 }

 leaf timeDuration {

 description " The time duration indicates how long the load needs to have been below the threshold.";

 type int32 { range "0..900"; }

 units "1";

 }

 }

 grouping EsNotAllowedTimePeriodGrp {

 description "Represents the the traffic load threshold and the time duration.";

 leaf startTimeandendTime {

 description "This field indicate valid UTC time.";

 type string;

 }

 leaf periodOfDay {

 description "This field indicate the period of day.";

 type string;

 }

 leaf daysOfWeekList {

 description "This field indicate the list of weekday.";

 type string;

 }

 leaf listoftimeperiods {

 description "This field indicate the list of time periods.";

 type string;

 }

 }

 grouping InterRatEsActivationOriginalCellParametersGrp {

 description "Represents the the traffic load threshold and the time duration.";

 leaf loadThreshold {

 description "The time duration indicates how long the traffic load (both for UL and DL) needs to have been below the threshold.";

 type int32 { range "0..10000"; }

 units "1";

 }

 leaf timeDuration {

 description " The time duration indicates how long the load needs to have been below the threshold.";

 type int32 { range "0..900"; }

 units "1";

 }

 }

 grouping InterRatEsActivationCandidateCellParametersGrp {

 description "Represents the the traffic load threshold and the time duration.";

 leaf loadThreshold {

 description "This attribute is used by distributed ES algorithms to allow a cell to enter the energySaving state.";

 type int32 { range "0..10000"; }

 units "1";

 }

 leaf timeDuration {

 description "The time duration indicates how long the traffic load (both for UL and DL) in the candidate cell needs to have been below the threshold before any original cells which will be provided backup coverage by the candidate cell enters energySaving state.";

 type int32 { range "0..900"; }

 units "1";

 }

 }

 grouping InterRatEsDeactivationCandidateCellParametersGrp {

 description "Represents the the traffic load threshold and the time duration.";

 leaf loadThreshold {

 description "This attribute is used by distributed ES algorithms to allow a cell to enter the energySaving state.";

 type int32 { range "0..10000"; }

 units "1";

 }

 leaf timeDuration {

 description "The time duration indicates how long the traffic load (either for UL or DL) in the candidate cell needs to have been above the threshold to wake up one or more original cells which have been provided backup coverage by the candidate cell.";

 type int32 { range "0..900"; }

 units "1";

 }

 }

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

 if-feature nrcellcu3gpp:DESManagementFunction;

 uses DESManagementFunctionGrp;

 }

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

 if-feature gnbcucp3gpp:DESManagementFunction;

 uses DESManagementFunctionGrp;

 }

 augment "/me3gpp:ManagedElement" {

 if-feature me3gpp:DESManagementFunction;

 uses DESManagementFunctionGrp;

 }

 augment "/subnet3gpp:SubNetwork" {

 if-feature subnet3gpp:DESManagementFunction;

 uses DESManagementFunctionGrp;

 }

}

## E.5.x3 module \_3gpp-nr-nrm-drachoptimizationfunction.yang

module \_3gpp-nr-nrm-drachoptimizationfunction {

 yang-version 1.1;

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

 prefix "drachoptimizationfunction3gpp";

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

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

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

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

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

 organization "3GPP SA5";

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

 description "Defines the YANG mapping of the DRACHOptimizationFunction 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 2020-05-08 { reference S5-203316; }

 grouping DRACHOptimizationFunctionGrp {

 description "Represents the DRACHOptimizationFunction IOC.";

 reference "3GPP TS 28.541";

 uses top3gpp:Top\_Grp;

 list ueAccProbilityDistPerSSB {

 key targetProbability;

 description "This is a list of target Access Probability (APn) for the RACH optimization function.";

 leaf targetProbability {type TargetProbability;}

 container attributes {

 uses UeAccProbilityDistPerSSBGrp;

 }

 }

 list ueAccDelayProbilityDistPerSSB {

 key targetProbability;

 description "This is a list of target Access Delay probability (ADP) for the RACH optimization function.";

 leaf targetProbability {type TargetProbability;}

 container attributes {

 uses UeAccDelayProbilityDistPerSSBGrp;

 }

 }

 leaf drachOptimizationControl {

 description "This attribute determines whether the RACH Optimization function is enabled or disabled.";

 type boolean;

 }

 }

 typedef TargetProbability {

 type enumeration {

 enum 25;

 enum 50;

 enum 75;

 enum 90;

 }

 }

 typedef Numberofpreamblessent {

 type int32 { range "1..200"; }

 units "1";

 }

 typedef Accessdelay {

 type int32 { range "10..560"; }

 units "1";

 }

 grouping UeAccProbilityDistPerSSBGrp {

 description "Represents the target Access Probability (APn) for the RACH optimization function.";

 leaf targetProbability {

 description "This attribute determines the target Probability.";

 mandatory true;

 type TargetProbability;

 }

 leaf numberofpreamblessent {

 description "This attribute determines the number of preambles sent.";

 mandatory true;

 type Numberofpreamblessent;

 }

 }

 grouping UeAccDelayProbilityDistPerSSBGrp {

 description "Represents the target Access Delay probability (ADP) for the RACH optimization function.";

 leaf targetProbability {

 description "This attribute determines the target Probability.";

 mandatory true;

 type TargetProbability;

 }

 leaf accessdelay {

 description "This attribute determines the access delay.";

 mandatory true;

 type Accessdelay;

 }

 }

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

 if-feature nrcellcu3gpp:DRACHOptimizationFunction;

 uses DRACHOptimizationFunctionGrp;

 }

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

 if-feature gnbcucp3gpp:DRACHOptimizationFunction;

 uses DRACHOptimizationFunctionGrp;

 }

 augment "/me3gpp:ManagedElement" {

 if-feature me3gpp:DRACHOptimizationFunction;

 uses DRACHOptimizationFunctionGrp;

 }

 augment "/subnet3gpp:SubNetwork" {

 if-feature nrcellcu3gpp:DRACHOptimizationFunction;

 uses DRACHOptimizationFunctionGrp;

 }

}

## E.5.x4 module \_3gpp-nr-nrm-dmrofunction.yang

module \_3gpp-nr-nrm-dmrofunction {

 yang-version 1.1;

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

 prefix "dmrofunction3gpp";

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

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

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

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

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

 organization "3GPP SA5";

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

 description "Defines the YANG mapping of the DMROFunction 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 2020-05-08 { reference S5-203316; }

 grouping DMROFunctionGrp {

 description "Represents the DMROFunction IOC.";

 reference "3GPP TS 28.541";

 uses top3gpp:Top\_Grp;

 leaf maximumDeviationHoTrigger {

 description "This parameter defines the maximum allowed absolute deviation of the Handover Trigger, from the default point of operation.";

 type int32 { range "-20..20"; }

 units "0.5";

 }

 leaf minimumTimeBetweenHoTriggerChange {

 description "This parameter defines the minimum allowed time interval between two Handover Trigger change performed by MRO. This is used to control the stability and convergence of the algorithm.";

 type int32 { range "0..604800"; }

 units "1";

 }

 leaf tstoreUEcntxt {

 description "The timer used for detection of too early HO, too late HO and HO to wrong cell.";

 type int32 { range "0..1023"; }

 units "100";

 }

 leaf dmroControl {

 description " This attribute determines whether the MRO function is enabled or disabled.";

 type boolean;

 }

 }

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

 if-feature nrcellcu3gpp:DMROFunction;

 uses DMROFunctionGrp;

 }

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

 if-feature gnbcucp3gpp:DMROFunction;

 uses DMROFunctionGrp;

 }

 augment "/me3gpp:ManagedElement" {

 if-feature me3gpp:DMROFunction;

 uses DMROFunctionGrp;

 }

 augment "/subnet3gpp:SubNetwork" {

 if-feature subnet3gpp:DMROFunction;

 uses DMROFunctionGrp;

 }

}

## E.5.x5 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-nrcelldu { prefix nrcelldu3gpp; }

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

 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 2020-05-08 { 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/gnbdu3gpp:GNBDUFunction/nrcelldu3gpp:NRCellDU" {

 if-feature nrcelldu3gpp:DPCIConfigurationFunction;

 uses DPCIConfigurationFunctionGrp;

 }

 augment "/me3gpp:ManagedElement" {

 if-feature me3gpp:DPCIConfigurationFunction;

 uses DPCIConfigurationFunctionGrp;

 }

 augment "/subnet3gpp:SubNetwork" {

 if-feature subnet3gpp:DPCIConfigurationFunction;

 uses DPCIConfigurationFunctionGrp;

 }

}

## E.5.x6 module \_3gpp-nr-nrm-cpciconfigurationfunction.yang

module \_3gpp-nr-nrm-cpciconfigurationfunction {

 yang-version 1.1;

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

 prefix "cpciconfigurationfunction3gpp";

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

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

 import \_3gpp-nr-nrm-nrcelldu { prefix nrcelldu3gpp; }

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

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

 grouping CPCIConfigurationFunctionGrp {

 description "Represents the CPCICONFIGURATIONFunction IOC.";

 reference "3GPP TS 28.541";

 uses top3gpp:Top\_Grp;

 list cSonPciList {

 key NRPci;

 description " This holds a list of physical cell identities that can be assigned to the pci attribute by gNB. The assignment algorithm is not specified. This attribute shall be supported if and only if the C-SON PCI configuration is supported.";

 leaf NRPci {type int32;}

 container attributes {

 uses CSonPciListGrp;

 }

 }

 leaf cPciConfigurationControl {

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

 type boolean;

 }

 }

 grouping CSonPciListGrp {

 description "Represents the C-SON 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/gnbdu3gpp:GNBDUFunction/nrcelldu3gpp:NRCellDU" {

 if-feature nrcelldu3gpp:CPCIConfigurationFunction;

 uses CPCIConfigurationFunctionGrp;

 }

 augment "/me3gpp:ManagedElement" {

 if-feature me3gpp:CPCIConfigurationFunction;

 uses CPCIConfigurationFunctionGrp;

 }

 augment "/subnet3gpp:SubNetwork" {

 if-feature subnet3gpp:CPCIConfigurationFunction;

 uses CPCIConfigurationFunctionGrp;

 }

}

## E.5.x7 module \_3gpp-nr-nrm-cesmanagementfunction.yang

module \_3gpp-nr-nrm-cesmanagementfunction {

 yang-version 1.1;

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

 prefix "cesmanagementfunction3gpp";

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

 grouping CESManagementFunctionGrp {

 description "Represents the CESManagementFunction IOC.";

 reference "3GPP TS 28.541";

 uses top3gpp:Top\_Grp;

 leaf cesSwitch {

 description "This attribute determines whether the Cross Domain-Centralized SON energy saving function is enabled or disabled.";

 type boolean;

 }

 leaf energySavingState {

 description "Specifies the status regarding the energy saving in the cell. If the value of energySavingControl is toBeEnergySaving, then it shall be tried to achieve the value isEnergySaving for the energySavingState. If the value of energySavingControl is toBeNotEnergySaving, then it shall be tried to achieve the value isNotEnergySaving for the energySavingState. ";

 type enumeration{

 enum isNotEnergySaving;

 enum isEnergySaving;

 }

 }

 leaf energySavingControl {

 description "This attribute allows the Cross Domain-Centralized SON energy saving function to initiate energy saving activation or deactivation.";

 type enumeration{

 enum toBeEnergySaving;

 enum toBeNotEnergySaving;

 }

 }

 }

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

 if-feature nrcellcu3gpp:CESManagementFunction;

 uses CESManagementFunctionGrp;

 }

 augment "/me3gpp:ManagedElement" {

 if-feature me3gpp:CESManagementFunction;

 uses CESManagementFunctionGrp;

 }

 augment "/subnet3gpp:SubNetwork" {

 if-feature subnet3gpp:CESManagementFunction;

 uses CESManagementFunctionGrp;

 }

}

|  |
| --- |
| **End of Changes** |