**3GPP TSG-SA5 Meeting #156 *S5-244785***

**Maastricht, The Netherlands, 19 - 23 August 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.622** | **CR** | **0456** | **rev** | **1** | **Current version:** | **19.0.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Rel-19 CR TS 28.622 Specify Float type in YANG solution set | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson España S.A. | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | AdNRM\_Ph3 | | | | |  | ***Date:*** | | | 2024-08-09 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | C |  | | | | | ***Release:*** | | | Rel-19 |
|  | *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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Clause 5.2 in TS 28.623 specifies common simple data types. For Float type, there is an editor’s note that format for YANG may need further study. However, this study has already been completed, with YANG format for this attribute already specified in Clause E.2.2 from TS 28.623. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Remove editor’s note for Float type, replacing it with the actual format for YANG solution set. According to clause E.2.2, the format is Decimal64, defined in IETF RFC 7950 2. Add IETF RFC 7950 to the references section (clause 2) | | | | | | | | |
| * ***a*** | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Stage-2 definition of float type says that stage-3 YANG definition requires further study; this gives a wrong message on potential gap betweens stage 2 and stage 3, which is not the case. | | | | | | | | |
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| ***Clauses affected:*** | | 2, 5.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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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| **1st Change** |

# 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] Void

[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] Void

[12] Void

[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] Void.

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

[32] 3GPP TS 28.533: "Management and orchestration; Architecture framework".

[33] 3GPP TS 38.300: "NR; NR and NG-RAN Overall Description; Stage 2".

[34] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".

[35] 3GPP TS 38.104: "NR; Base Station (BS) radio transmission and reception".

[36] 3GPP TS 38.321: "NR; Medium Access Control (MAC) protocol specification".

[37] 3GPP TS 36.321: "Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification".

[38] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol specification".

[39] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification".

[40] 3GPP TS 25.321: "Medium Access Control (MAC) protocol specification".

[41] 3GPP TS 25.331: "Radio Resource Control (RRC); Protocol specification".

[42] 3GPP TS 38.304: "NR; User Equipment (UE) procedures in Idle mode and RRC Inactive state".

[43] 3GPP TS 37.320: "Universal Terrestrial Radio Access (UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRA); Radio measurement collection for Minimization of Drive Tests (MDT); Overall description; Stage 2".

[44] 3GPP TS 28.705: "Telecommunication management; IP Multimedia Subsystem (IMS) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[45] 3GPP TS 28.702: "Telecommunication management; Core Network (CN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[46] 3GPP TS 28.652: "Telecommunication management; Universal Terrestrial Radio Access Network (UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[47] 3GPP TS 28.708: "Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[48] 3GPP TS 28.541: " Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3".

[49] IETF RFC 8089: "The "file" URI Scheme".

[50] 3GPP TS 28.405: "Telecommunication management; Quality of Experience (QoE) measurement collection; Control and configuration".

[51] 3GPP TS 26.247: "Transparent end-to-end Packet-switched Streaming Service (PSS); Progressive Download and Dynamic Adaptive Streaming over HTTP (3GP-DASH)".

[52] 3GPP TS 26.114: "IP Multimedia Subsystem (IMS); Multimedia Telephony; Media handling and interaction".

[53] 3GPP TS 26.118: "Virtual Reality (VR) profiles for streaming applications".

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

[55] IETF RFC 6991: "Common YANG Data Types".

[56] 3GPP TS 28.658: "Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[57] 3GPP TS 28.558: "Management and orchestration; UE level measurements for 5G system".

[58] 3GPP TS 28.111: "Fault management"

[59] 3GPP TS 32.404: "Performance Management (PM); Performance measurements; Definitions and template".

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

[61] IETF RFC 5952: "A recommendation for IPv6 address text representation".

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

[63] OpenAPI: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.

[x] IETF RFC 7950: “The YANG 1.1 Data Modeling Language”

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| **2nd Change** |

# 5 Common Data Types

## 5.1 Introduction

This clause defines common data types for generic usage.

## 5.2 Simple Data Types

This clause specifies common simple data types.

Table 5.2-1: Simple Data Types

|  |  |  |
| --- | --- | --- |
| Type Name | Type Definition | Description |
| FullTime | String | String with format "full-time" as defined in RFC 3339 [54] |
| DateMonth | String | String with format "date-month" as defined in RFC 3339 [54] |
| DateMonthDay | String | String with format "date-mday" as defined in RFC 3339 [54] |
| Float | Real | For YAML, the type is Real with format "float" as defined in OpenAPI Specification [63]  For YANG, the type is Decimal64 as defined in RFC 7950 [x] |
| Latitude | Real | The type is Real, the range is [-90, 90] |
| Longitude | Real | The type is Real, the range is [-180, 180] |
| DnList | array(DN) | List of DN |
| Mcc | String | Mobile Country Code, see clause 2.3 of TS 23.003 [5] for MCC,, String with pattern: '^[0-9]{3}$'  Editor Note: Pattern may need further study, e.g. alternatie pattern as '^ [02-79][0-9][0-9] $' |
| Mnc | String | Mobile Network Code, see clause 2.3 of TS 23.003 [5] for MNC, String with pattern: '^[0-9]{2,3}$' |
| Nid | String | This represents the Network Identifier, which together with a PLMN ID is used to identify an SNPN (see 3GPP TS 23.003 [5] and 3GPP TS 23.501 [8] clause 5.30.2.1).  Pattern: '^[A-Fa-f0-9]{11}$' |
| Tac | String | 2 or 3-octet string identifying a tracking area code as specified in clause 9.3.3.10 of 3GPP TS 38.413 [34], in hexadecimal representation. Each character in the string shall take a value of "0" to "9", "a" to "f" or "A" to "F" and shall represent 4 bits. The most significant character representing the 4 most significant bits of the TAC shall appear first in the string, and the character representing the 4 least significant bit of the TAC shall appear last in the string.  pattern: '(^[A-Fa-f0-9]{4}$)|(^[A-Fa-f0-9]{6}$)'  Examples:  A legacy TAC 0x4305 shall be encoded as "4305".  An extended TAC 0x63F84B shall be encoded as "63F84B"  Editor Note: Format may need further study |
| UtraCellId | Integer | UTRAN cells identified by UTRAN CGI  Editor Note: to add the limit number |
| EutraCellId | String | 28-bit string identifying an E-UTRA Cell Id as specified in clause 9.3.1.9 of 3GPP TS 38.413 [34], in hexadecimal representation. Each character in the string shall take a value of "0" to "9", "a" to "f" or "A" to "F" and shall represent 4 bits. The most significant character representing the 4 most significant bits of the Cell Id shall appear first in the string, and the character representing the 4 least significant bit of the Cell Id shall appear last in the string.  Pattern: '^[A-Fa-f0-9]{7}$'  Example:  An E-UTRA Cell Id 0x5BD6007 shall be encoded as "5BD6007". |
| NrCellId | String | 36-bit string identifying an NR Cell Id as specified in clause 9.3.1.7 of 3GPP TS 38.413 [34], in hexadecimal representation. Each character in the string shall take a value of "0" to "9", "a" to "f" or "A" to "F" and shall represent 4 bits. The most significant character representing the 4 most significant bits of the Cell Id shall appear first in the string, and the character representing the 4 least significant bit of the Cell Id shall appear last in the string.  Pattern: '^[A-Fa-f0-9]{9}$'  Example:  An NR Cell Id 0x225BD6007 shall be encoded as "225BD6007". |
| Fqdn | String | Fully Qualifed Domain Name, refere to clause 19.4.2 of TS 23.003[5]  Pattern: '^([0-9A-Za-z]([-0-9A-Za-z]{0,61}[0-9A-Za-z])?\.)+[A-Za-z]{2,63}\.?$'  minLength: 4  maxLength: 253 |
| Ipv4Addr | String | String identifying a IPv4 address formatted in the "dotted decimal" notation as defined in IETF RFC 1166 [60].  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])$'  example: '198.51.100.1' |
| Ipv6Addr | String | String identifying an IPv6 address formatted according to clause 4 of IETF RFC 5952 [61]. The mixed IPv4 IPv6 notation according to clause 5 of IETF RFC 5952 [61] shall not be used.  Pattern: '^((:|(0?|([1-9a-f][0-9a-f]{0,3}))):)((0?|([1-9a-f][0-9a-f]{0,3})):){0,6}(:|(0?|([1-9a-f][0-9a-f]{0,3})))$'  and  Pattern: '^((([^:]+:){7}([^:]+))|((([^:]+:)\*[^:]+)?::(([^:]+:)\*[^:]+)?))$'  example: '2001:db8:85a3::8a2e:370:7334' |
| Ipv6Prefix | String | String identifying an IPv6 address prefix formatted according to clause 4 of IETF RFC 5952 [61]. IPv6Prefix data type may contain an individual /128 IPv6 address.  Pattern: '^((:|(0?|([1-9a-f][0-9a-f]{0,3}))):)((0?|([1-9a-f][0-9a-f]{0,3})):){0,6}(:|(0?|([1-9a-f][0-9a-f]{0,3})))(\/(([0-9])|([0-9]{2})|(1[0-1][0-9])|(12[0-8])))$'  and  Pattern: '^((([^:]+:){7}([^:]+))|((([^:]+:)\*[^:]+)?::(([^:]+:)\*[^:]+)?))(\/.+)$'  example: '2001:db8:abcd:12::0/64' |
| Uri | String | String providing an URI formatted according to IETF RFC 3986 [62]. |
| NOTE 1: The string Pattern in X.2-1 may have different variants with no “^” or “$” in the pattern string. | | |

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| **End of Changes** |