**3GPP TSG-SA5 Meeting #133-e *S5-205262rev1***

**Online, , 12th Oct 2020 - 21st Oct 2020**

|  |
| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **28.541** | **CR** | **0402** | **rev** | **-** | **Current version:** | **17.0.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

|  |
| --- |
|  |
| ***Title:***  | Correction of network slice NRM |
|  |  |
| ***Source to WG:*** | Ericsson LM |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | eNRM |  | ***Date:*** | 2020-10-02 |
|  |  |  |  |  |
| ***Category:*** | A |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | The slice NRM today is missing: * the distinction between service requirements and network slice capabilities.
* the ability to extend the network slice model in an interoperable way.
 |
|  |  |
| ***Summary of change:*** | The network slice NRM are updated to remove those shortcomings, the following enhancement:* NetworkSliceCapabilities <<datatype>> has been added.
* AdditionalDataSpec IOC has been added.
* AdditionalDataValue <<dataType>> has been added
* AdditionalData <<datatype>>has been added
* ServiceProfile updated with additionalServiceProfileDataList
* NetworkSlice IOC updated with networkSliceCapabilities and additionalNetworkSliceDataList
* Class diagram updated to include NetworkSliceCapabilities, AdditionalDataSpec AdditionalDataValue and AdditionalData
* Inheritance figure updated
 |
|  |  |
| ***Consequences if not approved:*** | It will not be possible:* to distinguish between service requirements and network slice capabilities.
* extend the network slice model in an interoperable way.
 |
|  |  |
| ***Clauses affected:*** | 6.2.1, 6.2.2, 6.3.1, 6.3.3, 6.3.y, 6.3.z, 6.3.a, 6.3.b, 6.4.1 |
|  |  |
|  | **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 28.541 CR 0404 (stage 3) |
|  |  |
| ***Other comments:*** | Proposed updates discussed in S5-205268 |
|  |  |
| ***This CR's revision history:*** |  |

|  |
| --- |
| First change |

##

## 6.2 Class diagram

### 6.2.1 Relationships



Figure 6.2.1-1: Network slice NRM fragment relationship

NOTE 1: The <<OpenModelClass>> NetworkService and <<OpenModelClass>> VNF are defined in [40].

NOTE 2: The target Network Service (NS) instance represents a group of VNFs and PNFs that are supporting the source network slice subnet instance.

NOTE 3: The instance tree of this NRM fragment would not contain the instances of NetworkService and VNF. However, the NetworkSliceSubNet instances would have an attribute holding the identifiers of NetworkService instances and the ManagedFunction instance would have an attribute holding identifiers of VNF instances.

|  |
| --- |
| Next change |

### 6.2.2 Inheritance





Figure 6.2.2-1: Network slice inheritance relationship

|  |
| --- |
| Next change |

### 6.3.1 NetworkSlice

#### 6.3.1.1 Definition

This IOC represents the properties of a network slice instance in a 5G network. For more information about the network slice instance, see 3GPP TS 28.531 [26].

#### 6.3.1.2 Attributes

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| operationalState | M | T | F | F | T |
| administrativeState | M | T | T | F | T |
| serviceProfileList | M | T | T | F | T |
| networkSliceCapabilities | M | T | F | T | T |
| additionalNetworkSliceDataList | O | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
| networkSliceSubnetRef | M | T | F | F | T |
| additionalDataSpecRef | O | T | F | T | T |

#### 6.3.1.3 Attribute constraints

None.

#### 6.3.1.4 Notifications

The common notifications defined

|  |
| --- |
| Next change |

### 6.3.3 ServiceProfile <<dataType>>

#### 6.3.3.1 Definition

This data type represents the properties of network slice related requirement that should be supported by the network slice instance in 5G network. The network slice can be tailored based on the specific requirements adhered to SLA agreed between Network Slice Customer (NSC) and Network Slice Provider (NSP), see clause 2 of [50]. A network slicing provider may add additional requirements not directly derived from SLA’s, associated to the provider internal [business] goals. The GST defined by GSMA (see [50]) and the service performance requirements defined in 3GPP TS 22.261 [28] and TS 22.104 [51] are all considered as input for the network slice related requirements.

#### 6.3.3.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| serviceProfileId | M | T | F | T | T |
| sNSSAIList | M | T | T | F | T |
| pLMNIdList | M | T | T | F | T |
| maxNumberofUEs | O | T | T | F | T |
| coverageArea | O | T | T | F | T |
| latency | O | T | T | F | T |
| uEMobilityLevel | O | T | T | F | T |
| resourceSharingLevel | O | T | T | F | T |
| sST | M | T | T | F | T |
| availability | O | T | T | F | T |
| delayTolerance | O | T | T | F | T |
| deterministicComm | O | T | T | F | T |
| dLThptPerSlice | O | T | T | F | T |
| dLThptPerUE | O | T | T | F | T |
| uLThptPerSlic | O | T | T | F | T |
| uLThptPerUE | O | T | T | F | T |
| maxPktSize | O | T | T | F | T |
| maxNumberofConns | O | T | T | F | T |
| kPIMonitoring | O | T | T | F | T |
| userMgmtOpen | O | T | T | F | T |
| v2XCommModels | O | T | T | F | T |
| termDensity | O | T | T | F | T |
| activityFactor | O | T | T | F | T |
| uESpeed | O | T | T | F | T |
| jitter | O | T | T | F | T |
| survivalTime | O | T | T | F | T |
| reliability | O | T | T | F | T |
| additionalServiceProfileDataList | O | T | T | F | T |

NOTE: The attributes in ServiceProfile represent mapped requirements from an NSC (e.g. an enterprise) to an NSP

|  |
| --- |
| Next change |

### 6.3.y AdditionalDataValue <<dataType>>

#### 6.3.y.1 Definition

This datatype defines the key value pair of additional attributes defined by the AdditionalDataSpec instance **r**eferred to by a NetworkSlice instance or a ServiceProfile instance.

#### 6.3.y.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| key | M | T | T | F | T |
| value | M | T | T | F | T |

#### 6.3.y.3 Attribute constraints

None.

#### 6.3.y.4 Notifications

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

|  |
| --- |
| Next change |

### 6.3.z NetworkSliceCapabilities <<dataType>>

#### 6.3.z.1 Definition

This datatype represents the capabilitites of a NetworkSlice instance in a 5G network. For more information about the NetworkSlice instance, see 3GPP TS 28.531 [26].

#### 6.3.z.2 Attributes

The NetworkSliceCapabilities includes attributes defining constraints to the associated ServiceProfile(s):

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
|  |  |  |  |  |  |

#### Note: Attributes to be added when discussed.

#### 6.3.z.3 Attribute constraints

None.

#### 6.3.z.4 Notifications

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

|  |
| --- |
| Next change |

### 6.3.a AdditionalDataSpec

#### 6.3.a.1 Definition

This IOC represents the properties of AdditionalDataSpec in a 5G network. The AdditionalDataSpec defines the meta data related to the additionalNetworkSliceDataList associated with a NetworkSlice instance and to the additionalServiceProfileDataList associated with the ServiceProfile(s) of the NetworkSlice instance.

#### 6.3.a.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| networkSliceDataList | M | T | F | T | T |
| serviceProfileDataList | M | T | F | T | T |

#### 6.3.a.3 Attribute constraints

None.

#### 6.3.a.4 Notifications

The common notifications defined in subclause 6.5 are valid for this IOC, without exceptions or additions.

|  |
| --- |
| Next change |

### 6.3.b AdditionalData <<dataType>>

#### 6.3.b.1 Definition

This datatype AdditionalData <<dataType>> represents an attribute and its meta data in the AdditionalDataSpec IOC. The AdditionalData includes attributes defining meta data associated with an attribute in the additionalNetworkSliceDataList of a NetworkSlice instance or associated with an attribute in the addtionalServiceProfileDataList of a ServiceProfile.

#### 6.3.b.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| attributeName | M | T | F | T | T |
| attributeMandatory | M | T | T | T | T |
| attributeType | M | T | T | T | T |
| attributeDefault | O | T | T | T | T |
| attributeMinValue | O | T | T | T | T |
| attributeMaxValue | O | T | T | T | T |
| attributeUnit | M | T | T | T | T |
| attributeDescription | O | T | T | T | T |
| **Attribute related to role** |  |  |  |  |  |

#### 6.3.b.3 Attribute constraints

None.

#### 6.3.b.4 Notifications

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

|  |
| --- |
| Next change |

## 6.4 Attribute definition

### 6.4.1 Attribute properties

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| availability | This parameter specifies the communication service availability requirement, expressed as a percentage. The communication service availability is defined in clause 3.1 of TS 22.261 [28]. | type: Realmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: True |
| serviceProfileId | A unique identifier of property of network slice related requirement should be supported by the network slice instance. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: True |
| sliceProfileId | A unique identifier of the property of network slice subnet related requirement should be supported by the network slice subnet instance. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: True |
| operationalState | It indicates the operational state of the network slice instance or the network slice subnet instance. It describes whether or not the resource is physically installed and working.allowedValues: "ENABLED", "DISABLED".The meaning of these values is as defined in 3GPP TS 28.625 [17] and ITU-T X.731 [18]. | type: ENUM multiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| administrativeState | It indicates the administrative state of the network slice instance or the network slice subnet instance. It describes the permission to use or prohibition against using the instance, imposed through the OAM services.allowedValues: “LOCKED”, “UNLOCKED”, SHUTTINGDOWN” The meaning of these values is as defined in 3GPP TS 28.625 [17] and ITU-T X.731 [18]. | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/A isNullable: False |
| nsInfo | This attribute contains the NsInfo of the NS instance corresponding to the network slice subnet instance. The NsInfo is described in clause 8.3.3.2.2 of ETSI GS NFV-IFA 013 [29]. | type: NsInfomultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: No default valueisNullable: True |
| nSInstanceId | This attribute specifies the identifier of NS instance corresponding to the network slice subnet instance.See clause 8.3.3.2.2 of ETSI GS NFV-IFA 013 [29]. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: No default valueisNullable: True |
| nsName | This attribute specifies the name of NS instance corresponding to the network slice subnet instance.See clause 8.3.3.2.2 of ETSI GS NFV-IFA 013 [29]. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: No default valueisNullable: True |
| description | This attribute specifies the description of NS instance corresponding to the network slice subnet instance.See clause 8.3.3.2.2 of ETSI GS NFV-IFA 013 [29]. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: TruedefaultValue: No default valueisNullable: True |
| category | This attribute specifies the category of a service requirement/attribute of GST (see GSMA NG.116 [50]).allowedValues: character, scalability | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/A isNullable: False |
| tagging | This attribute specifies the tagging of a service requirement/attribute of GST in character catogary (see GSMA NG.116 [50]).allowedValues: performance, function, operation | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/A isNullable: False |
| exposure | This attribute specifies exposure mode of a service requirement/attribute of GST (see GSMA NG.116 [50]).allowedValues: API, KPI | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/A isNullable: False |
| sNSSAIList | This parameter specifies the S-NSSAI list to be supported by the new NSI to be created or the existing NSI to be re-used.sNSSAList is defined in subclause 4.4.1 |  |
| perfReq | This parameter specifies the requirements to the network slice subnet in terms of the scenarios defined in the TS 22.261 [28] and TS 22.104 [51], i.e. the "performance requirements for high data rate and traffic density scenarios" in TS 22.261 [28], "periodic deterministic communication, aperiodic deterministic communication, non-deterministic communication, and mixed traffic" in TS 22.104 [51].It is a structure containing the following elements:- list of perfReqDepending on the sST value, the list of perfReq will be- list of eMBBPerfReqor- list of uRLLCPerfReqor- list of mIoTPerfReqNOTE 1: the list of mIoTPerfReq is not addressed in the present document.allowedValues:- list of eMBBPerfReq is a list of entries where an entry identifies the performance requirements to the network slice subnet in terms of the scenarios defined in the Table 7.1-1 of TS 22.261 [28]. An entry has the following attributes: expDataRateDL (Integer), expDataRateUL (Integer), areaTrafficCapDL (Integer), areaTrafficCapUL (Integer), overallUserDensity (Integer), activityFactor (Integer), (see table 7.1-1 of TS 22.261 [28]).- list of uRLLCPerfReq is a list of entries where an entry identifies the performance requirements to the network slice subnet in terms of the scenarios defined in clauses 5.2 through 5.5 of TS 22.104 [51]. An entry has the following attributes: cSAvailabilityTarget (Float), cSReliabilityMeanTime (String), , expDataRate (Integer), msgSizeByte (String), transferIntervalTarget (String), survivalTime (String), , , (see table 5.2-1, table 5.3-1, table 5.4-1 and table 5.5-1 of TS 22.104 [51]).NOTE 2: Limitation on attribute values in instances of SliceProfile is not addressed in the present document.NOTE 3: The attributes inside perfReq here need further breaking down to define requirements for each subnetwork under different SST values. | type: PerfReqmultiplicity: \*1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| maxNumberofUEs | An attribute specifies the maximum number of UEs may simultaneously access the network slice instance. | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| coverageAreaTAList | An attribute specifies a list of TrackingAreas where the NSI can be selected.allowedValues:Legacy TAC and Extended TAC are defined in clause 9.3.3.10 of TS 38.413 [5]. | type: Integermultiplicity: 1..\*isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| latency | An attribute specifies the packet transmission latency (millisecond) through the RAN, CN, and TN part of 5G network and is used to evaluate utilization performance of the end-to-end network slice instance. See clause 6.3.1 of 28.554 [27]. | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| uEMobilityLevel | An attribute specifies the mobility level of UE accessing the network slice instance. See 6.2.1 of TS 22.261 [28].allowedValues: stationary, nomadic, restricted mobility, fully mobility. | type: Enummultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: True |
| serviceProfile.resourceSharingLevel | An attribute specifies whether the resources to be allocated to the network slice instance may be shared with another network slice instance(s).allowedValues: shared, non-shared. | type: Enummultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: YesisNullable: True |
| sliceProfile.resourceSharingLevel | An attribute specifies whether the resources to be allocated to the network slice subnet instance may be shared with another network slice subnet instance(s).allowedValues: shared, non-shared. | type: Enummultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: YesisNullable: True |
| serviceProfileList | An attribute specifies a list of ServiceProfile (see clause 6.3.3) supported by the network slice instance | type: ServiceProfilemultiplicity: \*isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| sliceProfileList | An attribute specifies a list of SliceProfile (see clause 6.3.4) supported by the network slice subnet instance | type: SliceProfilemultiplicity: \*isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| sST | This parameter specifies the slice/service type for a ServiceProfile.See clause 5.15.2 of 3GPP TS 23.501 [2]. | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| delayTolerance | An attribute specifies the properties of service delivery flexibility, especially for the vertical services that are not chasing a high system performance. See clause 4.3 of TS 22.104 [51]. | type: DelayTolerancemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: False |
| DelayTolerance.support | An attribute specifies whether or not the NSI supports service delivery flexibility, especially for the vertical services that are not chasing a high system performance.allowedValues:"NOT SUPPORTED", "SUPPORTED". | type: <<enumeration>>multiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: False |
| deterministicComm | An attribute specifies the properties of the deterministic communication for periodic user traffic, see clause 4.3 of TS 22.104 [51]. | type: <<DeterminComm>>multiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: False |
| DeterminComm.availability | An attribute specifies whether or not the NSI supports deterministic communication for period user traffic.allowedValues:"NOT SUPPORTED", "SUPPORTED". | type: <<enumeration>>multiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: False |
| DeterminComm.periodicityList | An attribute specifies a list of periodicities supported by the NSI for deterministic communication. | type: Realmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: False |
| dLThptPerSlice | This attribute defines achievable data rate of the network slice in downlink that is available ubiquitously across the coverage area of the slice, refer NG.116 [50]. | type: DLThptmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| dLThptPerUE | This attribute defines data rate supported by the network slice per UE, refer NG.116 [50].  | type: DLThptmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| guaThpt | This attribute describes the guaranteed data rate. | type: Realmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: True |
| maxThpt | This attribute describes the maximum data rate. | type: Realmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: True |
| uLThptPerSlice | This attribute defines achievable data rate of the network slice in uplink that is available ubiquitously across the coverage area of the slice, refer NG.116 [50].  | type: ULThptmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| uLThptPerUE | This attribute defines data rate supported by the network slice per UE, refer NG.116 [50].  | type: ULThptmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| maxPktSize | This parameter specifies the maximum packet size supported by the network slice, refer NG.116 [50].  | type: MaxPktSizemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| MaxPktSize.maxsize | This parameter specifies the maximum packet size supported by the network slice, refer NG.116 [50].  | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| maxNumberofConns | This parameter defines the maximum number of concurrent sessions supported by the network slice, refer NG.116 [50].  | type: MaxNumberofConnsmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| MaxNumberofConns.nOofConn | This parameter defines the maximum number of concurrent sessions supported by the network slice, refer NG.116 [50].  | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| kPIMonitoring | An attribute specifies the name list of KQIs and KPIs available for performance monitoring. | type: KPIMonitoringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: True |
| KPIMonitoring. kPIList | An attribute specifies the name list of KQIs and KPIs available for performance monitoring. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: True |
| userMgmtOpen | An attribute specifies whether or not the NSI supports the capability for the NSC to manage their users or groups of users’ network services and corresponding requirements. | type: UserMgmtOpenmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: False |
| UserMgmtOpen.support | An attribute specifies whether or not the NSI supports the capability for the NSC to manage their users or groups of users’ network services and corresponding requirements.allowedValues:"NOT SUPPORTED", "SUPPORTED". | type: <<enumeration>>multiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: False |
| v2XCommModels | An attribute specifies whether or not the V2X communication mode is supported by the NSI. | type: V2XCommModemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: False |
| V2XCommMode.v2XMode | An attribute specifies whether or not the V2X communication mode is supported by the NSI.allowedValues:"NOT SUPPORTED", "SUPPORTED BY NR". | type: <<enumeration>>multiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: False |
| coverageArea | An attribute specifies the coverage area of the network slice, i.e. the geographic region where a 3GPP communication service is accessible, see Table 7.1-1 of TS 22.261 [28]) and NG.116 [50]. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: True |
| termDensity | An attribute specifies the overall user density over the coverage area of the network slice. See Table 7.1-1 of TS 22.261 [28]). | type: TermDensitymultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: True |
| TermDensity.density | An attribute specifies the overall user density over the coverage area of the network slice. See Table 7.1-1 of TS 22.261 [28]). | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: True |
| activityFactor | An attribute specfies the percentage value of the amount of simultaneous active UEs to the total number of UEs where active means the UEs are exchanging data with the network. See Table 7.1-1 of TS 22.261 [28]). | type: Realmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: True |
| uESpeed | An attribute specifies the maximum speed (in km/hour) supported by the network slice at which a defined QoS can be achieved. See Table 7.1-1 of TS 22.261 [28]). | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: True |
| jitter | An attribute specifies the deviation from the desired value to the actual value when assessing time parameters, see clause C.4.1 of TS 22.104 [51]. | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: True |
| survivalTime | An attribute specifies the time that an application consuming a communication service may continue without an anticipated message. See clause 5 of TS 22.104 [51]). | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: True |
| reliability | An attribute specifies in the context of network layer packet transmissions, percentage value of the amount of sent network layer packets successfully delivered to a given system entity within the time constraint required by the targeted service, divided by the total number of sent network layer packets, see TS 22.261 [28] and TS 22.104 [51]. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: True |
| NetworkSlice.networkSliceSubnetRef | This holds a DN of NetworkSliceSubnet relating to the NetworkSlice instance. | type: DNmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| NetworkSliceSubnet.networkSliceSubnetRef | This holds a list of DN of constituent NetworkSliceSubnet supporting NetworkSliceSubnet instance  | type: DNmultiplicity: \*isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| managedFunctionRef | This holds a list of DN of ManagedFunction instances supporting the NetworkSliceSubnet instance. | type: DNmultiplicity: \*isOrdered: N/AisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| ipAddress | This parameter specifies the IP address assigned to a logical transport interface/endpoint. It can be an IPv4 address (See RFC 791 [37]) or an IPv6 address (See RFC 2373 [38]).See note 1 | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| logicInterfaceId | This parameter specifies the identify of a logical transport interface. It could be VLAN ID (See IEEE 802.1Q [39]), MPLS Tag or Segment ID. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| nextHopInfoList | This parameter is used to identify ingress transport node. Each node can be identified by any of combination of IP address of next-hop router of transport network, system name, port name, IP management address of transport nodes. | type: Stringmultiplicity: \*isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: True |
| qosProfileRefList | This parameter specifies reference to QoS Profile for a logical transport interface. A QoS profile includes a set of parameters which are locally provisioned on both sides of a logical transport interface. | type: Stringmultiplicity: \*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: True |
| epApplicationRef | This parameter specifies a list of application level EPs associated with the logical transport interface.See note 2. | type: DNmultiplicity: 1..\*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: False |
| epTransportRef | This parameter specifies a list of transport level EPs associated with the application level EP | type: DNmultiplicity: \*isOrdered: N/AisUnique: TruedefaultValue: NoneisNullable: True |
| additionalNetworkSliceDataList | This parameter specifies the list of additional data attributes and values defined by the referred AdditionalDataSpec IOC for the network slice instance. | type: AdditionalDataValue multiplicity: 1..NisOrdered: FalseisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: True |
| additionalDataSpecRef | This holds a DN of an AdditionalDataSpec instance defining meta data for the additionalNetworkSliceDataList in the NetworkSlice and additionalServiceProfileDataLists in the associated ServiceProfiles. | type: DNmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| additionalServiceProfileDataList | This parameter specifies the list of additional data attributes and values defined by the AdditionalDataSpec IOC referred to by the associated NetworkSlice instance. | type: AdditionalDataValue multiplicity: 1..NisOrdered: FalseisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: True |
| key | This attribute corresponds to an attributeName in the the AdditionalDataSpec instance referred to by a NetworkSlice instance or a ServiceProfile instance | type: string multiplicity: 1isOrdered: FalseisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: True |
| value | This attribute corresponds to the value of the key. The data type of the value corresponds to the attributeType, in the the AdditionalDataSpec instance referred to by a NetworkSlice instance or a ServiceProfile instance, associated with the attributeName matching the key. | type: <given by attributeType in referred AdditionalDataSpec> multiplicity: 1isOrdered: FalseisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: True |
| networkSliceDataList | This parameter specifies the list of additional data attributes defined by the referred AdditionalDataSpec IOC. | type: AdditionalDatamultiplicity: 1..NisOrdered: TrueisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: True |
| serviceProfileDataList | This parameter specifies the list of additional data attributes defined by the referred AdditionalDataSpec IOC. | type: AdditionalDatamultiplicity: 1..NisOrdered: TrueisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: True |
| additionalData.attributeName | This parameter defines the name of the attribute | type: stringmultiplicity: 1isOrdered: FalseisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| additionalData.attributeMandatory | Indicates whether a parameter is mandatory | type: booleanmultiplicity: 1isOrdered: FalseisUnique: N/AdefaultValue: FalseallowedValues: True/FalseisNullable: False |
| additionalData.attributeType | This parameter defines the data type of the attribute, e.g. integer, float, boolean, string. | type: stringmultiplicity: 1isOrdered: FalseisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| additionalData.attributeDefault | This parameter defines the default value of the attribute | type: stringmultiplicity: 1isOrdered: FalseisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: True |
| additionalData.attributeMinValue | This parameter defines the minimum value allowed for the attribute | type: stringmultiplicity: 1isOrdered: FalseisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: True |
| additionalData.attributeMaxValue | This parameter defines the maximum value allowed for the attribute | type: stringmultiplicity: 1isOrdered: FalseisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: True |
| additionalData.attributeUnit | This parameter defines the unit of the attribute | type: stringmultiplicity: 1isOrdered: FalseisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: False |
| additionalData.attributeDescription | This parameter describes the attribute | type: stringmultiplicity: 1isOrdered: FalseisUnique: N/AdefaultValue: NoneallowedValues: N/AisNullable: True |
| NOTE 1: There is no direct relationship between localAddress/remoteAddress in EP\_RP and ipAddress in EP\_transport. While the localAddress/remoteAddress in EP\_RP could be exchanged as part of signalling between GTP-u tunnel end points, ipAddress in EP\_transport is used for transport routing. NOTE 2: Application level EP represents EP\_RP defined in TS 28.622 (see [30]). e.g. including EP\_NgC, EP\_N3, etc... |

|  |
| --- |
| End of change |