3GPP TSG SA WG5 Meeting 136-e TDoc S5-212079rev2

electronic meeting, online, 1 - 9 March 2021

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.541** | **CR** | **0459** | **rev** | **1** | **Current version:** | **17.1.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **x** | Core Network | **x** |

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| ***Title:*** | Update the information model definitions for network slice NRM | | | | | | | | | |
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| ***Source to WG:*** | China Mobile | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eMA5SLA | | | | |  | ***Date:*** | | | 2021-2-18 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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 can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)*  *Rel-17 (Release 17)* | |
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| ***Reason for change:*** | | It is proposed to update the network slice NRM to support management aspect of 5G SLA. | | | | | | | | |
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| ***Summary of change:*** | | * Three new <<dataType>> are introduced as CNSliceSubnetProfile<<dataType>>, RANSliceSubnetProfile <<datatype>> and TopSliceSubnetProfile <<datatype>> under SliceProfile * CNSliceSubnetProfile<<dataType>> contains attributes related to CN, translated from corresponding attributes in ServiceProfile * RANSliceSubnetProfile <<datatype>> contains attributes related to RAN, translated from corresponding attributes in ServiceProfile. * TopSliceSubnetProfile <<datatype>> contains attributes related to top/root network slice subnet, translated from corresponding attributes in ServiceProfile.   Attrbutes for CNSliceSubnetProfile, RANSliceSubnetProfile and TopSliceSubnetProfile are defined in Attributes definition.  YAML definition for 205083  Add an attribute positioningin ServiceProfile.  Add an attribute synchronicity in ServiceProfile.  Existing ANNEX is extended to include crucial aspect of GST management. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Incomplete GST solution.  Missing Stage 3.  The attribute positioning will be missing in ServiceProfile.  The attribute synchronicity will be missing in ServiceProfile.  In-complete GST management solution. | | | | | | | | |
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| ***Clauses affected:*** | | 6.3.3.2, 6.3.4.2, 6.3.a(new), 6.3.b(new), 6.3.c(new), 6.3.d(new), 6.3.e(new), 6.3.f(new), 6.3.g(new), 6.4.1, J.4.3, L | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This proposal was already agreed input to the Rel-17 28.541 DraftCR for EMA5SLA. The agreed contributions under WI eMA5SLA are as following:  - S5-205292,  - S5-205283,  - S5-205293,  - S5-205294;  - S5-205295,  - S5-211359;  - S5-211446;  - S5-211504;  - S5-211505  Forge：<https://forge.3gpp.org/rep/sa5/MnS/tree/S5-212079_Update_the_information_model_definitions_for_network_slice_NRM_EMA5SLA> | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **1st modified section** |

# 6 Information model definitions for network slice NRM

#### 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 |
| maxNumberofPDUSessions | 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 |
| maxDLDataVolume | O | T | T | F | T |
| maxULDataVolume | O | T | T | F | T |
| nBIoT | O | T | T | F | T |
| synchronicity | O | T | T | F | T |
| positioning | O | T | T | F | T |
| sliceSimultaneousUse | O | T | T | F | T |

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

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| **Next Change** |

### 6.3.4 SliceProfile <<dataType>>

#### 6.3.4.1 Definition

This data type represents the properties of network slice subnet related requirement that should be supported by the network slice subnet instance in a 5G network.

#### 6.3.4.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| sliceProfileId | M | T | F | T | T |
| sNSSAIList | M | T | T | F | T |
| pLMNIdList | M | T | T | F | T |
| perfReq | M | T | T | F | T |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| CNSliceSubnetProfile | CM | T | T | F | T |
| RANSliceSubnetProfile | CM | T | T | F | T |
| TopSliceSubnetProfile | CM | T | T | F | T |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

#### 6.3.4.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| CNSliceSubnetProfile Support Qualifier | Condition: It shall be present when the slice profile for CN domain is needed. |
| RANSliceSubnetProfile Support Qualifier | Condition: It shall be present when the slice profile for RAN domain is needed. |
| tOPSliceSubnetProfile  Support Qualifier | Condition: It shall be present when the slice profile is for top/root network slice subnet |

Editors Note 1: Need for specific slice profile for TN domain is FFS.

Editor's NOTE 2: Analysis on clashes/inconsistencies between perfReq attribute from SliceProfile (cf. Section 6.3.4.2) and attributes from domain-specific SliceProfiles is FFS.

Editor's NOTE 3: The common attributes of the three types of SliceProfile may be extracted out and put into the common part of the SliceProfile

Editor's NOTE 4: Whether SliceProfile is dataType or IOC is FFS.

Editor's NOTE 5: Whether RANSliceSubnetProfile is inherited from or contained by SliceProfile is FFS.

Editor's NOTE 6: Whether CNSliceSubnetProfile is inherited from or contained by SliceProfile is FFS.

Editor's NOTE 7: Whether tOPSliceSubnetProfile is inherited from or contained by SliceProfile is FFS.

Editor's NOTE 8: All the attributes of SliceProfile, CNSliceSubnetProfile, RANSliceSubnetProfile and topSliceSubnetProfile will be revisited later

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| **Next modified section** |

### 6.3.a DLThptSliceSubnet<<dataType>>

#### 6.3.a.1 Definition

This data type represents the downlink throughput per slice subnet or per UE.

#### 6.3.a.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| guaThpt | M | T | F | F | T |
| maxThpt | C | T | F | F | T |

#### 6.3.a.3 Attribute constraints

None.

#### 6.3.a.4 Notifications

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

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| **Next modified section** |

### 6.3.b ULThptSliceSubnet<<dataType>>

#### 6.3.b.1 Definition

This data type represents the uplink throughput per slice subnet or per UE.

#### 6.3.b.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| guaThpt | M | T | F | F | T |
| maxThpt | C | T | F | F | T |

#### 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.

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| **Next modified section** |

### 6.3.c CNSliceSubnetProfile<<dataType>>

#### 6.3.c.1 Definition

This data type represents the requirements for CN slice profile.

Editor's NOTE: Whether CNSliceSubnetProfile is an IOC or dataType is FFS.

#### 6.3.c.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| maxNumberofUEs | O | T | T | F | T |
| latency | O | T | T | F | T |
| dLThptPerSliceSubnet | O | T | T | F | T |
| dLThptPerUEPerSubnet | O | T | T | F | T |
| uLThptPerSliceSubnet | O | T | T | F | T |
| uLThptPerUEPerSubnet | O | T | T | F | T |
| maxNumberOfPDUSessions | O | T | T | F | T |
| coverageAreaTAList | O | T | T | F | T |
| resourceSharingLevel | O | T | T | F | T |
| maxPktSize | O | T | T | F | T |
| sliceSimultaneousUse | O | T | T | F | T |
| delayTolerance | O | T | T | F | T |

#### 6.3.c.3 Attribute constraints

None.

#### 6.3.c.4 Notifications

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

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| **Next modified section** |

### 6.3.d RANSliceSubnetProfile<<dataType>>

#### 6.3.d.1 Definition

This data type represents the requirements for RAN slice profile.

Editor's NOTE 1: Whether the attributes of RANSliceSubnetProfile need to be modelled by one IOC or more than one IOC is FFS.

Editor's NOTE 2: Whether RANSliceSubnetProfile is an IOC or dataType is FFS.

#### 6.3.d.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
|  |  |  |  |  |  |
| coverageAreaTAList | O | T | T | F | T |
| uEMobilityLevel | O | T | T | F | T |
| resourceSharingLevel | O | T | T | F | T |
| maxNumberofUEs | O | T | T | F | T |
| activityFactor | O | T | T | F | T |
| dLThptPerUEPerSubnet | O | T | T | F | T |
| uLThptPerUEPerSubnet | O | T | T | F | T |
| uESpeed | O | T | T | F | T |
| reliability | O | T | T | F | T |
| serviceType | O | T | T | F | T |
| latency | O | T | T | F | T |
| delayTolerance | O | T | T | F | T |
| sliceSimultaneousUse | O | T | T | F | T |
| maxPktSize | O | T | T | F | T |

#### 6.3.d.3 Attribute constraints

None.

#### 6.3.d.4 Notifications

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

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| **Next modified section** |

### 6.3.e TopSliceSubnetProfile<<dataType>>

#### 6.3.e.1 Definition

This data type represents the requirements for the top slice associated with the network slice.

Editor's NOTE: Whether TopSliceSubnetProfile is an IOC or dataType is FFS.

#### 6.3.e.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| coverageArea | O | T | T | F | T |
| latency | O | T | T | F | T |
| maxNumberofUEs | O | T | T | F | T |
| dLThptPerSliceSubnet | O | T | T | F | T |
| dLThptPerUEPerSubnet | O | T | T | F | T |
| uLThptPerSliceSubnet | O | T | T | F | T |
| uLThptPerUEPerSubnet | O | T | T | F | T |
| maxPktSize | O | T | T | F | T |
| maxNumberOfPDUSessions | O | T | T | F | T |
| sliceSimultaneousUse | O | T | T | F | T |
| delayTolerance | O | T | T | F | T |

#### 6.3.e.3 Attribute constraints

None.

#### 6.3.e.4 Notifications

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

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| **Next modified section** |

### 6.3.f Positioning <<dataType>>

#### 6.3.f.1 Definition

This data type represents positioning support (see clause 3.4.20 of GSMA NG.116 [50]).

#### 6.3.f.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| servAttrCom | M | T | F | F | T |
| availability | O | T | F | F | T |
| predictionfrequency | O | T | T | F | T |
| accuracy | O | T | T | F | T |

#### 6.3.f.3 Attribute constraints

None.

#### 6.3.f.4 Notifications

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

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| **Next modified section** |

### 6.3.g Synchronicity <<dataType>>

#### 6.3.g.1 Definition

This data type represents synchronicity support (see clause 3.4.29 of GSMA NG.116 [50]).

#### 6.3.g.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| servAttrCom | M | T | F | F | T |
| availability | O | T | F | F | T |
| accuracy | O | T | T | F | T |

#### 6.3.g.3 Attribute constraints

None.

#### 6.3.g.4 Notifications

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

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| **Next modified section** |

## 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: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: True |
| serviceProfileId | A unique identifier of property of network slice related requirement should be supported by the network slice. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| sliceProfileId | A unique identifier of the property of network slice subnet related requirement should be supported by the network slice subnet. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: 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: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| administrativeState | It indicates the administrative state of the network slice or the network slice subnet. It describes the permission to use or prohibition against using the managed object 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: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: 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: NsInfo  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: No default value  isNullable: 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: String  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: No default value  isNullable: 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: String  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: No default value  isNullable: 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: String  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: No default value  isNullable: True |
| category | This attribute specifies the category of a service requirement/attribute of GST (see GSMA NG.116 [50]).  allowedValues: character, scalability | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: 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: ENUM  multiplicity: 1…3  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: 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: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| sNSSAIList | This parameter specifies the S-NSSAI list to be supported by the network slice new to be created or the existing network slice 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 perfReq  Depending on the sST value, the list of perfReq will be  - list of eMBBPerfReq  or  - list of uRLLCPerfReq  or  - list of mIoTPerfReq  NOTE 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 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: PerfReq  multiplicity: \*1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| maxNumberofUEs | An attribute specifies the maximum number of UEs may simultaneously access the network slice or network slice subnet instance. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| coverageAreaTAList | An attribute specifies a list of Tracking Areas for the network slice .  allowedValues:  Legacy TAC and Extended TAC are defined in clause 9.3.3.10 of TS 38.413 [5]. | type: Integer  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| 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. See clause 6.3.1 of 28.554 [27]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| topSliceSubnetProfile.latency | An attribute specifies the packet transmission latency (millisecond) through all domains of the network slice and is used to evaluate utilization performance of the end-to-end network slice. See clause 6.3.1 of 28.554 [27]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| CNSliceSubnetProfile.latency | An attribute specifies the packet transmission latency (millisecond) through CN domain of the network slice and is used to evaluate the delay in CN domain, e.g. time between received UL/DL packet on N3/N6 interface of UPF and successfully sent out the packet on N6/N3 interface. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| RANSliceSubnetProfile.latency | An attribute specifies the packet transmission latency (millisecond) through RAN domain of the network slice and is used to evaluate the delay in RAN domain, e.g. time between received UL/DL packet on air interface/NgU of gNB and successfully sent out the packet on NgU/air interface of the gNB. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
|  |  |  |
| uEMobilityLevel | An attribute specifies the mobility level of UE accessing the network slice. See 6.2.1 of TS 22.261 [28].  allowedValues: stationary, nomadic, restricted mobility, fully mobility. | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: True |
| serviceProfile.resourceSharingLevel | An attribute specifies whether the resources to be allocated to the network slice may be shared with another network slice(s).  allowedValues: shared, non-shared. | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: Yes  isNullable: True |
| sliceProfile.resourceSharingLevel | An attribute specifies whether the resources to be allocated to the network slice subnet may be shared with another network slice subnet(s).  allowedValues: shared, non-shared. | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: Yes  isNullable: True |
| serviceProfileList | An attribute specifies a list of ServiceProfile (see clause 6.3.3) supported by the network slice | type: ServiceProfile  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| sliceProfileList | An attribute specifies a list of SliceProfile (see clause 6.3.4) supported by the network slice subnet | type: SliceProfile  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| sST | This parameter specifies the slice/service type in a ServiceProfile to be supported by a network slice.  See clause 5.15.2 of 3GPP TS 23.501 [2]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| 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: DelayTolerance  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| DelayTolerance.support | An attribute specifies whether or not the network slice supports service delivery flexibility, especially for the vertical services that are not chasing a high system performance.  allowedValues:  "NOT SUPPORTED", "SUPPORTED". | type: <<enumeration>>  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: 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: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| DeterminComm.availability | An attribute specifies whether or not the network slice supports deterministic communication for period user traffic.  allowedValues:  "NOT SUPPORTED", "SUPPORTED". | type: <<enumeration>>  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| DeterminComm.periodicityList | An attribute specifies a list of periodicities supported by the network slice for deterministic communication. | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: 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: DLThpt  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| dLThptPerSliceSubnet | This attribute defines achievable data rate of the network slice subnet in downlink that is available ubiquitously across the coverage area of the slice. | type: DLThptSliceSubnet  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| dLThptPerUEPerSubnet | This attribute defines data rate supported by the network slice subnet per UE. | type: DLThptSliceSubnet  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| dLThptPerUE | This attribute defines data rate supported by the network slice per UE, refer NG.116 [50]. | type: DLThpt  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| guaThpt | This attribute describes the guaranteed data rate. | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| maxThpt | This attribute describes the maximum data rate. | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: 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: ULThpt  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| uLThptPerUE | This attribute defines data rate supported by the network slice per UE, refer NG.116 [50]. | type: ULThpt  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| uLThptPerSliceSubnet | This attribute defines achievable data rate of the network slice subnet in uplink that is available ubiquitously across the coverage area of the slice. | type: ULThptSliceSubnet  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| uLThptPerUEPerSubnet | This attribute defines data rate supported by the network slice subnet per UE. | type: ULThptSliceSubnet  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| maxPktSize | This parameter specifies the maximum packet size supported by the network slice or the network slice subnet, refer NG.116 [50]. | type: MaxPktSize  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| MaxPktSize.maxsize | This parameter specifies the maximum packet size supported by the network slice, refer NG.116 [50]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
|  |  |  |
| maxNumberofPDUSessions | This parameter defines the maximum number of concurrent PDU sessions supported by the network slice, refer NG.116 [50]. | type: MaxNumberofPDUSessions  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| MaxNumberofPDUSessions.nOofPDUSessions | This parameter defines the maximum number of concurrent PDU sessions supported by the network slice, refer NG.116 [50]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| kPIMonitoring | An attribute specifies the name list of KQIs and KPIs available for performance monitoring. | type: KPIMonitoring  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| KPIMonitoring. kPIList | An attribute specifies the name list of KQIs and KPIs available for performance monitoring. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| nBIoT | An attribute specifies whether NB-IoT is supported in the RAN in the network slice, see NG.116 [50]. | type: NBIoT  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| NBIoT.support | An attribute specifies whether NB-IoT is supported in the RAN in the network slice, see NG.116 [50].  allowedValues:  "NOT SUPPORTED", "SUPPORTED". | type: <<enumeration>>  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| synchronicity | An attribute specifies whether synchronicity of communication devices is supported, Two cases are most important in this context, see clause 3.4.29 of NG.116 [50]:  - Synchronicity between a base station and a mobile device and  - Synchronicity between mobile devices. | type: Synchronicity  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| Synchronicity.availability | An attribute specifies whether synchronicity of communication devices is supported, see NG.116 [50].  allowedValues:  "NOT SUPPORTED", "BETWEEN BS AND UE", "BETWEEN BS AND UE & UE AND UE". | type: <<enumeration>>  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| Synchronicity.accuracy | An attribute specifies the accuracy of the synchronicity, see NG.116 [50]. | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| userMgmtOpen | An attribute specifies whether or not the network slice supports the capability for the NSC to manage their users or groups of users’ network services and corresponding requirements. | type: UserMgmtOpen  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| UserMgmtOpen.support | An attribute specifies whether or not the network slice 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: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| v2XCommModels | An attribute specifies whether or not the V2X communication mode is supported by the network slice. | type: V2XCommMode  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| V2XCommMode.v2XMode | An attribute specifies whether or not the V2X communication mode is supported by the network slice  allowedValues:  "NOT SUPPORTED", "SUPPORTED BY NR". | type: <<enumeration>>  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: 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: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: 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: TermDensity  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: 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: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| positioning | An attribute specifies whether the network slice provides geo-localization methods or supporting methods, see clause 3.4.20 of NG.116 [50]. | type: Positioning  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| Positioning.availability | An attribute specifies if this attribute is provided by the network slice and contains a list of positioning methods provided by the slice. If the list is empty this attribute is not available in the network slice and the other parameters might be ignored, see NG.116 [50]. Comma separated multiple values are allowed:  CIDE-CID (LTE and NR), OTDOA (LTE and NR), RF fingerprinting, AECID, Hybrid positioning, NET-RTK. | type: ENUM  multiplicity: 1..6  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| Positioning.predictionfrequency | An attribute specifies how often location information is provided. This parameter simply defines how often the customer is allowed to request location information. This is not related to the time it takes to determine the location, which is a characteristic of the positioning method, see NG.116 [50].  allowedValues:  "PERSEC", "PERMIN", "PERHOUR". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| Positioning.accuracy | An attribute specifies the accuracy of the location information. Accuracy depends on the respective positioning solution applied in the network slice, see NG.116 [50]. | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| 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: Real  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| uESpeed | An attribute specifies the maximum speed (in km/hour) supported by the network slice or network slice subnet at which a defined QoS can be achieved. See Table 7.1-1 of TS 22.261 [28]). | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: 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: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: 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: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: 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: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: True |
| NetworkSlice.networkSliceSubnetRef | This holds a DN of NetworkSliceSubnet relating to the NetworkSlice instance. | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| NetworkSliceSubnet.networkSliceSubnetRef | This holds a list of DN of constituent NetworkSliceSubnet supporting NetworkSliceSubnet instance | type: DN  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| managedFunctionRef | This holds a list of DN of ManagedFunction instances supporting the NetworkSliceSubnet instance. | type: DN  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: 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: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: 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: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: 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: String  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: 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: String  multiplicity: \*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: True |
| maxDLDataVolume | An attribute specifies the maximum DL PDCP data volume supported by the network slice instance (performance measurement definition see in TS 28.552[69]). The unit is MByte/day. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
| maxULDataVolume | An attribute specifies the maximum UL PDCP data volume supported by the network slice instance (performance measurement definition see in TS 28.552[69]). The unit is MByte/day. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False |
|  |  |  |
| serviceType | An attribute specifies the standardized network slice type.  allowedValues: eMBB, URLLC, MIoT, V2X. | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: True |
| epApplicationRef | This parameter specifies a list of application level EPs associated with the logical transport interface.  See note 2. | type: DN  multiplicity: 1..\*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| epTransportRef | This parameter specifies a list of transport level EPs associated with the application level EP | type: DN  multiplicity: \*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: True |
| sliceSimultaneousUse | This attribute describes whether a network slice can be simultaneously used by a device together with other network slices and if so, with which other classes of network slices.  allowedValues: “0”, “1”, “2”, “3”, “4”.  “0”: Can be used with any network slice  “1”: Can be used with network slices with same SST value  “2”: Can be used with any network slice with same SD value  “3”: Cannot be used with another network slice  “4”: Cannot be used by a UE in a specific location | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: False  isNullable: False |
| 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... | | |

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| **Next modified section** |

Annex L (normative):   
Relation of GSMA GST, ServiceProfile and SliceProfile

# L.1 General

This annex describes the relation between GSMA GST [50] and information model ServiceProfile and SliceProfile.

# L.2 GSMA GST, ServiceProfile and SliceProfile

The GSMA GST is used as the SLA information for the communication between the NSC (e.g. vertical industry) and the NSP. The SLA requirements can be fulfilled from management aspect and control aspect in a coordinated way. The SLS includes ServiceProfile information model.

As shown in figure L.2.1, the GST [50] is translated and used as input to NRM ServiceProfile, the ServiceProfile can be translated to corresponding requirements for dedicated domains. For example, 5GC SliceProfile is used to carry 5GC domain requirements, NG-RAN SliceProfile is used to carry NG-RAN domain requirements, and TN requirements are translated and provide to TN domain.

Some of the information (as shown in Table L.2.1) in 5GC SliceProfile and NG-RAN SliceProfile is translated to configurable parameters related to network function behaviour for the control plane SLA support purpose. While other information (e.g delay tolerance, determistic communication support) in 5GC SliceProfile and NG-RAN SliceProfile are kept at OAM domain and is used to determine the overall behaviour of the network slice.

The following table show the translation of GST attributes.

|  |  |  |  |
| --- | --- | --- | --- |
| GST Attributes | ServiceProfile Parameter | SliceProfile Parameter | Configurable Parameter |
| Maximum number of UEs | maxNumberofUEs | maxNumberofUE | TBD |
| Maximum number of PDU sessions | maxNumberofConns | maxNumberofPDUSessions | TBD |
| Downlink maximum throughput per UE | dLThptPerUE | dLThptPerUEPerSubnet | TBD |
| Uplink maximum throughput per UE | uLThptPerUE | uLThptPerUEPerSubnet | TBD |

Table L.2.1: GST translation

Editors note: The list of exact configurable parameters is to be revisted depending on the requirements from SA2 and RAN WGs.



Figure L.2.1 Relation between GSMA GST, ServiceProfile and SliceProfile

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| **End of modified section** |