**3GPP TSG-CT WG4 Meeting #111-eC4-22xxxx**

**E-Meeting, 18th – 26th August 2022 *was* C4-224158**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.571** | **CR** | **0369** | **rev** | **1** | **Current version:** | **17.6.0** |  |
|  | | | | | | | | |
| *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 |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | WLAN location information for interworking between ePDG connected to EPC and 5GS | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI17 | | | | |  | ***Date:*** | | | 2022-08-25 |
|  |  | | | |  | |  | | |  |
| ***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 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In the case of interworking bewteen ePDG connected EPC and 5GS, the SMF+PGW-C needs to send the PCF with the WLAN location information as specified in clause 4.5.7.2.8 of TS 23.402 if received from the ePDG. However, there is no data type to represent this "WLAN location information".  Seeking for the minimum impact in the specifications, the TWAP Identifier is reused as the identifier of the untrusted WLAN in case of ePDG connected to SMF+PGW, where the ePDG sends the untrusted WLAN location information.  Note that thought the TNAP identifier could have been equally reused for this purpose (it is unknown whether the UE that is using the ePDG is incapable of 5G NAS via WLAN), the “twapId” attribute is considered better, as it is more explicit, using a name that indicates WLAN, and it is also more aligned with the name of the AVP used in Gx, the TWAN-Identifier AVP. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Extend the usage of "twapId" to contain the WLAN location information in the case of interworking between ePDG connected 5GS and EPC. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The SMF+PGW-C is not able to deliver the WLAN location information to the PCF if received from the ePDG. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 5.4.4.10, A.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 29.512... CR 0950 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* First 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 TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

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

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

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

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

[7] 3GPP TS 23.003: "Numbering, addressing and identification".

[8] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[9] IETF RFC 7807: "Problem Details for HTTP APIs".

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

[11] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP) ".

[12] IETF RFC 6901: "JavaScript Object Notation (JSON) Pointer".

[13] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General aspects".

[14] IETF RFC 6902: "JavaScript Object Notation (JSON) Patch".

[15] IETF RFC 4122: "A Universally Unique IDentifier (UUID) URN Namespace".

[16] 3GPP TS 36.413: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)".

[17] IETF RFC 7042: "IANA Considerations and IETF Protocol and Documentation Usage for IEEE 802 Parameters".

[18] IETF RFC 6733: "Diameter Base Protocol".

[19] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".

[20] 3GPP TS 24.501: "Non-Access-Stratum (NAS) Protocol for 5G System (5GS); Stage 3".

[21] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[22] Void.

[23] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

[24] ITU-T Recommendation Q.763 (1999): "Specifications of Signalling System No.7; Formats and codes".

[25] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[26] 3GPP TS 23.015: "Technical Realization of Operator Determined Barring".

[27] 3GPP TR 21.900: "Technical Specification Group working methods".

[28] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[29] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".

[30] 3GPP TS 23.316: "Wireless and wireline convergence access support for the 5G System (5GS)".

[31] IEEE Std 802.11-2012: "IEEE Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications".

[32] CableLabs WR-TR-5WWC-ARCH: "5G Wireless Wireline Converged Core Architecture".

[33] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access; Stage 2".

[34] BBF TR-069: "CPE WAN Management Protocol".

[35] BBF TR-369: "User Services Platform (USP)".

[36] 3GPP TS 23.287: "Architecture enhancements for 5G System (5GS) to support Vehicle-to-Everything (V2X) services".

[37] BBF TR-470: "5G Wireless Wireline Convergence Architecture".

[38] IEEE "Guidelines for Use of Extended Unique Identifier (EUI), Organizationally Unique Identifier (OUI), and Company ID (CID)", <https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/tutorials/eui.pdf>

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

[40] IETF RFC 5580: "Carrying Location Objects in RADIUS and Diameter".

[41] BBF TR-456: "".

[42] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol specification".

[43] 3GPP TS 29.572: "5G System; Location Management Services; Stage 3".

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

[45] 3GPP TS 33.246: "Security of Multimedia Broadcast/Multicast Service (MBMS)".

[46] 3GPP TS 33.501: "Security architecture and procedures for 5G system; Stage 2".

[4x] 3GPP TS 23.402: "Architecture enhancements for non-3GPP accesses".

\* \* \* First Change \* \* \* \*

#### 5.4.4.10 Type: N3gaLocation

Table 5.4.4.10-1: Definition of type N3gaLocation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| n3gppTai | Tai | C | 0..1 | This IE shall be present over the 3GPP PLMN internal interfaces, but it shall not be present over the N5 interface. When present, it shall contain the TAI reported by the N3IWF, TNGF or W-AGF for the non-3GPP access. |
| n3IwfId | string | C | 0..1 | This IE shall contain the N3IWF identifier received over NGAP and shall be encoded as a string of hexadecimal characters. 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 N3IWF ID shall appear first in the string, and the character representing the 4 least significant bit of the N3IWF ID shall appear last in the string.  Pattern: '^[A-Fa-f0-9]+$'  Example:  The N3IWF Id 0x5BD6 shall be encoded as "5BD6".  It shall be present over the 3GPP PLMN internal interfaces if the UE is accessing the 5GC via an untrusted non-3GPP access, but shall not be present over the N5 interface. |
| ueIpv4Addr | Ipv4Addr | C | 0..1 | UE/N5CW device local IPv4 address (used to reach the N3IWF, TNGF or TWIF).  The ueIPv4Addr or the ueIPv6Addr shall be present if the UE is accessing the 5GC via a trusted or untrusted non-3GPP access and the information is available. |
| ueIpv6Addr | Ipv6Addr | C | 0..1 | UE/N5CW device local IPv6 address (used to reach the N3IWF, TNGF or TWIF).  The ueIPv4Addr or the ueIPv6Addr shall be present if the UE is accessing the 5GC via a trusted or untrusted non-3GPP access and the information is available. |
| portNumber | Uinteger | C | 0..1 | UDP or TCP source port number. It shall be present if the UE is accessing the 5GC via a trusted or untrusted non-3GPP access and NAT is detected. |
| protocol | TransportProtocol | O | 0..1 | This IE may be present if portNumber is present.  When present, this IE shall indicate the transport protocol used by the UE to access the core network via a trusted or untrusted non-3GPP access and NAT is detected.  The absence of this IE indicates that the transport protocol used by the UE to access the core network via a trusted or untrusted non-3GPP access is not specified, i.e. could be UDP or TCP. |
| tnapId | TnapId | C | 0..1 | This IE shall contain the TNAP Identifier, see clause 5.6.2 of 3GPP TS 23.501 [8]. |
| twapId | TwapId | C | 0..1 | In the scenario of accessing 5GC from N5CW device, this IE shall contain the TWAP Identifier, see clause 4.2.8.5.3 of 3GPP TS 23.501 [8].  In the scenario of interworking between ePDG/EPC and 5GS, this IE shall contain the WLAN location information, see clause 4.5.7.2.8 of 3GPP TS 23.402 [4x]. |
| hfcNodeId | HfcNodeId | C | 0..1 | This IE shall contain the HFC Node Identifier received over NGAP. It shall be present for a 5G-CRG/FN-CRG accessing the 5GC via wireline access network. |
| gli | Gli | C | 0..1 | This IE shall contain the Global Line Identifier. It shall be present for a 5G-BRG/FN-BRG accessing the 5GC via wireline access network. |
| w5gbanLineType | LineType | O | 0..1 | This IE may be present for a 5G-BRG/FN-BRG accessing the 5GC via wireline access network.  When present, it shall indicate the type of the wireline (DSL or PON). |
| gci | Gci | C | 0..1 | This IE shall contain the Global Cable Identifier. It shall be present for the N5GC device accessing the 5GC via wireline access network. See clause 4.10a of 3GPP TS 23.316 [30] |

\* \* \* Next Change \* \* \* \*

# A.2 Data related to Common Data Types

openapi: 3.0.0

info:

version: '1.3.0'

title: 'Common Data Types'

description: |

Common Data Types for Service Based Interfaces.

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externalDocs:

description: 3GPP TS 29.571 Common Data Types for Service Based Interfaces, version 17.6.0

url: 'https://www.3gpp.org/ftp/Specs/archive/29\_series/29.571/'

paths: {}

components:

schemas:

#

# Common Data Types for Generic usage definitiones as defined in clause 5.2

#

#

# COMMON SIMPLE DATA TYPES

#

Binary:

format: binary

type: string

description: string with format 'binary' as defined in OpenAPI.

BinaryRm:

format: binary

type: string

nullable: true

description: "string with format 'binary' as defined in OpenAPI OpenAPI with 'nullable: true' property."

Bytes:

format: byte

type: string

description: string with format 'bytes' as defined in OpenAPI

BytesRm:

format: byte

type: string

nullable: true

description: >

string with format 'bytes' as defined in OpenAPI OpenAPI with 'nullable: true' property.

Date:

format: date

type: string

description: string with format 'date' as defined in OpenAPI.

DateRm:

format: date

type: string

nullable: true

description: >

string with format 'date' as defined in OpenAPI OpenAPI with 'nullable: true' property.

DateTime:

format: date-time

type: string

description: string with format 'date-time' as defined in OpenAPI.

DateTimeRm:

format: date-time

type: string

nullable: true

description: >

string with format 'date-time' as defined in OpenAPI with 'nullable:true' property.

DiameterIdentity:

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

DiameterIdentityRm:

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

Double:

format: double

type: number

description: string with format 'double' as defined in OpenAPI

DoubleRm:

format: double

type: number

nullable: true

description: >

string with format 'double' as defined in OpenAPI with 'nullable: true' property.

DurationSec:

type: integer

description: indicating a time in seconds.

DurationSecRm:

type: integer

nullable: true

description: "indicating a time in seconds with OpenAPI defined 'nullable: true' property."

Float:

format: float

type: number

description: string with format 'float' as defined in OpenAPI.

FloatRm:

format: float

type: number

nullable: true

description: >

string with format 'float' as defined in OpenAPI with the OpenAPI defined

'nullable: true' property.

Int32:

format: int32

type: integer

description: string with format 'int32' as defined in OpenAPI.

Int32Rm:

format: int32

type: integer

nullable: true

description: >

string with format 'int32' as defined in OpenAPI with the OpenAPI defined

'nullable: true' property.

Int64:

type: integer

format: int64

description: string with format 'int64' as defined in OpenAPI.

Int64Rm:

format: int64

type: integer

nullable: true

description: >

string with format 'int64' as defined in OpenAPI with the OpenAPI defined

'nullable: true' property.

Ipv4Addr:

type: string

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'

description: >

String identifying a IPv4 address formatted in the 'dotted decimal' notation

as defined in RFC 1166.

Ipv4AddrRm:

type: string

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'

nullable: true

description: >

String identifying a IPv4 address formatted in the 'dotted decimal' notation

as defined in RFC 1166 with the OpenAPI defined 'nullable: true' property.

Ipv4AddrMask:

type: string

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])(\/([0-9]|[1-2][0-9]|3[0-2]))$'

example: '198.51.0.0/16'

description: >

"String identifying a IPv4 address mask formatted in the 'dotted decimal' notation

as defined in RFC 1166."

Ipv4AddrMaskRm:

type: string

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])(\/([0-9]|[1-2][0-9]|3[0-2]))$'

example: '198.51.0.0/16'

nullable: true

description: >

String identifying a IPv4 address mask formatted in the 'dotted decimal' notation

as defined in RFC 1166 with the OpenAPI defined 'nullable: true' property.

Ipv6Addr:

type: string

allOf:

- 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})))$'

- pattern: '^((([^:]+:){7}([^:]+))|((([^:]+:)\*[^:]+)?::(([^:]+:)\*[^:]+)?))$'

example: '2001:db8:85a3::8a2e:370:7334'

description: >

String identifying an IPv6 address formatted according to clause 4 of RFC5952.

The mixed IPv4 IPv6 notation according to clause 5 of RFC5952 shall not be used.

Ipv6AddrRm:

type: string

allOf:

- 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})))$'

- pattern: '^((([^:]+:){7}([^:]+))|((([^:]+:)\*[^:]+)?::(([^:]+:)\*[^:]+)?))$'

example: '2001:db8:85a3::8a2e:370:7334'

nullable: true

description: >

String identifying an IPv6 address formatted according to clause 4 of RFC5952 with the

OpenAPI 'nullable: true' property.

The mixed IPv4 IPv6 notation according to clause 5 of RFC5952 shall not be used.

Ipv6Prefix:

type: string

allOf:

- 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])))$'

- pattern: '^((([^:]+:){7}([^:]+))|((([^:]+:)\*[^:]+)?::(([^:]+:)\*[^:]+)?))(\/.+)$'

example: '2001:db8:abcd:12::0/64'

description: >

String identifying an IPv6 address prefix formatted according to clause 4 of RFC 5952.

IPv6Prefix data type may contain an individual /128 IPv6 address.

Ipv6PrefixRm:

type: string

allOf:

- 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])))$'

- pattern: '^((([^:]+:){7}([^:]+))|((([^:]+:)\*[^:]+)?::(([^:]+:)\*[^:]+)?))(\/.+)$'

nullable: true

description: >

String identifying an IPv6 address prefix formatted according to clause 4 of RFC 5952 with

the OpenAPI 'nullable: true' property. IPv6Prefix data type may contain an individual

/128 IPv6 address.

MacAddr48:

type: string

pattern: '^([0-9a-fA-F]{2})((-[0-9a-fA-F]{2}){5})$'

description: >

String identifying a MAC address formatted in the hexadecimal notation

according to clause 1.1 and clause 2.1 of RFC 7042.

MacAddr48Rm:

type: string

pattern: '^([0-9a-fA-F]{2})((-[0-9a-fA-F]{2}){5})$'

nullable: true

description: >

"String identifying a MAC address formatted in the hexadecimal notation according to

clause 1.1 and clause 2.1 of RFC 7042 with the OpenAPI 'nullable: true' property."

SupportedFeatures:

type: string

pattern: '^[A-Fa-f0-9]\*$'

description: >

A string used to indicate the features supported by an API that is used as defined in clause

6.6 in 3GPP TS 29.500. The string shall contain a bitmask indicating supported features 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 the support of 4 features as described in

table 5.2.2-3. The most significant character representing the highest-numbered features

shall appear first in the string, and the character representing features 1 to 4

shall appear last in the string. The list of features and their numbering (starting with 1)

are defined separately for each API. If the string contains a lower number of characters

than there are defined features for an API, all features that would be represented by

characters that are not present in the string are not supported.

Uinteger:

type: integer

minimum: 0

description: Unsigned Integer, i.e. only value 0 and integers above 0 are permissible.

UintegerRm:

type: integer

minimum: 0

description: >

Unsigned Integer, i.e. only value 0 and integers above 0 are permissible with

the OpenAPI 'nullable: true' property.

nullable: true

Uint16:

type: integer

minimum: 0

maximum: 65535

description: Integer where the allowed values correspond to the value range of an unsigned 16-bit integer.

Uint16Rm:

type: integer

minimum: 0

maximum: 65535

nullable: true

description: >

Integer where the allowed values correspond to the value range of an unsigned

16-bit integer with the OpenAPI 'nullable: true' property.

Uint32:

type: integer

minimum: 0

maximum: 4294967295 #(2^32)-1

description: >

Integer where the allowed values correspond to the value range of an unsigned

32-bit integer.

Uint32Rm:

format: int32

type: integer

minimum: 0

maximum: 4294967295 #(2^32)-1

nullable: true

description: >

Integer where the allowed values correspond to the value range of an unsigned

32-bit integer with the OpenAPI 'nullable: true' property.

Uint64:

type: integer

minimum: 0

maximum: 18446744073709551615 #(2^64)-1

description: >

Integer where the allowed values correspond to the value range of an

unsigned 64-bit integer.

Uint64Rm:

type: integer

minimum: 0

maximum: 18446744073709551615 #(2^64)-1

nullable: true

description: >

Integer where the allowed values correspond to the value range of an unsigned

16-bit integer with the OpenAPI 'nullable: true' property.

Uri:

type: string

description: String providing an URI formatted according to RFC 3986.

UriRm:

type: string

nullable: true

description: >

String providing an URI formatted according to RFC 3986 with the OpenAPI

'nullable: true' property.

VarUeId:

type: string

pattern: '^(imsi-[0-9]{5,15}|nai-.+|msisdn-[0-9]{5,15}|extid-[^@]+@[^@]+|gci-.+|gli-.+|.+)$'

description: String represents the SUPI or GPSI

VarUeIdRm:

type: string

pattern: '^(imsi-[0-9]{5,15}|nai-.+|msisdn-[0-9]{5,15}|extid-[^@]+@[^@]+|gci-.+|gli-.+|.+)$'

nullable: true

description: "String represents the SUPI or GPSI with the OpenAPI 'nullable: true' property."

TimeZone:

type: string

example: '-08:00+1'

description: |

String with format "time-numoffset" optionally appended by "daylightSavingTime", where

- "time-numoffset" shall represent the time zone adjusted for daylight saving time and be

encoded as time-numoffset as defined in clause 5.6 of IETF RFC 3339;

- "daylightSavingTime" shall represent the adjustment that has been made and shall be

encoded as "+1" or "+2" for a +1 or +2 hours adjustment.

The example is for 8 hours behind UTC, +1 hour adjustment for Daylight Saving Time.

TimeZoneRm:

type: string

nullable: true

description: |

"String with format 'time-numoffset' optionally appended by '<daylightSavingTime>', where

- 'time-numoffset' shall represent the time zone adjusted for daylight saving time and be

encoded as time-numoffset as defined in clause 5.6 of IETF RFC 3339;

- 'daylightSavingTime' shall represent the adjustment that has been made and shall be

encoded as '+1' or '+2' for a +1 or +2 hours adjustment.

But with the OpenAPI 'nullable: true' property."

StnSr:

type: string

description: String representing the STN-SR as defined in clause 18.6 of 3GPP TS 23.003.

StnSrRm:

type: string

nullable: true

description: >

String representing the STN-SR as defined in clause 18.6 of 3GPP TS 23.003

with the OpenAPI 'nullable: true' property.

CMsisdn:

type: string

pattern: '^[0-9]{5,15}$'

description: String representing the C-MSISDN as defined in clause 18.7 of 3GPP TS 23.003.

CMsisdnRm:

type: string

pattern: '^[0-9]{5,15}$'

nullable: true

description: >

String representing the C-MSISDN as defined in clause 18.7 of 3GPP TS 23.003 with

the OpenAPI 'nullable: true' property.

DayOfWeek:

type: integer

minimum: 1

maximum: 7

description: >

integer between and including 1 and 7 denoting a weekday. 1 shall indicate Monday,

and the subsequent weekdays shall be indicated with the next higher numbers.

7 shall indicate Sunday.

TimeOfDay:

type: string

description: >

String with format partial-time or full-time as defined in clause 5.6 of IETF RFC 3339.

Examples, 20:15:00, 20:15:00-08:00 (for 8 hours behind UTC).

EmptyObject:

description: Empty JSON object { }, it is defined with the keyword additionalProperties false

type: object

additionalProperties: false

Fqdn:

description: Fully Qualified Domain Name

type: string

pattern: '^([0-9A-Za-z]([-0-9A-Za-z]{0,61}[0-9A-Za-z])?\.)+[A-Za-z]{2,63}\.?$'

minLength: 4

maxLength: 253

FqdnRm:

description: Fully Qualified Domain Name, but it also allows the null value

anyOf:

- $ref: '#/components/schemas/Fqdn'

- $ref: '#/components/schemas/NullValue'

#

# COMMON ENUMERATED DATA TYPES

#

PatchOperation:

anyOf:

- type: string

enum:

- add

- copy

- move

- remove

- replace

- test

- type: string

description: Operations as defined in IETF RFC 6902.

UriScheme:

anyOf:

- type: string

enum:

- http

- https

- type: string

description: HTTP and HTTPS URI scheme.

ChangeType:

anyOf:

- type: string

enum:

- ADD

- MOVE

- REMOVE

- REPLACE

- type: string

description: Indicates the type of change to be performed.

HttpMethod:

anyOf:

- type: string

enum:

- GET

- POST

- PUT

- DELETE

- PATCH

- OPTIONS

- HEAD

- CONNECT

- TRACE

- type: string

description: HTTP methodes.

NullValue:

enum:

- null

description: JSON's null value.

MatchingOperator:

anyOf:

- type: string

enum:

- FULL\_MATCH

- MATCH\_ALL

- STARTS\_WITH

- NOT\_START\_WITH

- ENDS\_WITH

- NOT\_END\_WITH

- CONTAINS

- NOT\_CONTAIN

- type: string

description: the matching operation.

#

# COMMON STRUCTURED DATA TYPES

#

ProblemDetails:

description: Provides additional information in an error response.

type: object

properties:

type:

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

title:

type: string

status:

type: integer

detail:

type: string

description: A human-readable explanation specific to this occurrence of the problem.

instance:

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

cause:

type: string

description: >

A machine-readable application error cause specific to this occurrence of the problem.

This IE should be present and provide application-related error information, if

available.

invalidParams:

type: array

items:

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

minItems: 1

supportedFeatures:

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

accessTokenError:

$ref: 'TS29510\_Nnrf\_AccessToken.yaml#/components/schemas/AccessTokenErr'

accessTokenRequest:

$ref: 'TS29510\_Nnrf\_AccessToken.yaml#/components/schemas/AccessTokenReq'

nrfId:

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

Link:

type: object

properties:

href:

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

description: It contains the URI of the linked resource.

LinkRm:

type: object

properties:

href:

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

nullable: true

description: >

It contains the URI of the linked resource with the OpenAPI 'nullable: true' property.

PatchItem:

type: object

properties:

op:

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

path:

type: string

description: >

contains a JSON pointer value (as defined in IETF RFC 6901) that references

a location of a resource on which the patch operation shall be performed.

from:

type: string

description: >

indicates the path of the source JSON element (according to JSON Pointer syntax)

being moved or copied to the location indicated by the "path" attribute.

value: {}

required:

- op

- path

description: it contains information on data to be changed.

LinksValueSchema:

oneOf:

- type: array

items:

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

minItems: 1

- $ref: '#/components/schemas/Link'

description: A list of mutually exclusive alternatives of 1 or more links.

SelfLink:

type: object

properties:

self:

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

required:

- self

description: It contains the URI of the linked resource.

InvalidParam:

type: object

properties:

param:

type: string

description: >

If the invalid parameter is an attribute in a JSON body, this IE shall contain the

attribute's name and shall be encoded as a JSON Pointer. If the invalid parameter is

an HTTP header, this IE shall be formatted as the concatenation of the string "header "

plus the name of such header. If the invalid parameter is a query parameter, this IE

shall be formatted as the concatenation of the string "query " plus the name of such

query parameter. If the invalid parameter is a variable part in the path of a resource

URI, this IE shall contain the name of the variable, including the symbols "{" and "}"

used in OpenAPI specification as the notation to represent variable path segments.

reason:

type: string

description: >

A human-readable reason, e.g. "must be a positive integer". In cases involving failed

operations in a PATCH request, the reason string should identify the operation that

failed using the operation's array index to assist in correlation of the invalid

parameter with the failed operation, e.g." Replacement value invalid for attribute

(failed operation index= 4)"

required:

- param

description: It contains an invalid parameter and a related description.

ChangeItem:

type: object

properties:

op:

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

path:

type: string

description: >

contains a JSON pointer value (as defined in IETF RFC 6901) that references a target

location within the resource on which the change has been applied.

from:

type: string

description: >

indicates the path of the source JSON element (according to JSON Pointer syntax)

being moved or copied to the location indicated by the "path" attribute. It shall

be present if the "op" attribute is of value "MOVE".

origValue: {}

newValue: {}

required:

- op

- path

description: It contains data which need to be changed.

NotifyItem:

type: object

required:

- resourceId

- changes

properties:

resourceId:

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

changes:

type: array

items:

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

minItems: 1

description: Indicates changes on a resource.

ComplexQuery:

oneOf:

- $ref: '#/components/schemas/Cnf'

- $ref: '#/components/schemas/Dnf'

description: >

The ComplexQuery data type is either a conjunctive normal form or a disjunctive normal form.

The attribute names "cnfUnits" and "dnfUnits" (see clause 5.2.4.11 and clause 5.2.4.12)

serve as discriminator.

Cnf:

type: object

required:

- cnfUnits

properties:

cnfUnits:

type: array

items:

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

minItems: 1

description: A conjunctive normal form

Dnf:

type: object

required:

- dnfUnits

properties:

dnfUnits:

type: array

items:

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

minItems: 1

description: A disjunctive normal form.

CnfUnit:

type: object

required:

- cnfUnit

properties:

cnfUnit:

type: array

items:

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

minItems: 1

description: >

During the processing of cnfUnits attribute, all the members in the array shall be

interpreted as logically concatenated with logical "AND".

DnfUnit:

type: object

required:

- dnfUnit

properties:

dnfUnit:

type: array

items:

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

minItems: 1

description: >

During the processing of dnfUnits attribute, all the members in the array shall be

interpreted as logically concatenated with logical "OR".

Atom:

description: contains a search parameter and its positive or negative content.

type: object

required:

- attr

- value

properties:

attr:

type: string

description: contains the name of a defined query parameter.

value: {}

negative:

type: boolean

description: indicates whether the negative condition applies for the query condition.

PatchResult:

description: The execution report result on failed modification.

type: object

required:

- report

properties:

report:

type: array

items:

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

minItems: 1

description: >

The execution report contains an array of report items. Each report item indicates one

failed modification.

ReportItem:

type: object

required:

- path

properties:

path:

type: string

description: >

Contains a JSON pointer value (as defined in IETF RFC 6901) that references a

location of a resource to which the modification is subject.

reason:

type: string

description: >

A human-readable reason providing details on the reported modification failure.

The reason string should identify the operation that failed using the operation's

array index to assist in correlation of the invalid parameter with the failed

operation, e.g. "Replacement value invalid for attribute (failed operation index= 4)".

description: indicates performed modivications.

HalTemplate:

description: >

Hypertext Application Language (HAL) template contains the extended 3GPP hypermedia format.

type: object

required:

- method

properties:

title:

type: string

description: A human-readable string that can be used to identify this template

method:

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

contentType:

type: string

description: >

The media type that should be used for the corresponding request. If the attribute

is missing, or contains an unrecognized value, the client should act as if the

contentType is set to "application/json".

properties:

type: array

items:

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

minItems: 1

description: >

The properties that should be included in the body of the corresponding request.

If the contentType attribute is set to "application/json", then this attribute

describes the attributes of the JSON object of the body.

Property:

description: >

If the contentType attribute is set to "application/json", then this attribute describes

the attributes of the JSON object of the body.

type: object

required:

- name

properties:

name:

type: string

description: The name of the property

required:

type: boolean

description: >

Indicates whether the property is required – true= required –

false(default)= not required.

regex:

type: string

description: A regular expression string to be applied to the value of the property.

value:

type: string

description: The property value. When present, it shall be a valid JSON string.

RedirectResponse:

description: >

The response shall include a Location header field containing a different URI

(pointing to a different URI of an other service instance), or the same URI if a request

is redirected to the same target resource via a different SCP.

type: object

properties:

cause:

type: string

targetScp:

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

targetSepp:

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

TunnelAddress:

description: Tunnel address

type: object

properties:

ipv4Addr:

$ref: '#/components/schemas/Ipv4Addr'

ipv6Addr:

$ref: '#/components/schemas/Ipv6Addr'

portNumber:

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

required:

- portNumber

anyOf:

- required: [ ipv4Addr ]

- required: [ ipv6Addr ]

FqdnPatternMatchingRule:

description: a matching rule for a FQDN pattern

type: object

oneOf:

- required: [ regex ]

- required: [ stringMatchingRule ]

properties:

regex:

type: string

stringMatchingRule:

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

StringMatchingRule:

description: A list of conditions for string matching

type: object

properties:

stringMatchingConditions:

type: array

items:

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

minItems: 1

StringMatchingCondition:

description: A String with Matching Operator

type: object

properties:

matchingString:

type: string

matchingOperator:

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

required:

- matchingOperator

#

# Data Types related to Subscription, Identification and Numbering as defined in clause 5.3

#

#

# SIMPLE DATA TYPES

#

Dnn:

type: string

description: >

String representing a Data Network as defined in clause 9A of 3GPP TS 23.003;

it shall contain either a DNN Network Identifier, or a full DNN with both the Network

Identifier and Operator Identifier, as specified in 3GPP TS 23.003 clause 9.1.1 and 9.1.2.

It shall be coded as string in which the labels are separated by dots

(e.g. "Label1.Label2.Label3").

DnnRm:

type: string

nullable: true

description: >

String representing a Data Network as defined in clause 9A of 3GPP TS 23.003;

it shall contain either a DNN Network Identifier, or a full DNN with both the

Network Identifier and Operator Identifier, as specified in 3GPP TS 23.003 clause 9.1.1

and 9.1.2. It shall be coded as string in which the labels are separated by dots

(e.g. 'Label1.Label2.Label3') with the OpenAPI 'nullable: true' property.

WildcardDnn:

type: string

pattern: '^[\*]$'

description: String representing the Wildcard DNN. It shall contain the string "\*".

WildcardDnnRm:

type: string

pattern: '^[\*]$'

nullable: true

description: >

String representing the Wildcard DNN. It shall contain the string '\*' but with the

OpenAPI 'nullable: true' property.

Gpsi:

type: string

pattern: '^(msisdn-[0-9]{5,15}|extid-[^@]+@[^@]+|.+)$'

description: >

String identifying a Gpsi shall contain either an External Id or an MSISDN.

It shall be formatted as follows -External Identifier= "extid-'extid', where 'extid'

shall be formatted according to clause 19.7.2 of 3GPP TS 23.003 that describes an

External Identifier.

GpsiRm:

type: string

pattern: '^(msisdn-[0-9]{5,15}|extid-[^@]+@[^@]+|.+)$'

nullable: true

description: >

String identifying a Gpsi shall contain either an External Id or an MSISDN. It shall be

formatted as follows -External Identifier= 'extid-'extid', where 'extid' shall be formatted

according to clause 19.7.2 of 3GPP TS 23.003 that describes an External Identifier with the

OpenAPI 'nullable: true' property.

GroupId:

type: string

pattern: '^[A-Fa-f0-9]{8}-[0-9]{3}-[0-9]{2,3}-([A-Fa-f0-9][A-Fa-f0-9]){1,10}$'

description: >

String identifying a group of devices network internal globally unique ID which identifies

a set of IMSIs, as specified in clause 19.9 of 3GPP TS 23.003.

GroupIdRm:

type: string

pattern: '^[A-Fa-f0-9]{8}-[0-9]{3}-[0-9]{2,3}-([A-Fa-f0-9][A-Fa-f0-9]){1,10}$'

nullable: true

description: >

String identifying a group of devices network internal globally unique ID which

identifies a set of IMSIs, as specified in clause 19.9 of 3GPP TS 23.003 with the

OpenAPI 'nullable: true' property.

ExternalGroupId:

type: string

pattern: '^extgroupid-[^@]+@[^@]+$'

description: >

String identifying External Group Identifier that identifies a group made up of one or

more subscriptions associated to a group of IMSIs, as specified in clause 19.7.3 of 3GPP

TS 23.003.

ExternalGroupIdRm:

type: string

pattern: '^extgroupid-[^@]+@[^@]+$'

nullable: true

description: >

String identifying External Group Identifier that identifies a group made up of one or

more subscriptions associated to a group of IMSIs, as specified in clause 19.7.3 of

3GPP TS 23.003 with the OpenAPI 'nullable: true' property.

Pei:

type: string

pattern: '^(imei-[0-9]{15}|imeisv-[0-9]{16}|mac((-[0-9a-fA-F]{2}){6})(-untrusted)?|eui((-[0-9a-fA-F]{2}){8})|.+)$'

description: >

String representing a Permanent Equipment Identifier that may contain - an IMEI or IMEISV,

as specified in clause 6.2 of 3GPP TS 23.003; a MAC address for a 5G-RG or FN-RG via

wireline access, with an indication that this address cannot be trusted for regulatory

purpose if this address cannot be used as an Equipment Identifier of the FN-RG, as

specified in clause 4.7.7 of 3GPP TS23.316. Examples are imei-012345678901234 or

imeisv-0123456789012345.

PeiRm:

type: string

pattern: '^(imei-[0-9]{15}|imeisv-[0-9]{16}|mac((-[0-9a-fA-F]{2}){6})(-untrusted)?|eui((-[0-9a-fA-F]{2}){8})|.+)$'

nullable: true

description: >

This data type is defined in the same way as the 'Pei' data type but with the OpenAPI 'nullable: true' property.

Supi:

type: string

pattern: '^(imsi-[0-9]{5,15}|nai-.+|gci-.+|gli-.+|.+)$'

description: |

String identifying a Supi that shall contain either an IMSI, a network specific identifier,

a Global Cable Identifier (GCI) or a Global Line Identifier (GLI) as specified in clause

2.2A of 3GPP TS 23.003. It shall be formatted as follows

- for an IMSI "imsi-<imsi>", where <imsi> shall be formatted according to clause 2.2

of 3GPP TS 23.003 that describes an IMSI.

- for a network specific identifier "nai-<nai>, where <nai> shall be formatted

according to clause 28.7.2 of 3GPP TS 23.003 that describes an NAI.

- for a GCI "gci-<gci>", where <gci> shall be formatted according to clause 28.15.2

of 3GPP TS 23.003.

- for a GLI "gli-<gli>", where <gli> shall be formatted according to clause 28.16.2 of

3GPP TS 23.003.To enable that the value is used as part of an URI, the string shall

only contain characters allowed according to the "lower-with-hyphen" naming convention

defined in 3GPP TS 29.501.

SupiRm:

type: string

pattern: '^(imsi-[0-9]{5,15}|nai-.+|gci-.+|gli-.+|.+)$'

nullable: true

description: >

This data type is defined in the same way as the 'Supi' data type, but with the

OpenAPI 'nullable: true' property.

NfInstanceId:

type: string

format: uuid

description: >

String uniquely identifying a NF instance. The format of the NF Instance ID shall be a

Universally Unique Identifier (UUID) version 4, as described in IETF RFC 4122.

AmfId:

type: string

pattern: '^[A-Fa-f0-9]{6}$'

description: >

String identifying the AMF ID composed of AMF Region ID (8 bits), AMF Set ID (10 bits)

and AMF Pointer (6 bits) as specified in clause 2.10.1 of 3GPP TS 23.003. It is encoded

as a string of 6 hexadecimal characters (i.e., 24 bits).

AmfRegionId:

type: string

pattern: '^[A-Fa-f0-9]{2}$'

description: >

String identifying the AMF Set ID (10 bits) as specified in clause 2.10.1 of 3GPP TS 23.003.

It is encoded as a string of 3 hexadecimal characters where the first character is limited

to values 0 to 3 (i.e. 10 bits)

AmfSetId:

type: string

pattern: '^[0-3][A-Fa-f0-9]{2}$'

description: >

String identifying the AMF Set ID (10 bits) as specified in clause 2.10.1 of 3GPP TS 23.003.

It is encoded as a string of 3 hexadecimal characters where the first character is limited

to values 0 to 3 (i.e. 10 bits).

RfspIndex:

type: integer

minimum: 1

maximum: 256

description: >

Unsigned integer representing the "Subscriber Profile ID for RAT/Frequency Priority"

as specified in 3GPP TS 36.413.

RfspIndexRm:

type: integer

minimum: 1

maximum: 256

nullable: true

description: >

Unsigned integer representing the 'Subscriber Profile ID for RAT/Frequency Priority'

as specified in 3GPP TS 36.413 with the OpenAPI 'nullable: true' property.

NfGroupId:

type: string

description: Identifier of a group of NFs.

MtcProviderInformation:

type: string

description: String uniquely identifying MTC provider information.

CagId:

type: string

pattern: '^[A-Fa-f0-9]{8}$'

description: String containing a Closed Access Group Identifier.

SupiOrSuci:

type: string

pattern: '^(imsi-[0-9]{5,15}|nai-.+|gli-.+|gci-.+|suci-(0-[0-9]{3}-[0-9]{2,3}|[1-7]-.+)-[0-9]{1,4}-(0-0-.\*|[a-fA-F1-9]-([1-9]|[1-9][0-9]|1[0-9]{2}|2[0-4][0-9]|25[0-5])-[a-fA-F0-9]+)|.+)$'

description: String identifying a SUPI or a SUCI.

#

# STRUCTURED DATA TYPES

#

Guami:

type: object

properties:

plmnId:

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

amfId:

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

required:

- plmnId

- amfId

description: Globally Unique AMF Identifier constructed out of PLMN, Network and AMF identity.

GuamiRm:

anyOf:

- $ref: '#/components/schemas/Guami'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'Guami' data type, but with the OpenAPI

'nullable: true' property.

NetworkId:

type: object

properties:

mnc:

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

mcc:

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

description: contains PLMN and Network identity.

#

# Data Types related to 5G Network as defined in clause 5.4

#

#

# SIMPLE DATA TYPES

#

ApplicationId:

type: string

description: String providing an application identifier.

ApplicationIdRm:

type: string

nullable: true

description: >

String providing an application identifier with the OpenAPI 'nullable: true' property.

PduSessionId:

type: integer

minimum: 0

maximum: 255

description: >

Unsigned integer identifying a PDU session, within the range 0 to 255, as specified in

clause 11.2.3.1b, bits 1 to 8, of 3GPP TS 24.007. If the PDU Session ID is allocated by the

Core Network for UEs not supporting N1 mode, reserved range 64 to 95 is used. PDU Session ID

within the reserved range is only visible in the Core Network.

Mcc:

type: string

pattern: '^\d{3}$'

description: >

Mobile Country Code part of the PLMN, comprising 3 digits, as defined in clause 9.3.3.5

of 3GPP TS 38.413.

MccRm:

type: string

pattern: '^\d{3}$'

nullable: true

description: >

Mobile Country Code part of the PLMN, comprising 3 digits, as defined in clause 9.3.3.5 of

3GPP TS 38.413 with the OpenAPI 'nullable: true' property.

Mnc:

type: string

pattern: '^\d{2,3}$'

description: Mobile Network Code part of the PLMN, comprising 2 or 3 digits, as defined in clause 9.3.3.5 of 3GPP TS 38.413.

MncRm:

type: string

pattern: '^\d{2,3}$'

nullable: true

description: >

Mobile Network Code part of the PLMN, comprising 2 or 3 digits, as defined in clause

9.3.3.5 of 3GPP TS 38.413 with the OpenAPI 'nullable: true' property.

Tac:

type: string

pattern: '(^[A-Fa-f0-9]{4}$)|(^[A-Fa-f0-9]{6}$)'

description: >

2 or 3-octet string identifying a tracking area code as specified in clause 9.3.3.10

of 3GPP TS 38.413, 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.

TacRm:

type: string

pattern: '(^[A-Fa-f0-9]{4}$)|(^[A-Fa-f0-9]{6}$)'

nullable: true

description: >

This data type is defined in the same way as the 'Tac' data type, but with the

OpenAPI 'nullable: true' property.

EutraCellId:

type: string

pattern: '^[A-Fa-f0-9]{7}$'

description: >

28-bit string identifying an E-UTRA Cell Id as specified in clause 9.3.1.9 of

3GPP TS 38.413, 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.

EutraCellIdRm:

type: string

pattern: '^[A-Fa-f0-9]{7}$'

nullable: true

description: >

This data type is defined in the same way as the 'EutraCellId' data type, but with

the OpenAPI 'nullable: true' property.

NrCellId:

type: string

pattern: '^[A-Fa-f0-9]{9}$'

description: >

36-bit string identifying an NR Cell Id as specified in clause 9.3.1.7 of 3GPP TS 38.413,

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.

NrCellIdRm:

type: string

pattern: '^[A-Fa-f0-9]{9}$'

nullable: true

description: >

This data type is defined in the same way as the 'NrCellId' data type, but with the

OpenAPI 'nullable: true' property.

Dnai:

type: string

description: DNAI (Data network access identifier), see clause 5.6.7 of 3GPP TS 23.501.

DnaiRm:

type: string

nullable: true

description: >

This data type is defined in the same way as the 'Dnai' data type, but with the

OpenAPI 'nullable: true' property.

5GMmCause:

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

AmfName:

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

AreaCode:

type: string

description: Values are operator specific.

AreaCodeRm:

type: string

nullable: true

description: >

This data type is defined in the same way as the 'AreaCode' data type, but with the

OpenAPI 'nullable: true' property.

N3IwfId:

type: string

pattern: '^[A-Fa-f0-9]+$'

description: >

This represents the identifier of the N3IWF ID as specified in clause 9.3.1.57 of

3GPP TS 38.413 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 N3IWF ID shall appear first in the

string, and the character representing the 4 least significant bit of the N3IWF ID shall

appear last in the string.

WAgfId:

type: string

pattern: '^[A-Fa-f0-9]+$'

description: >

This represents the identifier of the W-AGF ID as specified in clause 9.3.1.162 of

3GPP TS 38.413 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 W-AGF ID shall

appear first in the string, and the character representing the 4 least significant bit

of the W-AGF ID shall appear last in the string.

TngfId:

type: string

pattern: '^[A-Fa-f0-9]+$'

description: >

This represents the identifier of the TNGF ID as specified in clause 9.3.1.161 of

3GPP TS 38.413 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 TNGF ID shall appear first in

the string, and the character representing the 4 least significant bit of the TNGF ID

shall appear last in the string.

NgeNbId:

type: string

pattern: '^(MacroNGeNB-[A-Fa-f0-9]{5}|LMacroNGeNB-[A-Fa-f0-9]{6}|SMacroNGeNB-[A-Fa-f0-9]{5})$'

description: >

This represents the identifier of the ng-eNB ID as specified in clause 9.3.1.8 of

3GPP TS 38.413. The value of the ng-eNB ID shall be encoded 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 padding 0 shall be added to make multiple nibbles, so the most

significant character representing the padding 0 if required together with the 4 most

significant bits of the ng-eNB ID shall appear first in the string, and the character

representing the 4 least significant bit of the ng-eNB ID (to form a nibble) shall appear

last in the string.

example: SMacroNGeNB-34B89

Nid:

type: string

pattern: '^[A-Fa-f0-9]{11}$'

description: >

This represents the Network Identifier, which together with a PLMN ID is used to identify

an SNPN (see 3GPP TS 23.003 and 3GPP TS 23.501 clause 5.30.2.1).

NidRm:

type: string

pattern: '^[A-Fa-f0-9]{11}$'

nullable: true

description: >

This data type is defined in the same way as the 'Nid' data type, but with the OpenAPI

'nullable: true' property."

NfSetId:

type: string

description: >

NF Set Identifier (see clause 28.12 of 3GPP TS 23.003), formatted as the following string

"set<Set ID>.<nftype>set.5gc.mnc<MNC>.mcc<MCC>", or

"set<SetID>.<NFType>set.5gc.nid<NID>.mnc<MNC>.mcc<MCC>" with

<MCC> encoded as defined in clause 5.4.2 ("Mcc" data type definition)

<MNC> encoding the Mobile Network Code part of the PLMN, comprising 3 digits.

If there are only 2 significant digits in the MNC, one "0" digit shall be inserted

at the left side to fill the 3 digits coding of MNC. Pattern: '^[0-9]{3}$'

<NFType> encoded as a value defined in Table 6.1.6.3.3-1 of 3GPP TS 29.510 but

with lower case characters <Set ID> encoded as a string of characters consisting of

alphabetic characters (A-Z and a-z), digits (0-9) and/or the hyphen (-) and that

shall end with either an alphabetic character or a digit.

NfServiceSetId:

type: string

description: >

NF Service Set Identifier (see clause 28.12 of 3GPP TS 23.003) formatted as the following

string "set<Set ID>.sn<Service Name>.nfi<NF Instance ID>.5gc.mnc<MNC>.mcc<MCC>", or

"set<SetID>.sn<ServiceName>.nfi<NFInstanceID>.5gc.nid<NID>.mnc<MNC>.mcc<MCC>" with

<MCC> encoded as defined in clause 5.4.2 ("Mcc" data type definition)

<MNC> encoding the Mobile Network Code part of the PLMN, comprising 3 digits.

If there are only 2 significant digits in the MNC, one "0" digit shall be inserted

at the left side to fill the 3 digits coding of MNC. Pattern: '^[0-9]{3}$'

<NID> encoded as defined in clause 5.4.2 ("Nid" data type definition)

<NFInstanceId> encoded as defined in clause 5.3.2

<ServiceName> encoded as defined in 3GPP TS 29.510

<Set ID> encoded as a string of characters consisting of alphabetic

characters (A-Z and a-z), digits (0-9) and/or the hyphen (-) and that shall end

with either an alphabetic character or a digit.

PlmnAssiUeRadioCapId:

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

ManAssiUeRadioCapId:

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

TypeAllocationCode:

type: string

pattern: '^[0-9]{8}$'

description: >

Type Allocation Code (TAC) of the UE, comprising the initial eight-digit portion of the

15-digit IMEI and 16-digit IMEISV codes. See clause 6.2 of 3GPP TS 23.003.

HfcNId:

type: string

maxLength: 6

description: >

This IE represents the identifier of the HFC node Id as specified in CableLabs

WR-TR-5WWC-ARCH. It is provisioned by the wireline operator as part of wireline

operations and may contain up to six characters.

HfcNIdRm:

type: string

maxLength: 6

nullable: true

description: >

This data type is defined in the same way as the 'HfcNId' data type, but with the

OpenAPI 'nullable: true' property.

ENbId:

type: string

pattern: '^(MacroeNB-[A-Fa-f0-9]{5}|LMacroeNB-[A-Fa-f0-9]{6}|SMacroeNB-[A-Fa-f0-9]{5}|HomeeNB-[A-Fa-f0-9]{7})$'

description: >

This represents the identifier of the eNB ID as specified in clause 9.2.1.37 of

3GPP TS 36.413. The string shall be formatted with the following pattern

'^('MacroeNB-[A-Fa-f0-9]{5}|LMacroeNB-[A-Fa-f0-9]{6}|SMacroeNB-[A-Fa-f0-9]{5}

|HomeeNB-[A-Fa-f0-9]{7})$'. The value of the eNB ID shall be encoded 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 padding 0 shall be added to make multiple

nibbles, so the most significant character representing the padding 0 if required together

with the 4 most significant bits of the eNB ID shall appear first in the string, and the

character representing the 4 least significant bit of the eNB ID (to form a nibble) shall

appear last in the string.

Gli:

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

Gci:

type: string

description: >

Global Cable Identifier uniquely identifying the connection between the 5G-CRG or FN-CRG

to the 5GS. See clause 28.15.4 of 3GPP TS 23.003. This shall be encoded as a string per

clause 28.15.4 of 3GPP TS 23.003, and compliant with the syntax specified in clause 2.2

of IETF RFC 7542 for the username part of a NAI. The GCI value is specified in

CableLabs WR-TR-5WWC-ARCH.

NsSrg:

type: string

description: >

String providing a Network Slice Simultaneous Registration Group. See clause 5.15.12 of

3GPP TS 23.501

NsSrgRm:

type: string

nullable: true

description: >

String providing a Network Slice Simultaneous Registration Group with the OpenAPI

"nullable: true" property. See clause 5.15.12 of 3GPP TS 23.501

RelayServiceCode:

type: integer

minimum: 0

maximum: 16777215

description: >

Relay Service Code to identify a connectivity service provided by the UE-to-Network relay.

NsagId:

type: integer

description: >

The Network Slice AS Group ID, see 3GPP TS 38.413

NsagIdRm:

type: integer

nullable: true

description: >

This data type is defined in the same way as the "NsagId" data type, but with the OpenAPI "nullable: true" property

#

# ENUMERATED DATA TYPES

#

AccessType:

type: string

enum:

- 3GPP\_ACCESS

- NON\_3GPP\_ACCESS

description: Indicates wether the access is via 3GPP or via non-3GPP.

AccessTypeRm:

anyOf:

- $ref: '#/components/schemas/AccessType'

- $ref: '#/components/schemas/NullValue'

description: >

Indicates wether the access is via 3GPP or via non-3GPP but with the OpenAPI

'nullable: true' property."

RatType:

anyOf:

- type: string

enum:

- NR

- EUTRA

- WLAN

- VIRTUAL

- NBIOT

- WIRELINE

- WIRELINE\_CABLE

- WIRELINE\_BBF

- LTE-M

- NR\_U

- EUTRA\_U

- TRUSTED\_N3GA

- TRUSTED\_WLAN

- UTRA

- GERA

- NR\_LEO

- NR\_MEO

- NR\_GEO

- NR\_OTHER\_SAT

- NR\_REDCAP

- type: string

description: Indicates the radio access used.

RatTypeRm:

anyOf:

- $ref: '#/components/schemas/RatType'

- $ref: '#/components/schemas/NullValue'

description: >

Provides information about the radio access but with the OpenAPI 'nullable: true' property.

PduSessionType:

anyOf:

- type: string

enum:

- IPV4

- IPV6

- IPV4V6

- UNSTRUCTURED

- ETHERNET

- type: string

description: >

PduSessionType indicates the type of a PDU session. It shall comply with the provisions

defined in table 5.4.3.3-1.

PduSessionTypeRm:

anyOf:

- $ref: '#/components/schemas/PduSessionType'

- $ref: '#/components/schemas/NullValue'

description: >

PduSessionType indicates the type of a PDU session. It shall comply with the provisions

defined in table 5.4.3.3-1 but with the OpenAPI "nullable: true" property.

UpIntegrity:

anyOf:

- type: string

enum:

- REQUIRED

- PREFERRED

- NOT\_NEEDED

- type: string

description: >

indicates whether UP integrity protection is required, preferred or not needed for all

the traffic on the PDU Session. It shall comply with the provisions defined in

table 5.4.3.4-1.

UpIntegrityRm:

anyOf:

- $ref: '#/components/schemas/UpIntegrity'

- $ref: '#/components/schemas/NullValue'

description: >

indicates whether UP integrity protection is required, preferred or not needed for all

the traffic on the PDU Session. It shall comply with the provisions defined in

table 5.4.3.4-1.

UpConfidentiality:

anyOf:

- type: string

enum:

- REQUIRED

- PREFERRED

- NOT\_NEEDED

- type: string

description: >

indicates whether UP confidentiality protection is required, preferred or not needed for

all the traffic on the PDU Session. It shall comply with the provisions defined in

table 5.4.3.5-1.

UpConfidentialityRm:

anyOf:

- $ref: '#/components/schemas/UpConfidentiality'

- $ref: '#/components/schemas/NullValue'

description: >

indicates whether UP integrity protection is required, preferred or not needed for all the

traffic on the PDU Session. It shall comply with the provisions defined in table 5.4.3.4-1,

but with the OpenAPI 'nullable: true' property.

SscMode:

anyOf:

- type: string

enum:

- SSC\_MODE\_1

- SSC\_MODE\_2

- SSC\_MODE\_3

- type: string

description: >

represents the service and session continuity mode It shall comply with the provisions defined in table 5.4.3.6-1.

SscModeRm:

anyOf:

- $ref: '#/components/schemas/SscMode'

- $ref: '#/components/schemas/NullValue'

description: >

represents the service and session continuity mode It shall comply with the provisions

defined in table 5.4.3.6-1 but with the OpenAPI 'nullable: true' property.

DnaiChangeType:

anyOf:

- type: string

enum:

- EARLY

- EARLY\_LATE

- LATE

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

but is not used to encode content defined in the present version of this API.

description: |

Possible values are:

- EARLY: Early notification of UP path reconfiguration.

- EARLY\_LATE: Early and late notification of UP path reconfiguration. This value shall

only be present in the subscription to the DNAI change event.

- LATE: Late notification of UP path reconfiguration.

DnaiChangeTypeRm:

anyOf:

- $ref: '#/components/schemas/DnaiChangeType'

- $ref: '#/components/schemas/NullValue'

description: >

It can take the values as specified for DnaiChangeType but with the OpenAPI

'nullable: true' property.

RestrictionType:

anyOf:

- type: string

enum:

- ALLOWED\_AREAS

- NOT\_ALLOWED\_AREAS

- type: string

description: It contains the restriction type ALLOWED\_AREAS or NOT\_ALLOWED\_AREAS.

RestrictionTypeRm:

anyOf:

- $ref: '#/components/schemas/RestrictionType'

- $ref: '#/components/schemas/NullValue'

description: >

It contains the restriction type ALLOWED\_AREAS or NOT\_ALLOWED\_AREAS but with the

OpenAPI 'nullable: true' property.

CoreNetworkType:

anyOf:

- type: string

enum:

- 5GC

- EPC

- type: string

description: It contains the Core Network type 5GC or EPC.

CoreNetworkTypeRm:

anyOf:

- $ref: '#/components/schemas/CoreNetworkType'

- $ref: '#/components/schemas/NullValue'

description: >

It contains the Core Network type 5GC or EPC but with the OpenAPI

'nullable: true' property.

PresenceState:

anyOf:

- type: string

enum:

- IN\_AREA

- OUT\_OF\_AREA

- UNKNOWN

- INACTIVE

- type: string

description: |

Possible values are:

-IN\_AREA: Indicates that the UE is inside or enters the presence reporting area.

-OUT\_OF\_AREA: Indicates that the UE is outside or leaves the presence reporting area

-UNKNOW: Indicates it is unknown whether the UE is in the presence reporting area or not

-INACTIVE: Indicates that the presence reporting area is inactive in the serving node.

StationaryIndication:

anyOf:

- type: string

enum:

- STATIONARY

- MOBILE

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Possible values are:

- STATIONARY: Identifies the UE is stationary

- MOBILE: Identifies the UE is mobile

StationaryIndicationRm:

anyOf:

- $ref: '#/components/schemas/StationaryIndication'

- $ref: '#/components/schemas/NullValue'

description: >

This enumeration is defined in the same way as the 'StationaryIndication' enumeration,

but with the OpenAPI 'nullable: true' property."

ScheduledCommunicationType:

anyOf:

- type: string

enum:

- DOWNLINK\_ONLY

- UPLINK\_ONLY

- BIDIRECTIONAL

- type: string

description: |

Possible values are:

-DOWNLINK\_ONLY: Downlink only

-UPLINK\_ONLY: Uplink only

-BIDIRECTIONA: Bi-directional

ScheduledCommunicationTypeRm:

anyOf:

- $ref: '#/components/schemas/ScheduledCommunicationType'

- $ref: '#/components/schemas/NullValue'

description: >

This enumeration is defined in the same way as the 'ScheduledCommunicationTypen'

enumeration, but with the OpenAPI 'nullable: true' property."

TrafficProfile:

anyOf:

- type: string

enum:

- SINGLE\_TRANS\_UL

- SINGLE\_TRANS\_DL

- DUAL\_TRANS\_UL\_FIRST

- DUAL\_TRANS\_DL\_FIRST

- MULTI\_TRANS

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Possible values are:

- SINGLE\_TRANS\_UL: Uplink single packet transmission.

- SINGLE\_TRANS\_DL: Downlink single packet transmission.

- DUAL\_TRANS\_UL\_FIRST: Dual packet transmission, firstly uplink packet transmission

with subsequent downlink packet transmission.

- DUAL\_TRANS\_DL\_FIRST: Dual packet transmission, firstly downlink packet transmission

with subsequent uplink packet transmission.

TrafficProfileRm:

anyOf:

- $ref: '#/components/schemas/TrafficProfile'

- $ref: '#/components/schemas/NullValue'

description: >

This enumeration is defined in the same way as the 'TrafficProfile' enumeration, but

with the OpenAPI 'nullable: true' property.

LcsServiceAuth:

anyOf:

- type: string

enum:

- "LOCATION\_ALLOWED\_WITH\_NOTIFICATION"

- "LOCATION\_ALLOWED\_WITHOUT\_NOTIFICATION"

- "LOCATION\_ALLOWED\_WITHOUT\_RESPONSE"

- "LOCATION\_RESTRICTED\_WITHOUT\_RESPONSE"

- "NOTIFICATION\_ONLY"

- "NOTIFICATION\_AND\_VERIFICATION\_ONLY"

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Possible values are:

- "LOCATION\_ALLOWED\_WITH\_NOTIFICATION": Location allowed with notification

- "LOCATION\_ALLOWED\_WITHOUT\_NOTIFICATION": Location allowed without notification

- "LOCATION\_ALLOWED\_WITHOUT\_RESPONSE": Location with notification and privacy

verification; location allowed if no response

- "LOCATION\_RESTRICTED\_WITHOUT\_RESPONSE": Location with notification and privacy

verification; location restricted if no response

- "NOTIFICATION\_ONLY": Notification only

- "NOTIFICATION\_AND\_VERIFICATION\_ONLY": Notification and privacy verification only

UeAuth:

anyOf:

- type: string

enum:

- AUTHORIZED

- NOT\_AUTHORIZED

- type: string

description: |

Possible values are:

- AUTHORIZED: Indicates that the UE is authorized.

- NOT\_AUTHORIZED: Indicates that the UE is not authorized.

DlDataDeliveryStatus:

anyOf:

- type: string

enum:

- BUFFERED

- TRANSMITTED

- DISCARDED

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Possible values are:

- BUFFERED: The first downlink data is buffered with extended buffering matching the

source of the downlink traffic.

- TRANSMITTED: The first downlink data matching the source of the downlink traffic is

transmitted after previous buffering or discarding of corresponding packet(s) because

the UE of the PDU Session becomes ACTIVE, and buffered data can be delivered to UE.

- DISCARDED: The first downlink data matching the source of the downlink traffic is

discarded because the Extended Buffering time, as determined by the SMF, expires or

the amount of downlink data to be buffered is exceeded.

DlDataDeliveryStatusRm:

anyOf:

- $ref: '#/components/schemas/DlDataDeliveryStatus'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the ' DlDataDeliveryStatus ' data type,

but with the OpenAPI 'nullable: true' property.

AuthStatus:

anyOf:

- type: string

enum:

- EAP\_SUCCESS

- EAP\_FAILURE

- PENDING

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Possible values are:

- "EAP\_SUCCESS": The NSSAA status is EAP-Success.

- "EAP\_FAILURE": The NSSAA status is EAP-Failure.

- "PENDING": The NSSAA status is Pending.

LineType:

anyOf:

- type: string

enum:

- DSL

- PON

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Possible values are:

- DSL: Identifies a DSL line

- PON: Identifies a PON line

LineTypeRm:

anyOf:

- $ref: '#/components/schemas/LineType'

- $ref: '#/components/schemas/NullValue'

description: >  
 This data type is defined in the same way as the 'LineType' data type, but with the

OpenAPI 'nullable: true' property.

NotificationFlag:

anyOf:

- type: string

enum:

- ACTIVATE

- DEACTIVATE

- RETRIEVAL

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Possible values are:

- ACTIVATE: The event notification is activated.

- DEACTIVATE: The event notification is deactivated and shall be muted. The available

event(s) shall be stored.

- RETRIEVAL: The event notification shall be sent to the NF service consumer(s),

after that, is muted again.

TransportProtocol:

anyOf:

- type: string

enum:

- UDP

- TCP

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Possible values are:

- UDP: User Datagram Protocol.

- TCP: Transmission Control Protocol.

SatelliteBackhaulCategory:

anyOf:

- type: string

enum:

- GEO

- MEO

- LEO

- OTHER\_SAT

- NON\_SATELLITE

- type: string

description: Indicates the satellite backhaul used.

SatelliteBackhaulCategoryRm:

anyOf:

- $ref: '#/components/schemas/SatelliteBackhaulCategory'

- $ref: '#/components/schemas/NullValue'

description: >  
 Provides information about the satellite backhaul but with the OpenAPI

'nullable: true' property.

#

# STRUCTURED DATA TYPES

#

SubscribedDefaultQos:

type: object

required:

- 5qi

- arp

properties:

5qi:

$ref: '#/components/schemas/5Qi'

arp:

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

priorityLevel:

$ref: '#/components/schemas/5QiPriorityLevel'

description: Provides the subsribed 5QI and the ARP, it may contain the priority level.

Snssai:

type: object

properties:

sst:

type: integer

minimum: 0

maximum: 255

description: >

Unsigned integer, within the range 0 to 255, representing the Slice/Service Type.

It indicates the expected Network Slice behaviour in terms of features and services.

Values 0 to 127 correspond to the standardized SST range. Values 128 to 255 correspond

to the Operator-specific range. See clause 28.4.2 of 3GPP TS 23.003.

Standardized values are defined in clause 5.15.2.2 of 3GPP TS 23.501.

sd:

type: string

pattern: '^[A-Fa-f0-9]{6}$'

description: >

3-octet string, representing the Slice Differentiator, 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 SD shall appear first in the string, and the character

representing the 4 least significant bit of the SD shall appear last in the string.

This is an optional parameter that complements the Slice/Service type(s) to allow to

differentiate amongst multiple Network Slices of the same Slice/Service type. This IE

shall be absent if no SD value is associated with the SST.

description: >

When Snssai needs to be converted to string (e.g. when used in maps as key), the string shall

be composed of one to three digits "sst" optionally followed by "-" and 6 hexadecimal digits

"sd".

required:

- sst

PlmnId:

type: object

properties:

mcc:

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

mnc:

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

description: >

When PlmnId needs to be converted to string (e.g. when used in maps as key), the string

shall be composed of three digits "mcc" followed by "-" and two or three digits "mnc".

required:

- mcc

- mnc

PlmnIdRm:

anyOf:

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

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'PlmnId' data type, but with the

OpenAPI 'nullable: true' property.

Tai:

description: Contains the tracking area identity as described in 3GPP 23.003

type: object

properties:

plmnId:

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

tac:

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

nid:

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

required:

- plmnId

- tac

TaiRm:

anyOf:

- $ref: '#/components/schemas/Tai'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'Tai' data type, but with the OpenAPI

'nullable: true' property.

Ecgi:

description: Contains the ECGI (E-UTRAN Cell Global Identity), as described in 3GPP 23.003

type: object

properties:

plmnId:

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

eutraCellId:

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

nid:

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

required:

- plmnId

- eutraCellId

EcgiRm:

anyOf:

- $ref: '#/components/schemas/Ecgi'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'Ecgi' data type, but with the

OpenAPI 'nullable: true' property.

Ncgi:

description: Contains the NCGI (NR Cell Global Identity), as described in 3GPP 23.003

type: object

properties:

plmnId:

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

nrCellId:

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

nid:

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

required:

- plmnId

- nrCellId

NcgiRm:

anyOf:

- $ref: '#/components/schemas/Ncgi'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'Ncgi' data type, but with the

OpenAPI 'nullable: true' property.

UserLocation:

type: object

properties:

eutraLocation:

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

nrLocation:

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

n3gaLocation:

$ref: '#/components/schemas/N3gaLocation'

utraLocation:

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

geraLocation:

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

description: >

At least one of eutraLocation, nrLocation and n3gaLocation shall be present. Several

of them may be present.

EutraLocation:

description: Contains the E-UTRA user location.

type: object

properties:

tai:

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

ignoreTai:

type: boolean

default: false

ecgi:

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

ignoreEcgi:

type: boolean

default: false

description: >

This flag when present shall indicate that the Ecgi shall be ignored

When present, it shall be set as follows:

- true: ecgi shall be ignored.

- false (default): ecgi shall not be ignored.

ageOfLocationInformation:

type: integer

minimum: 0

maximum: 32767

description: >

The value represents the elapsed time in minutes since the last network contact of the

mobile station. Value "0" indicates that the location information was obtained after a

successful paging procedure for Active Location Retrieval when the UE is in idle mode

or after a successful NG-RAN location reporting procedure with the eNB when the UE is

in connected mode. Any other value than "0" indicates that the location information is

the last known one. See 3GPP TS 29.002 clause 17.7.8.

ueLocationTimestamp:

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

geographicalInformation:

type: string

pattern: '^[0-9A-F]{16}$'

description: >

Refer to geographical Information. See 3GPP TS 23.032 clause 7.3.2. Only the

description of an ellipsoid point with uncertainty circle is allowed to be used.

geodeticInformation:

type: string

pattern: '^[0-9A-F]{20}$'

description: >

Refers to Calling Geodetic Location. See ITU-T Recommendation Q.763 (1999) [24]

clause 3.88.2. Only the description of an ellipsoid point with uncertainty circle

is allowed to be used.

globalNgenbId:

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

globalENbId:

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

required:

- tai

- ecgi

EutraLocationRm:

anyOf:

- $ref: '#/components/schemas/EutraLocation'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'EutraLocation' data type, but with

the OpenAPI 'nullable: true' property.

NrLocation:

description: Contains the NR user location.

type: object

properties:

tai:

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

ncgi:

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

ignoreNcgi:

type: boolean

default: false

ageOfLocationInformation:

type: integer

minimum: 0

maximum: 32767

description: >

The value represents the elapsed time in minutes since the last network contact of the mobile

station. Value "0" indicates that the location information was obtained after a

successful paging procedure for Active Location Retrieval when the UE is in idle mode

or after a successful NG-RAN location reporting procedure with the eNB when the UE is

in connected mode. Any other value than "0" indicates that the location information is

the last known one. See 3GPP TS 29.002 clause 17.7.8.

ueLocationTimestamp:

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

geographicalInformation:

type: string

pattern: '^[0-9A-F]{16}$'

description: >

Refer to geographical Information. See 3GPP TS 23.032 clause 7.3.2. Only the description

of an ellipsoid point with uncertainty circle is allowed to be used.

geodeticInformation:

type: string

pattern: '^[0-9A-F]{20}$'

description: >

Refers to Calling Geodetic Location. See ITU-T Recommendation Q.763 (1999) [24] clause

3.88.2. Only the description of an ellipsoid point with uncertainty circle is allowed

to be used.

globalGnbId:

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

required:

- tai

- ncgi

NrLocationRm:

anyOf:

- $ref: '#/components/schemas/NrLocation'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'NrLocation' data type, but with the

OpenAPI 'nullable: true' property."

N3gaLocation:

description: Contains the Non-3GPP access user location.

type: object

properties:

n3gppTai:

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

n3IwfId:

type: string

pattern: '^[A-Fa-f0-9]+$'

description: >

This IE shall contain the N3IWF identifier received over NGAP and shall be encoded as a

string of hexadecimal characters. 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 N3IWF ID shall appear first in

the string, and the character representing the 4 least significant bit of the N3IWF ID

shall appear last in the string.

ueIpv4Addr:

$ref: '#/components/schemas/Ipv4Addr'

ueIpv6Addr:

$ref: '#/components/schemas/Ipv6Addr'

portNumber:

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

protocol:

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

tnapId:

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

twapId:

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

hfcNodeId:

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

gli:

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

w5gbanLineType:

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

gci:

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

UpSecurity:

description: Contains Userplain security information.

type: object

properties:

upIntegr:

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

upConfid:

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

required:

- upIntegr

- upConfid

UpSecurityRm:

anyOf:

- $ref: '#/components/schemas/UpSecurity'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'UpSecurity' data type, but with the

OpenAPI 'nullable: true' property.

NgApCause:

description: Represents the NGAP cause.

type: object

properties:

group:

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

value:

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

required:

- group

- value

BackupAmfInfo:

description: Provides details of the Backup AMF.

type: object

properties:

backupAmf:

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

guamiList:

type: array

items:

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

minItems: 1

description: >

If present, this IE shall contain the list of GUAMI(s) (supported by the AMF) for

which the backupAmf IE applies.

required:

- backupAmf

RefToBinaryData:

description: This parameter provides information about the referenced binary body data.

type: object

properties:

contentId:

type: string

description: >

This IE shall contain the value of the Content-ID header of the referenced binary

body part.

required:

- contentId

RefToBinaryDataRm:

anyOf:

- $ref: '#/components/schemas/RefToBinaryData'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the ' RefToBinaryData ' data type,

but with the OpenAPI 'nullable: true' property.

RouteToLocation:

type: object

properties:

dnai:

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

routeInfo:

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

routeProfId:

type: string

nullable: true

description: Identifies the routing profile Id.

required:

- dnai

anyOf:

- required: [ routeInfo ]

- required: [ routeProfId ]

nullable: true

description: >

At least one of the "routeInfo" attribute and the "routeProfId" attribute shall be included

in the "RouteToLocation" data type.

RouteInformation:

type: object

properties:

ipv4Addr:

$ref: '#/components/schemas/Ipv4Addr'

ipv6Addr:

$ref: '#/components/schemas/Ipv6Addr'

portNumber:

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

required:

- portNumber

nullable: true

description: >

At least one of the "ipv4Addr" attribute and the "ipv6Addr" attribute shall be included in

the "RouteInformation" data type.

Area:

description: Provides area information.

type: object

oneOf:

- required:

- tacs

- required:

- areaCode

properties:

tacs:

type: array

items:

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

minItems: 1

areaCode:

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

ServiceAreaRestriction:

description: Provides information about allowed or not allowed areas.

type: object

properties:

restrictionType:

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

areas:

type: array

items:

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

maxNumOfTAs:

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

maxNumOfTAsForNotAllowedAreas:

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

allOf:

#

# 1st condition: restrictionType and areas attributes shall be either both absent

# or both present

#

- oneOf:

- not:

required: [ restrictionType ]

- required: [ areas ]

#

# 2nd condition: if restrictionType takes value NOT\_ALLOWED\_AREAS,

# then maxNumOfTAs shall be absent

#

- anyOf:

- not:

required: [ restrictionType ]

properties:

restrictionType:

type: string

enum: [ NOT\_ALLOWED\_AREAS ]

- not:

required: [ maxNumOfTAs ]

#

# 3rd condition: if restrictionType takes value ALLOWED\_AREAS,

# then maxNumOfTAsForNotAllowedAreas shall be absent

#

- anyOf:

- not:

required: [ restrictionType ]

properties:

restrictionType:

type: string

enum: [ ALLOWED\_AREAS ]

- not:

required: [ maxNumOfTAsForNotAllowedAreas ]

PresenceInfo:

type: object

properties:

praId:

type: string

description: >

Represents an identifier of the Presence Reporting Area (see clause 28.10 of 3GPP

TS 23.003. This IE shall be present if the Area of Interest subscribed or reported is

a Presence Reporting Area or a Set of Core Network predefined Presence Reporting Areas.

When present, it shall be encoded as a string representing an integer in the following

ranges:

0 to 8 388 607 for UE-dedicated PRA

8 388 608 to 16 777 215 for Core Network predefined PRA

Examples:

PRA ID 123 is encoded as "123"

PRA ID 11 238 660 is encoded as "11238660"

additionalPraId:

type: string

description: >

This IE may be present if the praId IE is present and if it contains a PRA identifier

referring to a set of Core Network predefined Presence Reporting Areas. When present,

this IE shall contain a PRA Identifier of an individual PRA within the Set of Core

Network predefined Presence Reporting Areas indicated by the praId IE.

presenceState:

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

trackingAreaList:

type: array

items:

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

minItems: 1

description: >

Represents the list of tracking areas that constitutes the area. This IE shall be

present if the subscription or the event report is for tracking UE presence in the

tracking areas. For non 3GPP access the TAI shall be the N3GPP TAI.

ecgiList:

type: array

items:

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

minItems: 1

description: >

Represents the list of EUTRAN cell Ids that constitutes the area. This IE shall

be present if the Area of Interest subscribed is a list of EUTRAN cell Ids.

ncgiList:

type: array

items:

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

minItems: 1

description: >

Represents the list of NR cell Ids that constitutes the area. This IE shall be

present if the Area of Interest subscribed is a list of NR cell Ids.

globalRanNodeIdList:

type: array

items:

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

minItems: 1

description: >

Represents the list of NG RAN node identifiers that constitutes the area. This IE shall

be present if the Area of Interest subscribed is a list of NG RAN node identifiers.

globaleNbIdList:

type: array

items:

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

minItems: 1

description: >

Represents the list of eNodeB identifiers that constitutes the area. This IE shall be

present if the Area of Interest subscribed is a list of eNodeB identifiers.

description: >

If the additionalPraId IE is present, this IE shall state the presence information of the

UE for the individual PRA identified by the additionalPraId IE; If the additionalPraId IE

is not present, this IE shall state the presence information of the UE for the PRA

identified by the praId IE.

PresenceInfoRm:

type: object

properties:

praId:

type: string

description: |

Represents an identifier of the Presence Reporting Area (see clause 28.10 of

3GPP TS 23.003. This IE shall be present if the Area of Interest subscribed or

reported is a Presence Reporting Area or a Set of Core Network predefined Presence

Reporting Areas. When present, it shall be encoded as a string representing an integer

in the following ranges:

- 0 to 8 388 607 for UE-dedicated PRA

- 8 388 608 to 16 777 215 for Core Network predefined PRA

Examples:

PRA ID 123 is encoded as "123"

PRA ID 11 238 660 is encoded as "11238660"

additionalPraId:

type: string

description: >

This IE may be present if the praId IE is present and if it contains a PRA identifier

referring to a set of Core Network predefined Presence Reporting Areas.

When present, this IE shall contain a PRA Identifier of an individual PRA within the Set

of Core Network predefined Presence Reporting Areas indicated by the praId IE.

presenceState:

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

trackingAreaList:

type: array

items:

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

minItems: 0

description: >

Represents the list of tracking areas that constitutes the area. This IE shall be

present if the subscription or the event report is for tracking UE presence in the

tracking areas. For non 3GPP access the TAI shall be the N3GPP TAI.

ecgiList:

type: array

items:

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

minItems: 0

description: >

Represents the list of EUTRAN cell Ids that constitutes the area. This IE shall be

present if the Area of Interest subscribed is a list of EUTRAN cell Ids.

ncgiList:

type: array

items:

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

minItems: 0

description: >

Represents the list of NR cell Ids that constitutes the area. This IE shall be present

if the Area of Interest subscribed is a list of NR cell Ids.

globalRanNodeIdList:

type: array

items:

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

description: >

Represents the list of NG RAN node identifiers that constitutes the area. This IE shall be

present if the Area of Interest subscribed is a list of NG RAN node identifiers.

globaleNbIdList:

type: array

items:

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

minItems: 1

description: >

Represents the list of eNodeB identifiers that constitutes the area. This IE shall be present

if the Area of Interest subscribed is a list of eNodeB identifiers.

nullable: true

description: >

This data type is defined in the same way as the 'PresenceInfo' data type, but with the

OpenAPI 'nullable: true' property. If the additionalPraId IE is present, this IE shall state

the presence information of the UE for the individual PRA identified by the additionalPraId

IE; If the additionalPraId IE is not present, this IE shall state the presence information

of the UE for the PRA identified by the praId IE.

GlobalRanNodeId:

type: object

properties:

plmnId:

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

n3IwfId:

$ref: '#/components/schemas/N3IwfId'

gNbId:

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

ngeNbId:

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

wagfId:

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

tngfId:

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

nid:

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

eNbId:

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

oneOf:

- required: [ n3IwfId ]

- required: [ gNbId ]

- required: [ ngeNbId ]

- required: [ wagfId ]

- required: [ tngfId ]

- required: [ eNbId ]

description: >

One of the six attributes n3IwfId, gNbIdm, ngeNbId, wagfId, tngfId, eNbId shall be present.

required:

- plmnId

GNbId:

description: Provides the G-NB identifier.

type: object

properties:

bitLength:

type: integer

minimum: 22

maximum: 32

description: >

Unsigned integer representing the bit length of the gNB ID as defined in clause

9.3.1.6 of 3GPP TS 38.413 [11], within the range 22 to 32.

gNBValue:

type: string

pattern: '^[A-Fa-f0-9]{6,8}$'

description: >

This represents the identifier of the gNB. The value of the gNB ID shall be encoded

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 padding 0 shall

be added to make multiple nibbles, the most significant character representing the

padding 0 if required together with the 4 most significant bits of the gNB ID shall

appear first in the string, and the character representing the 4 least significant bit

of the gNB ID shall appear last in the string.

required:

- bitLength

- gNBValue

AtsssCapability:

description: >

Containes Capability to support procedures related to Access Traffic Steering, Switching,

Splitting.

type: object

properties:

atsssLL:

type: boolean

default: false

description: >

Indicates the ATSSS-LL capability to support procedures related to Access Traffic

Steering, Switching, Splitting (see clauses 4.2.10, 5.32 of 3GPP TS 23.501).

true: Supported

false (default): Not Supported

mptcp:

type: boolean

default: false

description: >

Indicates the MPTCP capability to support procedures related to Access Traffic Steering,

Switching, Splitting (see clauses 4.2.10, 5.32 of 3GPP TS 23.501

true: Supported

false (default): Not Supported

rttWithoutPmf:

type: boolean

default: false

description: >

This IE is only used by the UPF to indicate whether the UPF supports RTT measurement

without PMF (see clauses 5.32.2, 6.3.3.3 of 3GPP TS 23.501

true: Supported

false (default): Not Supported

PlmnIdNid:

description: >

Contains the serving core network operator PLMN ID and, for an SNPN, the NID that together

with the PLMN ID identifies the SNPN.

type: object

required:

- mcc

- mnc

properties:

mcc:

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

mnc:

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

nid:

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

PlmnIdNidRm:

anyOf:

- $ref: '#/components/schemas/PlmnIdNid'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'PlmnIdNid' data type, but with the

OpenAPI 'nullable: true' property.

SmallDataRateStatus:

description: It indicates theSmall Data Rate Control Status

type: object

properties:

remainPacketsUl:

type: integer

minimum: 0

description: >

When present, it shall contain the number of packets the UE is allowed to send uplink

in the given time unit for the given PDU session (see clause 5.31.14.3 of 3GPP TS 23.501.

remainPacketsDl:

type: integer

minimum: 0

description: >

When present it shall contain the number of packets the AF is allowed to send downlink

in the given time unit for the given PDU session (see clause 5.31.14.3 of 3GPP TS 23.501.

validityTime:

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

remainExReportsUl:

type: integer

minimum: 0

description: >

When present, it shall indicate number of additional exception reports the UE is allowed

to send uplink in the given time unit for the given PDU session (see clause 5.31.14.3

of 3GPP TS 23.501.

remainExReportsDl:

type: integer

minimum: 0

description: >

When present, it shall indicate number of additional exception reports the AF is allowed

to send downlink in the given time unit for the given PDU session (see clause 5.31.14.3

in 3GPP TS 23.501

HfcNodeId:

description: REpresents the HFC Node Identifer received over NGAP.

type: object

required:

- hfcNId

properties:

hfcNId:

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

HfcNodeIdRm:

anyOf:

- $ref: '#/components/schemas/HfcNodeId'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'HfcNodeId' data type, but with the

OpenAPI 'nullable: true' property.

WirelineArea:

type: object

properties:

globalLineIds:

type: array

items:

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

minItems: 1

hfcNIds:

type: array

items:

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

minItems: 1

areaCodeB:

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

areaCodeC:

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

description: >

One and only one of the "globLineIds", "hfcNIds", "areaCodeB" and "areaCodeC" attributes

shall be included in a WirelineArea data structure

WirelineServiceAreaRestriction:

type: object

properties:

restrictionType:

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

areas:

type: array

items:

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

description: >

The "restrictionType" attribute and the "areas" attribute shall be either both present

or absent. The empty array of areas is used when service is allowed/restricted nowhere.

ApnRateStatus:

description: Contains the APN rate control status e.g. of the AMF.

type: object

properties:

remainPacketsUl:

type: integer

minimum: 0

description: >

When present, it shall contain the number of packets the UE is allowed to send uplink

in the given time unit for the given APN (all PDN connections of the UE to this APN

see clause 4.7.7.3 in 3GPP TS 23.401.

remainPacketsDl:

type: integer

minimum: 0

description: >

When present, it shall contain the number of packets the UE is allowed to send uplink

in the given time unit for the given APN (all PDN connections of the UE to this APN

see clause 4.7.7.3 in 3GPP TS 23.401.

validityTime:

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

remainExReportsUl:

type: integer

minimum: 0

description: >

When present, it shall indicate the number of additional exception reports the UE is

allowed to send uplink in the given time unit for the given APN (all PDN connections of the UE to this APN,

see clause 4.7.7.3 in 3GPP TS 23.401.

remainExReportsDl:

type: integer

minimum: 0

description: >

When present, it shall indicate the number of additional exception reports the AF is

allowed to send downlink in the given time unit for the given APN (all PDN connections

of the UE to this APN, see clause 4.7.7.3 in 3GPP TS 23.401.

ScheduledCommunicationTime:

description: Identifies time and day of the week when the UE is available for communication.

type: object

properties:

daysOfWeek:

type: array

items:

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

minItems: 1

maxItems: 6

description: >

Identifies the day(s) of the week. If absent, it indicates every day of the week.

timeOfDayStart:

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

timeOfDayEnd:

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

ScheduledCommunicationTimeRm:

anyOf:

- $ref: '#/components/schemas/ScheduledCommunicationTime'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'ScheduledCommunicationTime' data type,

but with the OpenAPI 'nullable: true' property.

BatteryIndication:

type: object

properties:

batteryInd:

type: boolean

description: >

This IE shall indicate whether the UE is battery powered or not.

true: the UE is battery powered;

false or absent: the UE is not battery powered

replaceableInd:

type: boolean

description: >

This IE shall indicate whether the battery of the UE is replaceable or not.

true: the battery of the UE is replaceable;

false or absent: the battery of the UE is not replaceable.

rechargeableInd:

type: boolean

description: >

This IE shall indicate whether the battery of the UE is rechargeable or not.

true: the battery of UE is rechargeable;

false or absent: the battery of the UE is not rechargeable.

description: >

Parameters "replaceableInd" and "rechargeableInd" are only included if the value of

Parameter "batteryInd" is true.

BatteryIndicationRm:

anyOf:

- $ref: '#/components/schemas/BatteryIndication'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'BatteryIndication' data type, but

with the OpenAPI 'nullable: true' property.

AcsInfo:

description: The ACS information for the 5G-RG is defined in BBF TR-069 [42] or in BBF TR-369

type: object

properties:

acsUrl:

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

acsIpv4Addr:

$ref: '#/components/schemas/Ipv4Addr'

acsIpv6Addr:

$ref: '#/components/schemas/Ipv6Addr'

AcsInfoRm:

anyOf:

- $ref: '#/components/schemas/AcsInfo'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'AcsInfo' data type, but with the

OpenAPI 'nullable: true' property.

NrV2xAuth:

description: Contains NR V2X services authorized information.

type: object

properties:

vehicleUeAuth:

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

pedestrianUeAuth:

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

LteV2xAuth:

description: Contains LTE V2X services authorized information.

type: object

properties:

vehicleUeAuth:

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

pedestrianUeAuth:

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

Pc5QoSPara:

description: Contains policy data on the PC5 QoS parameters.

type: object

required:

- pc5QosFlowList

properties:

pc5QosFlowList:

type: array

items:

$ref: '#/components/schemas/Pc5QosFlowItem'

pc5LinkAmbr:

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

Pc5QosFlowItem:

description: Contains a PC5 QOS flow.

type: object

required:

- pqi

properties:

pqi:

$ref: '#/components/schemas/5Qi'

pc5FlowBitRates:

$ref: '#/components/schemas/Pc5FlowBitRates'

range:

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

Pc5FlowBitRates:

description: it shall represent the PC5 Flow Bit Rates

type: object

properties:

guaFbr:

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

maxFbr:

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

UtraLocation:

type: object

oneOf:

- required:

- cgi

- required:

- sai

- required:

- rai

description: Exactly one of cgi, sai or lai shall be present.

properties:

cgi:

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

sai:

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

lai:

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

rai:

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

ageOfLocationInformation:

type: integer

minimum: 0

maximum: 32767

description: >

The value represents the elapsed time in minutes since the last network contact of the

mobile station. Value "0" indicates that the location information was obtained after a

successful paging procedure for Active Location Retrieval when the UE is in idle mode

or after a successful location reporting procedure the UE is in connected mode. Any

other value than "0" indicates that the location information is the last known one.

See 3GPP TS 29.002 clause 17.7.8.

ueLocationTimestamp:

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

geographicalInformation:

type: string

pattern: '^[0-9A-F]{16}$'

description: >

Refer to geographical Information.See 3GPP TS 23.032 clause 7.3.2. Only the

description of an ellipsoid point with uncertainty circle is allowed to be used.

geodeticInformation:

type: string

pattern: '^[0-9A-F]{20}$'

description: >

Refers to Calling Geodetic Location. See ITU-T Recommendation Q.763 (1999) clause

3.88.2. Only the description of an ellipsoid point with uncertainty circle is allowed

to be used.

GeraLocation:

type: object

oneOf:

- required:

- cgi

- required:

- sai

- required:

- lai

- required:

- rai

description: Exactly one of cgi, sai or lai shall be present.

properties:

locationNumber:

type: string

description: Location number within the PLMN. See 3GPP TS 23.003, clause 4.5.

cgi:

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

rai:

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

sai:

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

lai:

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

vlrNumber:

type: string

description: VLR number. See 3GPP TS 23.003 clause 5.1.

mscNumber:

type: string

description: MSC number. See 3GPP TS 23.003 clause 5.1.

ageOfLocationInformation:

type: integer

minimum: 0

maximum: 32767

description: >

The value represents the elapsed time in minutes since the last network contact of the

mobile station. Value "0" indicates that the location information was obtained after a

successful paging procedure for Active Location Retrieval when the UE is in idle mode

or after a successful location reporting procedure the UE is in connected mode. Any

other value than "0" indicates that the location information is the last known one.

See 3GPP TS 29.002 clause 17.7.8.

ueLocationTimestamp:

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

geographicalInformation:

type: string

pattern: '^[0-9A-F]{16}$'

description: >

Refer to geographical Information.See 3GPP TS 23.032 clause 7.3.2. Only the

description of an ellipsoid point with uncertainty circle is allowed to be used.

geodeticInformation:

type: string

pattern: '^[0-9A-F]{20}$'

description: >

Refers to Calling Geodetic Location.See ITU-T Recommendation Q.763 (1999) clause 3.88.2.

Only the description of an ellipsoid point with uncertainty circle is allowed to be

used.

CellGlobalId:

description: Contains a Cell Global Identification as defined in 3GPP TS 23.003, clause 4.3.1.

type: object

required:

- plmnId

- lac

- cellId

properties:

plmnId:

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

lac:

type: string

pattern: '^[A-Fa-f0-9]{4}$'

cellId:

type: string

pattern: '^[A-Fa-f0-9]{4}$'

ServiceAreaId:

description: Contains a Service Area Identifier as defined in 3GPP TS 23.003, clause 12.5.

type: object

required:

- plmnId

- lac

- sac

properties:

plmnId:

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

lac:

type: string

pattern: '^[A-Fa-f0-9]{4}$'

description: Location Area Code.

sac:

type: string

pattern: '^[A-Fa-f0-9]{4}$'

description: Service Area Code.

LocationAreaId:

description: Contains a Location area identification as defined in 3GPP TS 23.003, clause 4.1.

type: object

required:

- plmnId

- lac

properties:

plmnId:

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

lac:

type: string

pattern: '^[A-Fa-f0-9]{4}$'

description: Location Area Code.

RoutingAreaId:

description: Contains a Routing Area Identification as defined in 3GPP TS 23.003, clause 4.2.

type: object

required:

- plmnId

- lac

- rac

properties:

plmnId:

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

lac:

type: string

pattern: '^[A-Fa-f0-9]{4}$'

description: Location Area Code

rac:

type: string

pattern: '^[A-Fa-f0-9]{2}$'

description: Routing Area Code

DddTrafficDescriptor:

description: Contains a Traffic Descriptor.

type: object

properties:

ipv4Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

ipv6Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

portNumber:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

macAddr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/MacAddr48'

MoExpDataCounter:

description: Contain the MO Exception Data Counter.

type: object

required:

- counter

properties:

counter:

type: integer

description: >

Unsigned integer identifying the MO Exception Data Counter, as specified in clause

5.31.14.3 of 3GPP TS 23.501.

timeStamp:

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

NssaaStatus:

description: contains the Subscribed S-NSSAI subject to NSSAA procedure and the status.

type: object

required:

- snssai

- status

properties:

snssai:

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

status:

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

NssaaStatusRm:

anyOf:

- $ref: '#/components/schemas/NssaaStatus'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'NssaaStatus' data type, but with

the OpenAPI 'nullable: true' property.

TnapId:

description: Contain the TNAP Identifier see clause5.6.2 of 3GPP TS 23.501.

type: object

properties:

ssId:

type: string

description: >

This IE shall be present if the UE is accessing the 5GC via a trusted WLAN access

network.When present, it shall contain the SSID of the access point to which the UE

is attached, that is received over NGAP, see IEEE Std 802.11-2012.

bssId:

type: string

description: >

When present, it shall contain the BSSID of the access point to which the UE is

attached, that is received over NGAP, see IEEE Std 802.11-2012.

civicAddress:

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

TnapIdRm:

anyOf:

- $ref: '#/components/schemas/TnapId'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'TnapId' data type, but with the

OpenAPI 'nullable: true' property.

TwapId:

description: >

Contain the TWAP Identifier as defined in clause 4.2.8.5.3 of 3GPP TS 23.501

or the WLAN location information as defined in clause 4.5.7.2.8 of 3GPP TS 23.402.

type: object

required:

- ssId

properties:

ssId:

type: string

description: >

This IE shall contain the SSID of the access point to which the UE is attached, that is

received over NGAP, see IEEE Std 802.11-2012.

bssId:

type: string

description: >

When present, it shall contain the BSSID of the access point to which the UE is

attached, for trusted WLAN access, see IEEE Std 802.11-2012.

civicAddress:

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

TwapIdRm:

anyOf:

- $ref: '#/components/schemas/TwapId'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'TwapId' data type, but with the

OpenAPI 'nullable: true' property.

SnssaiExtension:

description: >

Extensions to the Snssai data type, sdRanges and wildcardSd shall not be present

simultaneously

type: object

not:

required:

- sdRanges

- wildcardSd

properties:

sdRanges:

description: >

When present, it shall contain the range(s) of Slice Differentiator values supported for

the Slice/Service Type value indicated in the sst attribute of the Snssai data type

type: array

items:

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

minItems: 1

wildcardSd:

description: >

When present, it shall be set to true, to indicate that all SD values are supported for

the Slice/Service Type value indicated in the sst attribute of the Snssai data type.

type: boolean

enum:

- true

SdRange:

description: A range of SDs (Slice Differentiators)

type: object

properties:

start:

type: string

pattern: '^[A-Fa-f0-9]{6}$'

description: >

First value identifying the start of an SD range. This string shall be formatted as

specified for the sd attribute of the Snssai data type in clause 5.4.4.2.

end:

type: string

pattern: '^[A-Fa-f0-9]{6}$'

description: >

Last value identifying the end of an SD range. This string shall be formatted as

specified for the sd attribute of the Snssai data type in clause 5.4.4.2.

ProseServiceAuth:

description: >

Indicates whether the UE is authorized to use ProSe Direct Discovery, ProSe Direct

Communication, or both.

type: object

properties:

proseDirectDiscoveryAuth:

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

proseDirectCommunicationAuth:

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

EcsServerAddr:

description: >

Contains the Edge Configuration Server Address Configuration Information as defined in

clause 5.2.3.6.1 of 3GPP TS 23.502.

type: object

properties:

ecsFqdnList:

type: array

items:

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

minItems: 1

ecsIpAddressList:

type: array

items:

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

minItems: 1

ecsProviderId:

type: string

EcsServerAddrRm:

anyOf:

- $ref: '#/components/schemas/EcsServerAddr'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the ' EcsServerAddr ' data type, but with

the OpenAPI 'nullable: true' property.

IpAddr:

description: Contains an IP adresse.

type: object

oneOf:

- required:

- ipv4Addr

- required:

- ipv6Addr

- required:

- ipv6Prefix

properties:

ipv4Addr:

$ref: '#/components/schemas/Ipv4Addr'

ipv6Addr:

$ref: '#/components/schemas/Ipv6Addr'

ipv6Prefix:

$ref: '#/components/schemas/Ipv6Prefix'

SACInfo:

description: >

Represents threshold(s) to control the triggering of network slice reporting notifications

or the information contained in the network slice reporting notification.

type: object

properties:

numericValNumUes:

type: integer

numericValNumPduSess:

type: integer

percValueNumUes:

type: integer

minimum: 0

maximum: 100

percValueNumPduSess:

type: integer

minimum: 0

maximum: 100

SACEventStatus:

description: >

Contains the network slice status information in terms of the current number of UEs

registered with a network slice, the current number of PDU Sessions established on a

network slice or both.

type: object

properties:

reachedNumUes:

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

reachedNumPduSess:

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

SpatialValidityCond:

description: Contains the Spatial Validity Condition.

type: object

properties:

trackingAreaList:

type: array

items:

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

minItems: 1

countries:

type: array

items:

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

minItems: 1

SpatialValidityCondRm:

description: Contains the Spatial Validity Condition or the null value.

anyOf:

- $ref: '#/components/schemas/SpatialValidityCond'

- $ref: '#/components/schemas/NullValue'

ServerAddressingInfo:

description: Contains addressing information (IP addresses and/or FQDNs) of a server.

type: object

anyOf:

- required:

- ipv4Addresses

- required:

- ipv6Addresses

- required:

- fqdnList

properties:

ipv4Addresses:

type: array

items:

$ref: '#/components/schemas/Ipv4Addr'

minItems: 1

ipv6Addresses:

type: array

items:

$ref: '#/components/schemas/Ipv6Addr'

minItems: 1

fqdnList:

type: array

items:

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

minItems: 1

PcfUeCallbackInfo:

description: >

Contains the PCF for the UE information necessary for the PCF for the PDU session to send

SM Policy Association Establishment and Termination events.

type: object

properties:

callbackUri:

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

bindingInfo:

type: string

nullable: true

required:

- callbackUri

PduSessionInfo:

description: indicates the DNN and S-NSSAI combination of a PDU session.

properties:

snssai:

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

dnn:

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

required:

- dnn

- snssai

EasIpReplacementInfo:

description: Contains EAS IP replacement information for a Source and a Target EAS.

type: object

properties:

source:

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

target:

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

required:

- source

- target

EasServerAddress:

description: Represents the IP address and port of an EAS server.

type: object

properties:

ip:

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

port:

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

required:

- ip

- port

RoamingRestrictions:

description: >

Indicates if access is allowed to a given serving network, e.g. a PLMN (MCC, MNC) or an

SNPN (MCC, MNC, NID).

type: object

properties:

accessAllowed:

type: boolean

#

# Data types describing alternative data types or combinations of data types

#

ExtSnssai:

allOf:

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

- $ref: '#/components/schemas/SnssaiExtension'

description: >

The sdRanges and wildcardSd attributes shall be exclusive from each other. If one of these

attributes is present, the sd attribute shall also be present and it shall contain one Slice

Differentiator value within the range of SD (if the sdRanges attribute is present) or with

any value (if the wildcardSd attribute is present).

#

# Data Types related to 5G QoS as defined in clause 5.5

#

#

# SIMPLE DATA TYPES

#

#

Qfi:

type: integer

minimum: 0

maximum: 63

description: Unsigned integer identifying a QoS flow, within the range 0 to 63.

QfiRm:

type: integer

minimum: 0

maximum: 63

nullable: true

description: >

This data type is defined in the same way as the 'Qfi' data type, but with the

OpenAPI 'nullable: true' property.

5Qi:

type: integer

minimum: 0

maximum: 255

description: >

Unsigned integer representing a 5G QoS Identifier (see clause 5.7.2.1 of 3GPP TS 23.501,

within the range 0 to 255.

5QiRm:

type: integer

minimum: 0

maximum: 255

nullable: true

description: >

This data type is defined in the same way as the '5QiPriorityLevel' data type, but with

the OpenAPI 'nullable: true' property. "

BitRate:

type: string

pattern: '^\d+(\.\d+)? (bps|Kbps|Mbps|Gbps|Tbps)$'

description: >

String representing a bit rate; the prefixes follow the standard symbols from The International

System of Units, and represent x1000 multipliers, with the exception that prefix "K" is

used to represent the standard symbol "k".

BitRateRm:

type: string

pattern: '^\d+(\.\d+)? (bps|Kbps|Mbps|Gbps|Tbps)$'

nullable: true

description: >

This data type is defined in the same way as the 'BitRate' data type, but with the OpenAPI 'nullable: true' property.

ArpPriorityLevelRm:

type: integer

minimum: 1

maximum: 15

nullable: true

description: >

This data type is defined in the same way as the 'ArpPriorityLevel' data type, but with

the OpenAPI 'nullable: true' property.

ArpPriorityLevel:

type: integer

minimum: 1

maximum: 15

nullable: true

description: >

nullable true shall not be used for this attribute. Unsigned integer indicating the ARP

Priority Level (see clause 5.7.2.2 of 3GPP TS 23.501, within the range 1 to 15.Values are

ordered in decreasing order of priority, i.e. with 1 as the highest priority and 15 as

the lowest priority.

5QiPriorityLevel:

type: integer

minimum: 1

maximum: 127

description: >

Unsigned integer indicating the 5QI Priority Level (see clauses 5.7.3.3 and 5.7.4 of 3GPP

TS 23.501, within the range 1 to 127.Values are ordered in decreasing order of priority,

i.e. with 1 as the highest priority and 127 as the lowest priority.

5QiPriorityLevelRm:

type: integer

minimum: 1

maximum: 127

nullable: true

description: >

This data type is defined in the same way as the '5QiPriorityLevel' data type, but with

the OpenAPI 'nullable: true' property.

PacketDelBudget:

type: integer

minimum: 1

description: >

Unsigned integer indicating Packet Delay Budget (see clauses 5.7.3.4 and 5.7.4 of 3GPP

TS 23.501), expressed in milliseconds.

PacketDelBudgetRm:

type: integer

minimum: 1

nullable: true

description: >

This data type is defined in the same way as the 'PacketDelBudget' data type, but with

the OpenAPI 'nullable: true' property.

PacketErrRate:

type: string

pattern: '^([0-9]E-[0-9])$'

description: >

String representing Packet Error Rate (see clause 5.7.3.5 and 5.7.4 of 3GPP TS 23.501,

expressed as a "*scalar* x 10-k" where the scalar and the *exponent k are each encoded as*

*one decimal digit.*

PacketErrRateRm:

type: string

pattern: '^([0-9]E-[0-9])$'

nullable: true

description: >

This data type is defined in the same way as the 'PacketErrRate' data type, but with

the OpenAPI 'nullable: true' property.

PacketLossRate:

type: integer

minimum: 0

maximum: 1000

description: >

Unsigned integer indicating Packet Loss Rate (see clauses 5.7.2.8 and 5.7.4 of 3GPP

TS 23.501), expressed in tenth of percent.

PacketLossRateRm:

type: integer

minimum: 0

maximum: 1000

nullable: true

description: >

This data type is defined in the same way as the 'PacketLossRate' data type, but with

the OpenAPI 'nullable: true' property.

AverWindow:

type: integer

minimum: 1

maximum: 4095

default: 2000

description: Unsigned integer indicating Averaging Window (see clause 5.7.3.6 and 5.7.4 of 3GPP TS 23.501), expressed in milliseconds.

AverWindowRm:

type: integer

maximum: 4095

default: 2000

minimum: 1

nullable: true

description: >

This data type is defined in the same way as the 'AverWindow' data type, but with

the OpenAPI 'nullable: true' property.

MaxDataBurstVol:

type: integer

minimum: 1

maximum: 4095

description: >

Unsigned integer indicating Maximum Data Burst Volume (see clauses 5.7.3.7 and 5.7.4 of

3GPP TS 23.501), expressed in Bytes.

MaxDataBurstVolRm:

type: integer

minimum: 1

maximum: 4095

nullable: true

description: >

This data type is defined in the same way as the 'MaxDataBurstVol' data type, but with

the OpenAPI 'nullable: true' property.

SamplingRatio:

type: integer

minimum: 1

maximum: 100

description: >

Unsigned integer indicating Sampling Ratio (see clauses 4.15.1 of 3GPP TS 23.502),

expressed in percent.

SamplingRatioRm:

type: integer

minimum: 1

maximum: 100

nullable: true

description: >

This data type is defined in the same way as the 'SamplingRatio' data type, but with the

OpenAPI 'nullable: true' property.

#

RgWirelineCharacteristics:

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

RgWirelineCharacteristicsRm:

anyOf:

- $ref: '#/components/schemas/RgWirelineCharacteristics'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'RgWirelineCharacteristics' data type,

but with the OpenAPI 'nullable: true' property.

ExtMaxDataBurstVol:

type: integer

minimum: 4096

maximum: 2000000

description: >

Unsigned integer indicating Maximum Data Burst Volume (see clauses 5.7.3.7 and 5.7.4 of

3GPP TS 23.501), expressed in Bytes.

ExtMaxDataBurstVolRm:

type: integer

minimum: 4096

maximum: 2000000

nullable: true

description: >

This data type is defined in the same way as the 'ExtMaxDataBurstVol' data type, but

with the OpenAPI 'nullable: true' property.

ExtPacketDelBudget:

type: integer

minimum: 1

description: >

Unsigned integer indicating Packet Delay Budget (see clauses 5.7.3.4 and 5.7.4 of 3GPP

TS 23.501 [8])), expressed in 0.01 milliseconds.

ExtPacketDelBudgetRm:

type: integer

minimum: 1

nullable: true

description: >

This data type is defined in the same way as the 'ExtPacketDelBudget' data type, but

with the OpenAPI 'nullable: true' property. "

#

# ENUMERATED DATA TYPES

#

PreemptionCapability:

anyOf:

- type: string

enum:

- NOT\_PREEMPT

- MAY\_PREEMPT

- type: string

description: >

The enumeration PreemptionCapability indicates the pre-emption capability of a request on

other QoS flows. See clause 5.7.2.2 of 3GPP TS 23.501. It shall comply with the provisions

defined in table 5.5.3.1-1.

PreemptionCapabilityRm:

anyOf:

- $ref: '#/components/schemas/PreemptionCapability'

- $ref: '#/components/schemas/NullValue'

description: >

This enumeration is defined in the same way as the 'PreemptionCapability' enumeration,

but with the OpenAPI 'nullable: true' property.

PreemptionVulnerability:

anyOf:

- type: string

enum:

- NOT\_PREEMPTABLE

- PREEMPTABLE

- type: string

description: >

The enumeration PreemptionVulnerability indicates the pre-emption vulnerability of the QoS

flow to pre-emption from other QoS flows. See clause 5.7.2.2 of 3GPP TS 23.501. It shall

comply with the provisions defined in table 5.5.3.2-1

PreemptionVulnerabilityRm:

anyOf:

- $ref: '#/components/schemas/PreemptionVulnerability'

- $ref: '#/components/schemas/NullValue'

description: >

This enumeration is defined in the same way as the 'PreemptionVulnerability' enumeration,

but with the OpenAPI 'nullable: true' property."

ReflectiveQoSAttribute:

anyOf:

- type: string

enum:

- RQOS

- NO\_RQOS

- type: string

description: >

The enumeration ReflectiveQosAttribute indicates whether certain traffic of the QoS flow may

be subject to Reflective QoS (see clause 5.7.2.3 of 3GPP TS 23.501). It shall comply with

the provisions defined in table 5.5.3.3-1.

ReflectiveQoSAttributeRm:

anyOf:

- $ref: '#/components/schemas/ReflectiveQoSAttribute'

- $ref: '#/components/schemas/NullValue'

description: >

This enumeration is defined in the same way as the 'ReflectiveQosAttribute' enumeration,

but with the OpenAPI 'nullable: true' property. "

NotificationControl:

anyOf:

- type: string

enum:

- REQUESTED

- NOT\_REQUESTED

- type: string

description: >

The enumeration NotificationControl indicates whether notifications are requested from the

RAN when the GFBR can no longer (or again) be fulfilled for a QoS Flow during the lifetime

of the QoS Flow (see clause 5.7.2.4 of 3GPP TS 23.501).

It shall comply with the provisions defined in table 5.5.3.5-1.

NotificationControlRm:

anyOf:

- $ref: '#/components/schemas/NotificationControl'

- $ref: '#/components/schemas/NullValue'

description: >

This enumeration is defined in the same way as the 'NotificationControl' enumeration, but

with the OpenAPI 'nullable: true' property.

QosResourceType:

anyOf:

- type: string

enum:

- NON\_GBR

- NON\_CRITICAL\_GBR

- CRITICAL\_GBR

- type: string

description: >

The enumeration QosResourceType indicates whether a QoS Flow is non-GBR, delay critical GBR,

or non-delay critical GBR (see clauses 5.7.3.4 and 5.7.3.5 of 3GPP TS 23.501). It shall

comply with the provisions defined in table 5.5.3.6-1.

QosResourceTypeRm:

anyOf:

- $ref: '#/components/schemas/QosResourceType'

- $ref: '#/components/schemas/NullValue'

description: >

This enumeration is defined in the same way as the 'QosResourceType' enumeration, but

with the OpenAPI 'nullable: true' property. "

AdditionalQosFlowInfo:

anyOf:

- anyOf:

- type: string

enum:

- MORE\_LIKELY

- type: string

- $ref: '#/components/schemas/NullValue'

description: >

The enumeration AdditionalQosFlowInfo provides additional QoS flow information (see clause

9.3.1.12 3GPP TS 38.413 [11]). It shall comply with the provisions defined in table

5.5.3.12-1.

PartitioningCriteria:

anyOf:

- type: string

enum:

- TAC

- SUBPLMN

- GEOAREA

- SNSSAI

- DNN

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Possible values are:

- "TAC": Type Allocation Code

- "SUBPLMN": Subscriber PLMN ID

- "GEOAREA": Geographical area, i.e. list(s) of TAI(s)

- "SNSSAI": S-NSSAI

- "DNN": DNN

PartitioningCriteriaRm:

anyOf:

- $ref: '#/components/schemas/PartitioningCriteria'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the ' PartitioningCriteria ' data type, but

with the OpenAPI 'nullable: true' property.

#

#

# STRUCTURED DATA TYPES

#

Arp:

description: Contains Allocation and Retention Priority information.

type: object

properties:

priorityLevel:

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

preemptCap:

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

preemptVuln:

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

required:

- priorityLevel

- preemptCap

- preemptVuln

Ambr:

description: Contains the maximum aggregated uplink and downlink bit rates.

type: object

properties:

uplink:

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

downlink:

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

required:

- uplink

- downlink

Dynamic5Qi:

description: >

It indicates the QoS Characteristics for a Non-standardised or not pre-configured 5QI

for downlink and uplink.

type: object

properties:

resourceType:

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

priorityLevel:

$ref: '#/components/schemas/5QiPriorityLevel'

packetDelayBudget:

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

packetErrRate:

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

averWindow:

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

maxDataBurstVol:

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

extMaxDataBurstVol:

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

extPacketDelBudget:

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

cnPacketDelayBudgetDl:

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

cnPacketDelayBudgetUl:

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

required:

- resourceType

- priorityLevel

- packetDelayBudget

- packetErrRate

NonDynamic5Qi:

description: >

It indicates the QoS Characteristics for a standardized or pre-configured 5QI for downlink

and uplink.

type: object

properties:

priorityLevel:

$ref: '#/components/schemas/5QiPriorityLevel'

averWindow:

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

maxDataBurstVol:

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

extMaxDataBurstVol:

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

cnPacketDelayBudgetDl:

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

cnPacketDelayBudgetUl:

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

minProperties: 0

ArpRm:

anyOf:

- $ref: '#/components/schemas/Arp'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'Arp' data type, but with the

OpenAPI 'nullable: true' property.

AmbrRm:

anyOf:

- $ref: '#/components/schemas/Ambr'

- $ref: '#/components/schemas/NullValue'

description: >

This data type is defined in the same way as the 'Ambr' data type, but with the

OpenAPI 'nullable: true' property."

SliceMbr:

description: MBR related to slice

type: object

properties:

uplink:

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

downlink:

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

required:

- uplink

- downlink

SliceMbrRm:

description: "SliceMbr with nullable: true"

anyOf:

- $ref: '#/components/schemas/SliceMbr'

- $ref: '#/components/schemas/NullValue'

#

# Data Types related to 5G Trace as defined in clause 5.6

#

#

# SIMPLE DATA TYPES

#

PhysCellId:

type: integer

minimum: 0

maximum: 1007

description: >

Integer value identifying the physical cell identity (PCI), as definition of "*PhysCellId*" IE

in clause 6.3.2 of 3GPP TS 38.331.

ArfcnValueNR:

type: integer

minimum: 0

maximum: 3279165

description: >

Integer value indicating the ARFCN applicable for a downlink, uplink or bi-directional (TDD)

NR global frequency raster,

as definition of "*ARFCN-ValueNR*" IE in clause 6.3.2 of 3GPP TS 38.331.

#

#

# Enumerations

#

TraceDepth:

anyOf:

- type: string

enum:

- MINIMUM

- MEDIUM

- MAXIMUM

- MINIMUM\_WO\_VENDOR\_EXTENSION

- MEDIUM\_WO\_VENDOR\_EXTENSION

- MAXIMUM\_WO\_VENDOR\_EXTENSION

- type: string

description: >

The enumeration TraceDepth defines how detailed information should be recorded in the trace.

See 3GPP TS 32.422 for further description of the values. It shall comply with the

provisions defined in table 5.6.3.1-1

TraceDepthRm:

anyOf:

- $ref: '#/components/schemas/TraceDepth'

- $ref: '#/components/schemas/NullValue'

description: >

This enumeration is defined in the same way as the 'TraceDepth' enumeration, but with

the OpenAPI 'nullable: true' property.

JobType:

anyOf:

- type: string

enum:

- IMMEDIATE\_MDT\_ONLY

- LOGGED\_MDT\_ONLY

- TRACE\_ONLY

- IMMEDIATE\_MDT\_AND\_TRACE

- RLF\_REPORTS\_ONLY

- RCEF\_REPORTS\_ONLY

- LOGGED\_MBSFN\_MDT

- type: string

description: >

The enumeration JobType defines Job Type in the trace. See 3GPP TS 32.422 for further

description of the values. It shall comply with the provisions defined in table 5.6.3.3-1.

ReportTypeMdt:

anyOf:

- type: string

enum:

- PERIODICAL

- EVENT\_TRIGGED

- type: string

description: >

The enumeration ReportTypeMdt defines Report Type for logged MDT in the trace. See 3GPP TS

32.422 for further description of the values. It shall comply with the provisions defined

in table 5.6.3.4-1.

MeasurementLteForMdt:

anyOf:

- type: string

enum:

- M1

- M2

- M3

- M4\_DL

- M4\_UL

- M5\_DL

- M5\_UL

- M6\_DL

- M6\_UL

- M7\_DL

- M7\_UL

- M8

- M9

- type: string

description: >

The enumeration MeasurementLteForMdt defines Measurements used for MDT in LTE in the trace.

See 3GPP TS 32.422 for further description of the values. It shall comply with the

provisions defined in table 5.6.3.5-1.

MeasurementNrForMdt:

anyOf:

- type: string

enum:

- M1

- M2

- M3

- M4\_DL

- M4\_UL

- M5\_DL

- M5\_UL

- M6\_DL

- M6\_UL

- M7\_DL

- M7\_UL

- M8

- M9

- type: string

description: >

The enumeration MeasurementNrForMdt defines Measurements used for MDT in NR in the trace.

See 3GPP TS 32.422 for further description of the values. It shall comply with the provisions

defined in table 5.6.3.6-1.

SensorMeasurement:

anyOf:

- type: string

enum:

- BAROMETRIC\_PRESSURE

- UE\_SPEED

- UE\_ORIENTATION

- type: string

description: >

The enumeration SensorMeasurement defines sensor measurement type for MDT in the trace. See 3GPP

TS 32.422 for further description of the values. It shall comply with the provisions defined

in table 5.6.3.7-1.

ReportingTrigger:

anyOf:

- type: string

enum:

- PERIODICAL

- EVENT\_A2

- EVENT\_A2\_PERIODIC

- ALL\_RRM\_EVENT\_TRIGGERS

- type: string

description: >

The enumeration ReportingTrigger defines Reporting Triggers for MDT in the trace. See 3GPP

TS 32.42] for further description of the values. It shall comply with the provisions

defined in table 5.6.3.8-1.

ReportIntervalMdt:

anyOf:

- type: string

enum:

- 120

- 240

- 480

- 640

- 1024

- 2048

- 5120

- 10240

- 60000

- 360000

- 720000

- 1800000

- 3600000

- type: string

description: >

The enumeration ReportIntervalMdt defines Report Interval for MDT in the trace. See 3GPP

TS 32.422 for further description of the values. It shall comply with

the provisions defined in table 5.6.3.9-1.

ReportAmountMdt:

anyOf:

- type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- infinity

- type: string

description: >

The enumeration ReportAmountMdt defines Report Amount for MDT in the trace. See 3GPP

TS 32.422 for further description of the values. It shall comply with the provisions

defined in table 5.6.3.10-1.

EventForMdt:

anyOf:

- type: string

enum:

- OUT\_OF\_COVERAG

- A2\_EVENT

- type: string

description: >

The enumeration EventForMdt defines events triggered measurement for logged MDT in the

trace. See 3GPP TS 32.422 for further description of the values. It shall comply with

the provisions defined in table 5.6.3.11-1

LoggingIntervalMdt:

anyOf:

- type: string

enum:

- 128

- 256

- 512

- 1024

- 2048

- 3072

- 4096

- 6144

- type: string

description: >

The enumeration LoggingIntervalMdt defines Logging Interval for MDT in the trace. See 3GPP

TS 32.422 for further description of the values. It shall comply with the provisions

defined in table 5.6.3.12-1.

LoggingDurationMdt:

anyOf:

- type: string

enum:

- 600

- 1200

- 2400

- 3600

- 5400

- 7200

- type: string

description: >

The enumeration LoggingIntervalMdt defines Logging Interval for MDT in the trace. See 3GPP

TS 32.422 for further description of the values. It shall comply with the provisions

defined in table 5.6.3.12-1.

PositioningMethodMdt:

anyOf:

- type: string

enum:

- GNSS

- E\_CELL\_ID

- type: string

description: >

The enumeration LoggingDurationMdt defines Logging Duration for MDT in the trace. See 3GPP

TS 32.422 for further description of the values. It shall comply with the provisions

defined in table 5.6.3.13-1.

CollectionPeriodRmmLteMdt:

anyOf:

- type: string

enum:

- 1024

- 1280

- 2048

- 2560

- 5120

- 10240

- 60000

- type: string

description: >

The enumeration CollectionPeriodRmmLteMdt defines Collection period for RRM measurements

LTE for MDT in the trace. See 3GPP TS 32.422 for further description of the values. It shall

comply with the provisions defined in table 5.6.3.15-1.

MeasurementPeriodLteMdt:

anyOf:

- type: string

enum:

- 1024

- 1280

- 2048

- 2560

- 5120

- 10240

- 60000

- type: string

description: >

The enumeration MeasurementPeriodLteMdt defines Measurement period LTE for MDT in the trace.

See 3GPP TS 32.422 for further description of the values. It shall comply with the

provisions defined in table 5.6.3.16-1.

ReportIntervalNrMdt:

anyOf:

- type: string

enum:

- 120

- 240

- 480

- 640

- 1024

- 2048

- 5120

- 10240

- 20480

- 40960

- 60000

- 360000

- 720000

- 1800000

- 3600000

- type: string

description: >

The enumeration ReportIntervalNrMdt defines Report Interval in NR for MDT in the trace. See

3GPP TS 32.422 for further description of the values. It shall comply with the provisions

defined in table 5.6.3.17-1.

LoggingIntervalNrMdt:

anyOf:

- type: string

enum:

- 128

- 256

- 512

- 1024

- 2048

- 3072

- 4096

- 6144

- 320

- 640

- infinity

- type: string

description: >

The enumeration LoggingIntervalNrMdt defines Logging Interval in NR for MDT in the trace.

See 3GPP TS 32.422 for further description of the values. It shall comply with the

provisions defined in table 5.6.3.18-1.

CollectionPeriodRmmNrMdt:

anyOf:

- type: string

enum:

- 1024

- 2048

- 5120

- 10240

- 60000

- type: string

description: >

The enumeration CollectionPeriodRmmNrMdt defines Collection period for RRM measurements NR for MDT in the trace.

See 3GPP TS 32.422 for further description of the values. It shall comply with the provisions defined in table 5.6.3.19-1

LoggingDurationNrMdt:

anyOf:

- type: string

enum:

- 600

- 1200

- 2400

- 3600

- 5400

- 7200

- type: string

description: >

The enumeration LoggingDurationMdt defines Logging Duration in NR for MDT in the trace. See

3GPP TS 32.422 for further description of the values. It shall comply with the provisions

defined in table 5.6.3.20-1.

#

# STRUCTURED DATA TYPES

#

TraceData:

description: contains Trace control and configuration parameters.

type: object

nullable: true

properties:

traceRef:

type: string

pattern: '^[0-9]{3}[0-9]{2,3}-[A-Fa-f0-9]{6}$'

description: >

Trace Reference (see 3GPP TS 32.422).It shall be encoded as the concatenation of MCC,

MNC and Trace ID as follows: 'MCC'<MNC'-'Trace ID'The Trace ID shall be encoded as a 3 octet string in hexadecimal

representation. Each character in the Trace ID 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 Trace ID

shall appear first in the string, and the character representing the 4 least significant

bit of the Trace ID shall appear last in the string.

traceDepth:

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

neTypeList:

type: string

pattern: '^[A-Fa-f0-9]+$'

description: >

List of NE Types (see 3GPP TS 32.422).It shall be encoded as an octet string 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 shall appear

first in the string, and the character representing the

4 least significant bit shall appear last in the string.Octets shall be coded

according to 3GPP TS 32.422.

eventList:

type: string

pattern: '^[A-Fa-f0-9]+$'

description: >

Triggering events (see 3GPP TS 32.422).It shall be encoded as an octet string 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 shall appear

first in the string, and the character representing the 4 least significant bit shall

appear last in the string. Octets shall be coded according to 3GPP TS 32.422.

collectionEntityIpv4Addr:

$ref: '#/components/schemas/Ipv4Addr'

collectionEntityIpv6Addr:

$ref: '#/components/schemas/Ipv6Addr'

interfaceList:

type: string

pattern: '^[A-Fa-f0-9]+$'

description: >

List of Interfaces (see 3GPP TS 32.422).It shall be encoded as an octet string 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 shall appear first in the string, and the character representing the

4 least significant bit shall appear last in the string. Octets shall be coded

according to 3GPP TS 32.422. If this attribute is not present, all the interfaces

applicable to the list of NE types indicated in the neTypeList attribute should

be traced.

required:

- traceRef

- traceDepth

- neTypeList

- eventList

MdtConfiguration:

description: contains contain MDT configuration data.

type: object

required:

- jobType

properties:

jobType:

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

reportType:

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

areaScope:

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

measurementLteList:

type: array

items:

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

measurementNrList:

type: array

items:

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

minItems: 1

sensorMeasurementList:

type: array

items:

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

minItems: 1

reportingTriggerList:

type: array

items:

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

minItems: 1

reportInterval:

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

reportIntervalNr:

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

reportAmount:

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

eventThresholdRsrp:

type: integer

minimum: 0

maximum: 97

description: >

This IE shall be present if the report trigger parameter is configured for A2 event

reporting or A2 event triggered periodic reporting and the job type parameter is

configured for Immediate MDT or combined Immediate MDT and Trace in LTE.

When present, this IE shall indicate the Event Threshold for RSRP, and the value shall

be between 0-97.

eventThresholdRsrpNr:

type: integer

minimum: 0

maximum: 127

description: >

This IE shall be present if the report trigger parameter is configured for A2 event

reporting or A2 event triggered periodic reporting and the job type parameter is

configured for Immediate MDT or combined Immediate MDT

and Trace in NR. When present,

this IE shall indicate the Event Threshold for RSRP, and the value shall be

between 0-127.

eventThresholdRsrq:

type: integer

minimum: 0

maximum: 34

description: >

This IE shall be present if the report trigger parameter is configured for A2 event

reporting or A2 event triggered periodic reporting and the job type parameter is

configured for Immediate MDT or combined Immediate MDT and Trace in LTE.When present,

this IE shall indicate the Event Threshold for RSRQ, and the value shall be

between 0-34.

eventThresholdRsrqNr:

type: integer

minimum: 0

maximum: 127

description: >

This IE shall be present if the report trigger parameter is configured for A2 event

reporting or A2 event triggered periodic reporting and the job type parameter is

configured for Immediate MDT or combined Immediate MDT and Trace in NR.When present,

this IE shall indicate the Event Threshold for RSRQ, and the value shall be

between 0-127.

eventList:

type: array

items:

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

minItems: 1

loggingInterval:

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

loggingIntervalNr:

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

loggingDuration:

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

loggingDurationNr:

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

positioningMethod:

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

addPositioningMethodList:

type: array

items:

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

minItems: 1

collectionPeriodRmmLte:

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

collectionPeriodRmmNr:

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

measurementPeriodLte:

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

mdtAllowedPlmnIdList:

type: array

items:

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

minItems: 1

maxItems: 16

mbsfnAreaList:

type: array

items:

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

minItems: 1

maxItems: 8

interFreqTargetList:

type: array

items:

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

minItems: 1

maxItems: 8

AreaScope:

description: Contain the area based on Cells or Tracking Areas.

type: object

properties:

eutraCellIdList:

type: array

items:

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

minItems: 1

nrCellIdList:

type: array

items:

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

minItems: 1

tacList:

type: array

items:

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

minItems: 1

tacInfoPerPlmn:

type: object

additionalProperties:

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

minProperties: 1

description: >

A map (list of key-value pairs) where PlmnId converted to a string serves as key

TacInfo:

description: contains tracking area information (tracking area codes).

type: object

required:

- tacList

properties:

tacList:

type: array

items:

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

minItems: 1

MbsfnArea:

description: Contains an MBSFN area information.

type: object

properties:

mbsfnAreaId:

type: integer

minimum: 0

maximum: 255

description: This IE shall contain the MBSFN Area ID.

carrierFrequency:

type: integer

minimum: 0

maximum: 262143

description: When present, this IE shall contain the Carrier Frequency (EARFCN).

InterFreqTargetInfo:

description: Indicates the Inter Frequency Target information.

required:

- dlCarrierFreq

type: object

properties:

dlCarrierFreq:

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

cellIdList:

type: array

items:

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

minItems: 1

maxItems: 32

description: >

When present, this IE shall contain a list of the physical cell identities where the

UE is requested to perform measurement logging for the indicated frequency.

# Data Types related to 5G ODB as defined in clause 5.7

#

# SIMPLE DATA TYPES

#

#

#

# Enumerations

#

RoamingOdb:

anyOf:

- type: string

enum:

- OUTSIDE\_HOME\_PLMN

- OUTSIDE\_HOME\_PLMN\_COUNTRY

- type: string

description: >

The enumeration RoamingOdb defines the Barring of Roaming as. See 3GPP TS 23.015 for further

description. It shall comply with the provisions defined in table 5.7.3.1-1.

OdbPacketServices:

anyOf:

- anyOf:

- type: string

enum:

- ALL\_PACKET\_SERVICES

- ROAMER\_ACCESS\_HPLMN\_AP

- ROAMER\_ACCESS\_VPLMN\_AP

- type: string

- $ref: '#/components/schemas/NullValue'

description: >

The enumeration OdbPacketServices defines the Barring of Packet Oriented Services.

See 3GPP TS 23.015 for further description. It shall comply with the provisions defined

in table 5.7.3.2-1

#

# STRUCTURED DATA TYPES

#

OdbData:

description: Contains information regarding operater determined barring.

type: object

properties:

roamingOdb:

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

#

# Data Types related to Charging as defined in clause 5.8

#

#

# SIMPLE DATA TYPES

#

#

ChargingId:

deprecated: true

type: integer

minimum: 0

maximum: 4294967295 #(2^32)-1

description: >

Integer where the allowed values correspond to the value range of an unsigned 32-bit

integer.

ApplicationChargingId:

type: string

description: Application provided charging identifier allowing correlation of charging information.

RatingGroup:

$ref: '#/components/schemas/Uint32'

ServiceId:

$ref: '#/components/schemas/Uint32'

#

# Enumerations

#

#

# STRUCTURED DATA TYPES

#

SecondaryRatUsageReport:

description: Secondary RAT Usage Report to report usage data for a secondary RAT for QoS flows.

type: object

properties:

secondaryRatType:

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

qosFlowsUsageData:

type: array

items:

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

minItems: 1

required:

- secondaryRatType

- qosFlowsUsageData

QosFlowUsageReport:

description: Contains QoS flows usage data information.

type: object

properties:

qfi:

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

startTimeStamp:

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

endTimeStamp:

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

downlinkVolume:

$ref: '#/components/schemas/Int64'

uplinkVolume:

$ref: '#/components/schemas/Int64'

required:

- qfi

- startTimeStamp

- endTimeStamp

- downlinkVolume

- uplinkVolume

SecondaryRatUsageInfo:

description: >

Secondary RAT Usage Information to report usage data for a secondary RAT for QoS flows

and/or the whole PDU session.

type: object

properties:

secondaryRatType:

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

qosFlowsUsageData:

type: array

items:

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

minItems: 1

pduSessionUsageData:

type: array

items:

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

minItems: 1

required:

- secondaryRatType

VolumeTimedReport:

description: Contains Usage data information.

type: object

properties:

startTimeStamp:

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

endTimeStamp:

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

downlinkVolume:

$ref: '#/components/schemas/Int64'

uplinkVolume:

$ref: '#/components/schemas/Int64'

required:

- startTimeStamp

- endTimeStamp

- downlinkVolume

- uplinkVolume

# Data Types related to MBS as defined in clause 5.9

#

#

# SIMPLE DATA TYPES

#

#

AreaSessionId:

$ref: '#/components/schemas/Uint16'

MbsFsaId:

description: MBS Frequency Selection Area Identifier

type: string

pattern: '^[A-Fa-f0-9]{6}$'

#

# Enumerations

#

#

MbsServiceType:

description: Indicates the type of an MBS session

anyOf:

- type: string

enum:

- MULTICAST

- BROADCAST

- type: string

MbsSessionActivityStatus:

description: Indicates the MBS session's activity status

anyOf:

- type: string

enum:

- ACTIVE

- INACTIVE

- type: string

MbsSessionEventType:

description: MBS Session Event Type

anyOf:

- type: string

enum:

- MBS\_REL\_TMGI\_EXPIRY

- BROADCAST\_DELIVERY\_STATUS

- INGRESS\_TUNNEL\_ADD\_CHANGE

- type: string

BroadcastDeliveryStatus:

description: Broadcast MBS Session's Delivery Status

anyOf:

- type: string

enum:

- ACTIVATED

- TERMINATED

- type: string

#

# STRUCTURED DATA TYPES

#

MbsSessionId:

description: MBS Session Identifier

type: object

properties:

tmgi:

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

ssm:

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

nid:

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

Tmgi:

description: Temporary Mobile Group Identity

type: object

properties:

mbsServiceId:

type: string

pattern: '^[A-Fa-f0-9]{6}$'

description: MBS Service ID

plmnId:

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

required:

- mbsServiceId

- plmnId

Ssm:

description: Source specific IP multicast address

type: object

properties:

sourceIpAddr:

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

destIpAddr:

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

required:

- sourceIpAddr

- destIpAddr

MbsServiceArea:

description: MBS Service Area

type: object

properties:

ncgiList:

type: array

items:

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

minItems: 1

description: List of NR cell Ids

taiList:

type: array

items:

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

minItems: 1

description: List of tracking area Ids

NcgiTai:

description: List of NR cell ids, with their pertaining TAIs

type: object

properties:

tai:

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

cellList:

type: array

items:

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

minItems: 1

description: List of List of NR cell ids

required:

- tai

- cellList

MbsSession:

description: Individual MBS session

type: object

properties:

mbsSessionId:

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

tmgiAllocReq:

type: boolean

default: false

writeOnly: true

tmgi:

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

readOnly: true

expirationTime:

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

readOnly: true

serviceType:

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

writeOnly: true

locationDependent:

type: boolean

default: false

areaSessionId:

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

readOnly: true

ingressTunAddrReq:

type: boolean

default: false

writeOnly: true

ingressTunAddr:

type: array

items:

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

minItems: 1

readOnly: true

ssm:

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

writeOnly: true

mbsServiceArea:

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

writeOnly: true

extMbsServiceArea:

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

writeOnly: true

dnn:

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

writeOnly: true

snssai:

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

writeOnly: true

activationTime:

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

terminationTime:

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

mbsSessionSubsc:

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

activityStatus:

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

anyUeInd:

type: boolean

default: false

writeOnly: true

mbsFsaIdList:

type: array

items:

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

minItems: 1

required:

- serviceType

anyOf:

- required: [ mbsSessionId ]

- required: [ tmgiAllocReq ]

MbsSessionSubscription:

description: MBS session subscription

type: object

properties:

mbsSessionId:

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

areaSessionId:

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

eventList:

type: array

items:

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

minItems: 1

notifyUri:

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

notifyCorrelationId:

type: string

expiryTime:

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

nfcInstanceId:

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

mbsSessionSubscUri:

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

readOnly: true

required:

- eventList

- notifyUri

MbsSessionEventReportList:

description: MBS session event report list

type: object

properties:

eventReportList:

type: array

items:

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

minItems: 1

notifyCorrelationId:

type: string

required:

- eventReportList

MbsSessionEvent:

description: MBS session event

type: object

properties:

eventType:

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

required:

- eventType

MbsSessionEventReport:

description: MBS session event report

type: object

properties:

eventType:

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

timeStamp:

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

ingressTunAddrInfo:

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

broadcastDelStatus:

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

required:

- eventType

ExternalMbsServiceArea:

description: List of geographic area or list of civic address info for MBS Service Area

type: object

properties:

geographicAreaList:

type: array

items:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/GeographicArea'

minItems: 1

civicAddressList:

type: array

items:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/CivicAddress'

minItems: 1

oneOf:

- required: [ geographicAreaList ]

- required: [ civicAddressList ]

MbsSecurityContext:

type: object

properties:

keyList:

description: A map (list of key-value pairs) where a (unique) valid JSON string serves as key of MbsSecurityContext

type: object

additionalProperties:

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

minProperties: 1

required:

- keyList

MbsKeyInfo:

description: MBS Security Key Data Structure

type: object

properties:

keyDomainId:

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

mskId:

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

msk:

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

mskLifetime:

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

mtkId:

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

mtk:

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

required:

- keyDomainId

- mskId

IngressTunAddrInfo:

description: Ingress Tunnel Address Information

type: object

properties:

ingressTunAddr:

type: array

items:

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

minItems: 1

required:

- ingressTunAddr

MbsServiceAreaInfo:

description: MBS Service Area Information for location dependent MBS session

type: object

properties:

areaSessionId:

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

mbsServiceArea:

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

required:

- areaSessionId

- mbsServiceArea

#

# HTTP responses

#

responses:

'307':

description: Temporary Redirect

content:

application/json:

schema:

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

headers:

Location:

description: 'The URI pointing to the resource located on the redirect target'

required: true

schema:

type: string

3gpp-Sbi-Target-Nf-Id:

description: 'Identifier of target NF (service) instance towards which the request is redirected'

schema:

type: string

'308':

description: Permanent Redirect

content:

application/json:

schema:

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

headers:

Location:

description: 'The URI pointing to the resource located on the redirect target'

required: true

schema:

type: string

3gpp-Sbi-Target-Nf-Id:

description: >

'Identifier of target NF (service) instance towards which the request is redirected'

schema:

type: string

'400':

description: Bad request

content:

application/problem+json:

schema:

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

'401':

description: Unauthorized

content:

application/problem+json:

schema:

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

'403':

description: Forbidden

content:

application/problem+json:

schema:

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

'404':

description: Not Found

content:

application/problem+json:

schema:

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

'405':

description: Method Not Allowed

'408':

description: Request Timeout

content:

application/problem+json:

schema:

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

'406':

description: 406 Not Acceptable

'409':

description: Conflict

content:

application/problem+json:

schema:

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

'410':

description: Gone

content:

application/problem+json:

schema:

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

'411':

description: Length Required

content:

application/problem+json:

schema:

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

'412':

description: Precondition Failed

content:

application/problem+json:

schema:

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

'413':

description: Payload Too Large

content:

application/problem+json:

schema:

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

'414':

description: URI Too Long

content:

application/problem+json:

schema:

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

'415':

description: Unsupported Media Type

content:

application/problem+json:

schema:

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

'429':

description: Too Many Requests

content:

application/problem+json:

schema:

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

'500':

description: Internal Server Error

content:

application/problem+json:

schema:

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

'501':

description: Not Implemented

content:

application/problem+json:

schema:

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

'502':

description: Bad Gateway

content:

application/problem+json:

schema:

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

'503':

description: Service Unavailable

content:

application/problem+json:

schema:

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

'504':

description: Gateway Timeout

content:

application/problem+json:

schema:

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

default:

description: Generic Error

\* \* \* End of Changes \* \* \* \*