**3GPP TSG-SA5 Meeting #143-e *S5-223165rev1***

**e-meeting, 9 - 17 May 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **28.622** | **CR** | **0152** | **rev** | **1** | **Current version:** | **17.1.1** |  |
|  |
| *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:***  | Rel-17 CR 28.622 Add missing definitions of common data types |
|  |  |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | SA5 |
|  |  |
| ***Work item code:*** | adNRM |  | ***Date:*** | 2022-04-29 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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:*** | Many data types are required in more than one NRM. Currently these data types are defined multiple times or the stage 2 definition is missing completely. This increases the risk of inconsistent definitions, leave alone that it is not according to best specification practices to duplicate definitions. |
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| ***Summary of change:*** | Add missing stage 2 definitions of common data types that are used in more than one NRM or that are expected to be used in more than one NRM. |
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| ***Consequences if not approved:*** | The current partice of duplicating data type definitions continues. Stage 2 definition of common data types is missing and therefore misalignment with Stage 3 TS 28.623. |
|  |  |
| ***Clauses affected:*** | 2, 3a (new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| **First modification** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

[2] 3GPP TS 32.102: "Telecommunication management; Architecture".

[3] 3GPP TS 32.302: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Information Service (IS)".

[4] 3GPP TS 32.150: "Telecommunication management; Integration Reference Point (IRP) Concept and Definitions".

[5] 3GPP TS 23.003: "Technical Specification Group Core Network and Terminals; Numbering, addressing and identification"

[6] 3GPP TS 32.532: " Telecommunication management; Software Management Integration Reference Point (IRP); Information Service (IS) "

[7] ITU-T Recommendation X.710 (1991): "Common Management Information Service Definition for CCITT Applications".

[8] TS 32.107: "Telecommunication management; Fixed Mobile Convergence (FMC) Federated Network Information Model (FNIM)"

[9] TS 28.620: "Telecommunication management; Fixed Mobile Convergence (FMC) Federated Network Information Model (FNIM) Umbrella Information Model (UIM)"

[10] TS 32.156: "Telecommunication management; Fixed Mobile Convergence (FMC) Model Repertoire"

[11] 3GPP TS 32.111-2: "Telecommunication management; Fault Management; Part 2: Alarm Integration Reference Point (IRP): Information Service (IS)".

[12] 3GPP TS 32.662: "Telecommunication management; Configuration Management (CM); Kernel CM Information Service (IS)".

[13] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[14] 3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".

[15] ETSI GS NFV 003 V1.1.1: "Network Functions Virtualisation (NFV); Terminology for Main Concepts in NFV".

[16] ETSI GS NFV-IFA 008 v2.1.1: "Network Functions Virtualisation (NFV); Management and Orchestration; Ve-Vnfm reference point - Interface and Information Model Specification".

[17] ETSI GS NFV-IFA 015 v2.1.2: "Network Functions Virtualisation (NFV); Management and Orchestration; Report on NFV Information Model".

[18] ETSI ES 202 336-12 V1.1.1: "Environmental Engineering (EE); Monitoring and control interface for infrastructure equipment (power, cooling and building environment systems used in telecommunication networks); Part 12: ICT equipment power, energy and environmental parameters monitoring information model".

[19] ITU-T Recommendation X.731: "Information technology - Open Systems Interconnection - Systems Management: State management function".

[20] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

[21] 3GPP TS 28.625: "State Management Data Definition Integration Reference Point (IRP); Information Service (IS) ".

[22] 3GPP TS 23.501: "System Architecture for the 5G System".

[23] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[24] IETF RFC 791: "Internet Protocol".

[25] IETF RFC 2373: "IP Version 6 Addressing Architecture".

[26] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[27] 3GPP TS 28.532: "Management and orchestration; Generic management services".

[28] 3GPP TS 28.554: "Management and orchestration; 5G end to end Key Performance Indicators (KPI)".

[29] 3GPP TS 32.421: "Telecommunication management; Subscriber and equipment trace; Trace concepts and requirements".

[30] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".

[31] ITU-T Recommendation X.733 (02/92): "Information technology - Open Systems Interconnection - Systems Management: Alarm reporting function".

[g] 3GPP TS 36.413: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)".

[f] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".

[a] IETF RFC 3986: "Uniform Resource Identifier (URI): Generic Syntax".

[b] IETF RFC 1166: "Internet Numbers".

[d] IETF RFC 8200: "Internet Protocol, Version 6 (IPv6)".

[c] IETF RFC 5952: "A Recommendation for IPv6 Address Text Representation".

[e] IETF RFC 1034: "Domain Names – Concepts and Facilities".

[x] IETF RFC 3339: "Date and Time on the Internet: Timestamps"

[y] 3GPP TS 29.510: “5G System; Network Repository Service; Stage 3”

[z] ECMA-262: "ECMAScript® Language Specification", <https://www.ecma-international.org/ecma-262/5.1/>.

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| **Next modification** |

# 3a Common data type definitions

## 3a.1 Introduction

This clause contains common data type definitions. Common data types are those data types that are actually used or likely to be used by more than one NRM. NRMs shall re-use the definitions provided in this clause (instead of redefining them).

## 3a.2 General data types

### 3a.2.1 Simple data types

Table 3a.1.1-1: Data types imported

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Description |
| DateTime | TS 32.156 [10], clause 5.4.3.1 | Date and time |
| Real | TS 32.156 [10], clause 5.4.3.1 | Real number |
| String | TS 32.156 [10], clause 5.4.3.1 | String |
| Integer | TS 32.156 [10], clause 5.4.3.1 | Integer |
| Boolean | TS 32.156 [10], clause 5.4.3.1 | Boolean |
| DN | TS 32.156 [10], clause 5.4.3.1 | Distinguished Name (TS 32.300 [13]) |

Table 3a.1.1-2: Data types defined in the present document

|  |  |  |
| --- | --- | --- |
| Type name | Type definition | Description |
| Float | Real | Floating-point number. Float and Real are used synonymously. |
| FullDate | String | Date as define by "full-time" in RFC3339 [x] |
| FullTime | String | Time as define by "full-time" in RFC3339 [x] |
| Latitude | Float | Latitude based on World Geodetic System (1984 version) global reference frame (WGS 84). Positive values correspond to the northern hemisphere.Minimum: -90.0000, Maximum: +90.0000 |
| Longitude | Float | Longitude based on World Geodetic System (1984 version) global reference frame (WGS 84). Positive values correspond to degrees east of 0 degrees longitude.Maximum: -180.0000, Minimum: +180.0000 |
| Dn | DN | Distinguished Name (TS 32.300 [13]), provided to align with data type naming conventions |
| NotificationId | Integer | Notification identifier |
| SystemDn | Dn | System DN |
| Filter | String | Filter. The filter format is protocol specific. |
| DomainName | String | Domain Name in textual dotted notation as defined in clause 3.5 of IETF RFC 1034 [e]. The domain name should be fully qualified. |
| Fqdn | String | *Editor's note: This is ffs if the term Fqdn should be replaced by DomainName.* |
| Ipv4Addr | String | Type of an IPv4 address in dotted decimal text representation format of four decimal integers, ranging from 0 to 255 each, as defined in IETF RFC 1166 [b].Pattern: '^(([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])\.){3}([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])$' |
| Ipv6Addr | String | Type of an Ipv6 address (IETF RFC 4260 [d]) in the canonical text representation format defined in clause 4 of IETF RFC 5952 [c].Pattern: '^((:|(0?|([1-9a-f][0-9a-f]{0,3}))):)((0?|([1-9a-f][0-9a-f]{0,3})):){0,6}(:|(0?|([1-9a-f][0-9a-f]{0,3})))$'andPattern: '^((([^:]+:){7}([^:]+))|((([^:]+:)\*[^:]+)?::(([^:]+:)\*[^:]+)?))$' |
| IpAddr | CHOICE(Ipv4Addr, Ipv6Addr) | Type of an IP address, either an IPv4 address or an IPv6 address. |
| Host | CHOICE(Ipv4Addr, Ipv6Addr, DomainName) | *Editor's note: This is ffs since host names have a stricter format than domain names.* |
| Port | Integer | Port number, as defined e.g. in clause 3.2.3 of IETF RFC 3986 [a]Minimum: 0, Maximum: 65535 |
| Uri | String | Type of a URI as defined in in IETF RFC 3986 [a] |
|  |  |  |
|  |  |  |

### 3a.2.2 Enumerations

#### 3a.2.2.1 AdministrativeState

Table 3a.2.2.1-1: Definition of the type AdministrativeState

|  |  |
| --- | --- |
| Enumeration value | Description |
| LOCKED | Indicates the permission to use an object instance (ITU-T Rec. X. 731 [19]). |
| UNLOCKED | Indicates the prohibition against using an object instance (ITU-T Rec. X. 731 [19]). |

#### 3a.2.2.2 OperationalState

Table 3a.2.2.2-1: Definition of the type OperationalState

|  |  |
| --- | --- |
| Enumeration value | Description |
| ENABLED | Indicates an object instance is operable (ITU-T Rec. X. 731 [19]). |
| DISABLED | Indicates an object instance is inoperable (ITU-T Rec. X. 731 [19]). |

#### 3a.2.2.3 UsageState

Table 3a.2.2.2-1: Definition of the type UsageState

|  |  |
| --- | --- |
| Enumeration value | Description |
| IDLE | Indicates an object instance is idle (ITU-T Rec. X. 731 [19]). |
| ACTIVE | Indicates an object instance is active (ITU-T Rec. X. 731 [19]). |
| BUSY | Indicates an object instance is busy (ITU-T Rec. X. 731 [19]). |

### 3a.2.3 Structured data types

#### 3a.2.3.1 GeoCoordinate

##### 3a.2.3.1.1 Definition

This data type defines a geographical location on earth.

##### 3a.2.3.1.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| latitude | M | T | T | F | T |
| longitude | M | T | T | F | T |

##### 3a.2.3.1.3 Attribute constraints

None.

##### 3a.2.3.1.4 Attribute properties

| Attribute name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| latitude | Latitude of the geographical locationAllowedValues: as defined by the data type "Latitude" | type: Latitudemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| longitude | Longitude of the geographical locationAllowedValues: as defined by the data type "Longitude" | type: Longitudemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |

#### 3a.2.3.2 ConvexGeoPolygon <<dataType>>

##### 3a.2.3.1 Definition

This data type defines a geographical area with a convex polygon. The convex polygon is specified by its corners.

##### 3a.2.3.2 Attributes

| Data type name | Properties |
| --- | --- |
| ConvexGeoPolygon | type: GeoCoordinatemultiplicity: 3..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |

## 3a.3 Mobile network specific data types

### 3a.3.1 Simple data types

|  |  |  |
| --- | --- | --- |
| Type name | Type definition | Description |
| Mcc | String | Type of a Mobile Country Code, consisting of three decimal digits, as defined in clause 2.2 of TS 23.003 [5]Pattern: '^[0-9]{3}$' |
| Mnc | String | Type of a Mobile Network Code, consisting of two or three decimal digits, as defined in clause 2.2 of TS 23.003 [5]Pattern: '^[0-9]{2,3}$' |
| Nid | String | Network Identifier, which together with a PLMN ID is used to identify an SNPN (see TS 23.003 [5] and TS 23.501 [22], clause 5.30.2.1).Pattern: '^[A-Fa-f0-9]{11}$' |
| Tac | String | 3-octet string identifying a tracking area code (TAC) as specified in clause 9.3.3.10 of TS 38.413 [f], in hexadecimal representation. Pattern: '(^[A-Fa-f0-9]{4}$)|(^[A-Fa-f0-9]{6}$)' |

### 3a.3.2 Enumerations

None.

### 3a.3.3 Structured data types

#### 3a.3.3.1 PlmnId

Type of a Public Land Mobile Network (PLMN) identifier (PLMN-Id), as defined in clause 12.1 and clause 2.2 of TS 23.003 [5].

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute name | S | Data type | Description |
| mcc | M | Mcc | Mobile Country Code (MCC) |
| mnc | M | Mnc | Mobile Network Code (MNC) |

#### 3a.3.3.2 Tai

Type of a Tracking Area Identity (TAI) as defined in clause 28.6 of TS 23.003 [5], clause 8.2 of TS 38.300 [33] and clause 9.3.3.11 of TS 38.413 [34].

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute name | S | Data type | Description |
| mcc | M | Mcc | Mobile Country Code (MCC) |
| mnc | M | Mnc | Mobile Network Code (MNC) |
| tac | M | Tac | Tracing Area Code (TAC) |

#### 3a.3.3.4 TacRange

Represents the range of TACs defined as a start-end points or based on a pattern as defined in clause 6.1.6.2.28 of TS 29.510 [y].

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute name | S | Data type | Description |
| CHOICE 1.1 tacStart | M | Tac | Identify the start of a TAC range. Used when the range of TAC's can be represented as a hexadecimal range.  |
| CHOICE 1.2 tacEnd | M | Tac | Identify the end of a TAC range. Used when the range of TAC's can be represented as a hexadecimal range.  |
| CHOICE 2.1 tacPattern | M | String | Pattern (regular expression according to the ECMA-262 dialect [z]) representing the set of TAC's belonging to this range. A TAC value is considered part of the range if and only if the TAC string fully matches the regular expression. |

#### 3a.3.3.5 SnpnId

Represents the information of a Stand-alone Non-Public Network (SNPN) identifier, as defined in clause 12.7 of TS 23.003 [5].

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute name | S | Data type | Description |
| mcc | M | Mcc | Mobile Country Code (MCC) |
| mnc | M | Mnc | Mobile Network Code (MNC) |
| nid | M | Nid | Network identifier for an SNPN |

# 4 Model

## 4.1 Imported information entities and local labels

|  |  |
| --- | --- |
| Label reference | Local label |
| 3GPP TS 28.532 [27], notification, notifyMOICreation | notifyMOICreation |
| 3GPP TS 28.532 [27], notification, notifyMOIDeletion | notifyMOIDeletion |
| 3GPP TS 28.532 [27], notification, notifyMOIAttributeValueChanges | notifyMOIAttributeValueChanges |
| 3GPP TS 28.532 [27], notification, notifyMOIChanges | notifyMOIChanges |
| 3GPP TS 28.532 [27], notification, notifyNewAlarm | notifyNewAlarm |
| 3GPP TS 28.532 [27], notification, notifyClearedAlarm | notifyClearedAlarm |
| 3GPP TS 28.532 [27], notification, notifyChangedAlarm | notifyChangedAlarm |
| 3GPP TS 28.532 [27], notification, notifyChangedAlarmGeneral | notifyChangedAlarmGeneral |
| 3GPP TS 28.532 [27], notification, notifyCorrelatedNotificationChanged | notifyCorrelatedNotificationChanged |
| 3GPP TS 28.532 [27], notification, notifyAckStateChanged | notifyAckStateChanged |
| 3GPP TS 28.532 [27], notification, notifyComments | notifyComments |
| 3GPP TS 28.532 [27], notification, notifyPotentialFaultyAlarmlist | notifyPotentialFaultyAlarmList |
| 3GPP TS 28.532 [27], notification, notifyAlarmlistRebuilt | notifyAlarmListRebuilt |
| 3GPP TS 28.532 [27], notification, notifyFileReady | notifyFileReady |
| 3GPP TS 28.532 [27], notification, notifyFilePreparationError | notifyFilePreparationError |
| 3GPP TS 28.532 [27], SupportIOC, AlarmInformation  | AlarmRecord |
| 3GPP TS 28.620 [9], IOC, *Domain\_* | *Domain\_* |
| 3GPP TS 28.620 [9], IOC, *ManagedElement\_* | *ManagedElement\_* |
| 3GPP TS 28.620 [9], IOC, *Function\_* | *Function\_* |
| 3GPP TS 28.620 [9], IOC, *ManagementSystem\_* | *ManagementSystem\_* |
| 3GPP TS 28.620 [9], IOC, *TopologicalLink\_* | *TopologicalLink\_* |
| 3GPP TS 28.620 [9], IOC, *Top\_* | *Top\_* |

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| **Next modification** |

### 4.3.39 void

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| **End of modifications** |