**3GPP TSG- Meeting #**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| --- |
|  |
| ***Title:***  |  |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | The current version of TS 33.128 has multiple location formats that can be used. The specifics of when each format should be used and the details of the parameters inside the different structures are currently not defined. This CR attempts to add the relevant details. |
|  |  |
| ***Summary of change:*** | Addition of tables to clause 7.3.3 with details for the usage of the various location structures. |
|  |  |
| ***Consequences if not approved:*** | It may be difficult for implementers to send the location in the correct format and locations received may be difficult for LEAs to understand. |
|  |  |
| ***Clauses affected:*** | 2, 7.3.3 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 33.128 CRs 0475, 0479, 0494, 0496  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** | The tables in this CR reference ASN.1 types defined in CR 0475, CR 0479, CR 0496 and CR 0494. |
|  |  |
| ***This CR's revision history:*** | S3i230045, S3i230082, S3i230142 |

## \*\*\*\* START OF FIRST CHANGE (MAIN DOCUMENT) \*\*\*

#  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 23.501: "System Architecture for the 5G System".

[3] 3GPP TS 33.126: "Lawful Interception Requirements".

[4] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[5] 3GPP TS 33.127: "Lawful Interception (LI) Architecture and Functions".

[6] ETSI TS 103 120: "Lawful Interception (LI); Interface for warrant information".

[7] ETSI TS 103 221-1: "Lawful Interception (LI); Internal Network Interfaces; Part 1: X1".

[8] ETSI TS 103 221-2: "Lawful Interception (LI); Internal Network Interfaces; Part 2: X2/X3".

 [9] ETSI TS 102 232-1: "Lawful Interception (LI); Handover Interface and Service-Specific Details (SSD) for IP delivery; Part 1: Handover specification for IP delivery".

[10] ETSI TS 102 232-7: "Lawful Interception (LI); Handover Interface and Service-Specific Details (SSD) for IP delivery; Part 7: Service-specific details for Mobile Services".

[11] 3GPP TS 33.501: "Security Architecture and Procedures for the 5G System".

[12] 3GPP TS 33.108: "3G security; Handover interface for Lawful Interception (LI)".

[13] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS)".

[14] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General Aspects".

[15] 3GPP TS 29.244: "Interface between the Control Plane and the User Plane nodes".

[16] 3GPP TS 29.502: "5G System; Session Management Services; Stage 3".

[17] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[18] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".

[19] 3GPP TS 23.003: "Numbering, addressing and identification ".

[20] OMA-TS-MLP-V3\_5-20181211-C: "Open Mobile Alliance; Mobile Location Protocol, Candidate Version 3.5", <https://www.openmobilealliance.org/release/MLS/V1_4-20181211-C/OMA-TS-MLP-V3_5-20181211-C.pdf>.

[21] 3GPP TS 29.540: "5G System; SMS Services; Stage 3".

[22] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".

[23] 3GPP TS 38.413: "NG Application Protocol (NGAP)".

[24] 3GPP TS 29.572: "Location Management Services; Stage 3".

[25] 3GPP TS 29.503: "5G System; Unified Data Management Services".

[26] IETF RFC 815: "IP datagram reassembly algorithms".

[27] IETF RFC 2460: "Internet Protocol, Version 6 (IPv6) Specification".

[28] IETF RFC 793: "Transmission Control Protocol".

[29] IETF RFC 768: "User Datagram Protocol".

[30] IETF RFC 4340: "Datagram Congestion Control Protocol (DCCP)".

[31] IETF RFC 4960: "Stream Control Transmission Protocol".

[32] IANA (www.iana.org): Assigned Internet Protocol Numbers, "Protocol Numbers".

[33] IETF RFC 6437: "IPv6 Flow Label Specification".

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

[35] Open Geospatial Consortium OGC 05-010: "URNs of definitions in ogc namespace".

[36] 3GPP TS 33.107: "3G security; Lawful interception architecture and functions".

[37] 3GPP TS 37.340: "Evolved Universal Radio Access (E-UTRA) and NR-Multi-connectivity; Stage 2".

[38] 3GPP TS 36.413: "S1 Application Protocol (S1AP)".

[39] OMA-TS-MMS\_ENC-V1\_3-20110913-A: "Multimedia Messaging Service Encapsulation Protocol".

[40] 3GPP TS 23.140: "Multimedia Messaging Protocol. Functional Description. Stage 2".

[41] 3GPP TS 38.415: "NG-RAN; PDU Session User Plane Protocol".

[42] 3GPP TS 23.273: "5G System (5GS) Location Services (LCS); Stage 2".

[43] IETF RFC 4566: "SDP: Session Description Protocol".

[44] 3GPP TS 24.193: "Stage 3: Access Traffic Steering, Switching and Splitting (ATSSS)".

[45] 3GPP TS 29.509: "5G System; Authentication Server Services; Stage 3".

[46] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[47] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[48] 3GPP TS 29.504: "5G System; Unified Data Repository Services; Stage 3".

[49] 3GPP TS 29.505: "5G System; Usage of the Unified Data Repository services for Subscription Data; Stage 3".

[50] 3GPP TS 23.401 "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".

[51] 3GPP TS 24.301 "Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS), Stage 3".

[52] 3GPP TS 23.271 "Functional stage 2 description of Location Services (LCS)".

[53] 3GPP TS 29.172 "Evolved Packet Core (EPC) LCS Protocol (ELP) between the Gateway Mobile Location Centre (GMLC) and the Mobile Management Entity (MME); SLg interface".

[54] 3GPP TS 29.171 "LCS Application Protocol (LCS-AP) between the Mobile Management Entity (MME) and Evolved Serving Mobile Location Centre (E-SMLC); SLs interface".

[55] 3GPP TS 24.379: "Mission Critical Push to Talk (MCPTT) call control; protocol specification".

[56] OMA-TS-PoC-System\_Description-V2\_1-20110802-A: "OMA PoC System Description".

[57] 3GPP TS 29.541: "5G System; Network Exposure (NE) function services for Non-IP Data Delivery (NIDD); Stage 3".

[58] 3GPP TS 29.522: "5G System; Network Exposure Function Northbound APIs; Stage 3".

[59] 3GPP TS 29.338: "Diameter based protocols to support Short Message Service (SMS) capable Mobile Management Entities (MMEs); Stage 3".

[60] 3GPP TS 29.337: "Diameter-based T4 interface for communications with packet data networks and applications".

[61] 3GPP TS 24.250: "Protocol for Reliable Data Service; Stage 3".

[62] 3GPP TS 29.128: "Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) interfaces for interworking with packet data networks and applications".

[63] 3GPP TS 29.122: "T8 reference point for Northbound APIs".

[64] 3GPP TS 29.598: "5G System; Unstructured Data Storage Services; Stage3".

[65] 3GPP TS 33.535: "Authentication and Key Management for Applications (AKMA) based on 3GPP credentials in the 5G System (5GS)".

[66] IETF RFC 5246: "The Transport Layer Security (TLS) Protocol Version 1.2".

[67] GSMA IR.88: "IR.88 LTE and EPC Roaming Guidelines".

[68] GSMA NG.114 "IMS Profile for Voice, Video and Messaging over 5GS".

[69] IETF RFC 8225: "PASSporT: Personal Assertion Token".

[70] IETF RFC 8224: "Authenticated Identity Management in the Session Initiation Protocol (SIP)".

[71] IETF RFC 8588: "Personal Assertion Token (PaSSporT) Extension for Signature-based Handling of Asserted information using toKENs (SHAKEN)".

[72] 3GPP TS 24.196: "Enhanced Calling Name (eCNAM)".

[73] IETF draft-ietf-stir-passport-rcd-17: "PASSporT Extension for Rich Call Data".

NOTE: The above document cannot be formally referenced until it is published as an RFC.

[74] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP)and Session Description Protocol (SDP); Stage 3".

[75] IANA Session Initiation Protocol (SIP) Parameters: <https://www.iana.org/assignments/sip-parameters/sip-parameters.xhtml>

[76] IETF RFC 8946: "Personal Assertion Token (PASSporT) Extension for Diverted Calls".

[77] 3GPP TS 23.204: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Support of Short Message Service (SMS) over generic 3GPP Internet Protocol (IP) access; Stage 2".

[78] GSMA RCC.07: "Rich Communication Suite – Advanced Communications Services and Client Specification".

[79] IETF RFC 4975: "The Message Session Relay Protocol (MSRP)".

[80] IETF RFC 3862: "Common Presence and Instant Messaging (CPIM): Message Format".

[81] IETF RFC 5438: "Instant Message Disposition Notification (IMDN)".

[82] OMA-TS-CPM\_System\_Description-V2\_2-20170926-C: "OMA Converged IP Messaging System Description".

[83] IETF RFC 4566: "SDP: Session Description Protocol".

[84] 3GPP TS 36.455: "Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol A (LPPa) ".

[85] 3GPP TS 37.355: "LTE Positioning Protocol (LPP)".

[86] 3GPP TS 38.455: "NG-RAN; NR Positioning Protocol A (NRPPa)".

[87] 3GPP TS 29.274: "3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3".

[88] 3GPP TS 29.513: "5G System; Policy and Charging Control signalling flows and QoS parameter mapping".

[89] 3GPP TS 29.512: "5G System; Session Management Policy Control Service; Stage 3".

[90] 3GPP TS 29.508: "5G System; Session Management Event Exposure Service; Stage 3".

[91] 3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

[92] 3GPP TS 29.214: "Policy and Charging Control over Rx reference point".

[93] 3GPP TS 24.558: "Enabling Edge Applications; Protocol specification".

[94] 3GPP TS 29.558: "Enabling Edge Applications; Application Programming Interface (API) specification".

[95] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

[96] 3GPP TS 29.551: "5G System; Packet Flow Description Management Service; Stage 3".

[97] ETSI TS 103 280: "Lawful Interception (LI); Dictionary for common parameters".

[98] 3GPP TS 26.512: "5G Media Streaming (5GMS); Protocols".

[99] 3GPP TS 26.247: "Transparent end-to-end Packet-switched Streaming Service (PSS); Progressive Download and Dynamic Adaptive Streaming over HTTP (3GP-DASH)".

[100] 3GPP TS 29.563: "5G System; Home Subscriber Server (HSS) services for interworking with Unified Data Management (UDM); Stage 3".

[101] 3GPP TS 29.562: "5G System; Home Subscriber Server (HSS) Services; Stage 3".

[102] 3GPP TS 24.341: "Support of SMS over IP networks, Stage 3".

[Re1] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

[Re2] ITU-T Recommendation Q.763 (1999): "Specifications of Signalling System No.7; Formats and codes".

[Re3] 3GPP TS 29.272: "Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) related interfaces based on Diameter protocol".

[Re4] IETF RFC 6442: "Location Conveyance for the Session Initiation Protocol".

## \*\*\*\* START OF NEXT CHANGE (MAIN DOCUMENT) \*\*\*

### 7.3.3 Use of the Location structure

#### 7.3.3.1 General description

The Location structure (see Annex A) is used to convey access network location information and geolocation information. While the data types defined in the clauses below are generally modelled on data types from the Service Based Interfaces (SBIs) defined for specific NFs, the data types defined below shall be used by any POI in order to send all location information available at the NF where the POI is located.

When location information is reported, unless otherwise specified, all location information present at the NF for the target shall be reported. If a single parameter within the Location type is unable to carry all the types of location information available at the NF, multiple parameters within the Location type shall be used.

#### 7.3.3.X Location structure data types

##### 7.3.3.X.1 Simple data types for location

Table 7.3.3.X.1-1: Simple Types for Location

|  |  |  |
| --- | --- | --- |
| Type name | Type definition | Description |
|  |  |  |
| AgeOfLocation | INTEGER (0..32767) | Integer value of the age of the location information or location estimate, expressed in minutes. 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 TS 29.572 [24], table 6.1.6.3.2-1 and TS 29.571 [17], tables 5.4.4.8-1, 5.4.4.9-1, 5.4.4.52-1 and 5.4.4.53-1.  |
| Altitude | UTF8String | Contains a string representation of the altitude reported in meters. |
| Angle | INTEGER (0..360) | Integer value of the angle in degrees. |
| BSSID | UTF8String | The BSSID of the access point being reported. |
| CivicAddressBytes | OCTET STRING | Contains the original binary data (i.e. the value of the YAML field after the base64 encoding is removed). See 29.571 [17] Tables 5.4.4.64-2 and 5.4.4.64-1 for additional details. |
| Confidence | INTEGER (0..100) | Indicates the confidence of the location in percentage. |
| EUTRACellID | BIT STRING (SIZE(28)) | The E-UTRA Cell Identitiy being reported. The EUTRACellID is derived from the E-UTRA Cell Identity parameter of the E-UTRA CGI defined in TS 38.413 [23] clause 9.3.1.9 |
| GCI | UTF8String | Global Cable Identifier uniquely identifying the line connecting the 5G-BRG or FN-BRG to the 5GS. See TS 23.003 [19] clause 28.15.4. See TS 29.571 [17] table 5.4.2-1 for encoding. |
| GLI | OCTET STRING (SIZE(0..150)) | Global Line Identifier uniquely identifying the line connecting the 5G-BRG or FN-BRG to the 5GS. See TS 23.003 [19] clause 28.16.4.  |
| GNbID | BIT STRING (SIZE(22..32)) | The gNodeB identifier being reported. The GNbID is derived from the gNB ID parameter of the Global gNB ID defined in TS 38.413 [23], clause 9.3.1.6 |
| HFCNodeID | UTF8String | Contains the identifier of the HFC node Id as described in TS 29.571 [17], clause 5.4.4.36 and table 5.4.2-1. It is provisioned by the wireline operator as part of wireline operations and may contain up to six characters. |
| HorizontalSpeed | UTF8String | Contains the string representation of the horizontal speed being reported, expressed in kilometres per hour. See TS 29.572 [24], table 6.1.6.3.2-1 |
| InnerRadius | INTEGER (0..327675) | Indicates the inner radius of an ellipsoid arc from 0 to 327675 meters. |
| IPv4Address | OCTET STRING (SIZE(4)) | The IPv4 address being reported in binary representation. |
| IPv6Address | OCTET STRING (SIZE(16)) | The IPv6 address being reported in binary representation. |
| MCC | NumericString (SIZE(3)) | Mobile Country Code |
| MethodCode | INTEGER (16..31) | This parameter shall carry the decimal code value of the network specific positioning method as described in TS 29.572 [24] clause 6.1.6.2.15.  |
| MNC | NumericString (SIZE(2..3)) | Mobile Network Code |
| N3IWFIDNGAP | BIT STRING (SIZE(16)) | The N3IWFIDNGAP type is used to report the N3IWF Identity received over NGAP. The N3IWFIDNGAP type is derived from the data present in the N3IWF ID parameter of the Global N3IWFID defined in TS 38.413 [23], clause 9.3.1.5.7. |
| N3IWFIDSBI | UTF8String | The N3IWFIDSBI type is used to report the N3IWF Identity received over SBI. The N3IWFIDSBI type is derived from the data present in the N3IWFID parameter of the GloalRanNodeID defined in TS 29.571[17], clause 5.4.4.28 |
| NID | UTF8String (SIZE(11)) | This represents the Network Identifier, which together with a PLMN ID is used to identify an SNPN. See TS 23.003 [19] clause 12.7.1. Encoded as per TS 29.571 [17] clause 5.4.3 |
| NRCellID | BIT STRING (SIZE(36)) | The New Radio Cell Identitiy being reported. The NRCellID is derived from the NR Cell Identity parameter of the NR CGI defined in TS 38.413 [23] clause 9.3.1.7 |
| Orientation | INTEGER (0..180) | Integer value of the orientation angle, expressed in degrees. Encoded as per TS 29.572 [24], table 6.1.6.3.2-1 |
| SIPAccessInfo | UTF8String | Contains the contents of the access-info parameter of the specified Header Field of the SIP Message. See TS 24.229 [74] clauses 7.2A.4.2 and 7.2A.4.3. |
| SIPCellularAccessInfo | UTF8String | Contains the contents of the cellular-access-info parameter of the specified Header Field of the SIP Message. See TS 24.229 [74] clause 7.2.15.  |
| SpeedUncertainty | UTF8String | Contains the string representation of the speed uncertainty being reported, expressed in kilometres per hour. See TS 29.572 [24], table 6.1.6.3.2-1 |
| SSID | UTF8String | The SSID of the access point being reported. |
| TAC | OCTET STRING (SIZE(2..3)) | The tracking area code being reported. Given in the format specified in TS 38.413 [23] clause 9.3.3.10 |
| Timestamp | GeneralizedTime | Unless otherwised specified, the timestamp shall be given qualified with time zone information (i.e. as UTC or offset from UTC, not using the local time format). |
| TimeZone | UTF8String | String containing the contents defined in TS 29.571 [17], table 5.2.2-1. |
| TNGFID | UTF8String | This represents the identifier of the TNGF ID.The TNGFID is derived from the TngfId parameter in TS 29.571 [17] clause 5.4.4.28 and table 5.4.2-1 |
| Uncertainty | INTEGER (0..127) | This type has been deprecated and shall always be set to 0. |
| UncertaintySBI | UTF8String | Contains a string representation of the uncertainty reported in meters. See TS 29.572 [24], table 6.1.6.3.2-1. |
| VerticalSpeed | UTF8String | Contains the string representation of the vertical speed being reported, expressed in kilometres per hour. See TS 29.572 [24], table 6.1.6.3.2-1 |
| WAGFID | UTF8String | This represents the identifier of the W-AGF ID.The WAGFID is derived from the WAgfId parameter in TS 29.571 [17] clause 5.4.4.28 and table 5.4.2-1 |

##### 7.3.3.X.2 Type: Location

Table 7.3.3.X.2-1 contains the details for the Location type.

Table 7.3.3.X.2-1: Definition of type Location

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| locationInfo | LocationInfo | 0..1 | Location information type derived from the data present in the ProvideLocInfo structure defined in TS 29.518 [22] clause 6.4.6.2.6. This parameter shall be used any time information from the ProvideLocInfo structure needs to be reported. This parameter shall also be used whenever information from the UserLocation type needs to be reported. | C |
| positioningInfo | PositioningInfo | 0..1 | Location information type derived from the data present in the ProvidePosInfo structure defined in TS 29.518 [22] clause 6.4.6.2.3. This parameter shall be used any time information from LCS operations needs to be reported from the 5GC. This structure may also be used any time information from the ProvidePosInfo structure needs to be reported. | C |
| locationPresenceReport | LocationPresenceReport | 0..1 | Location information type derived from the data present in the AMFEventReport structure defined in TS 29.518 [22] clause 6.2.6.2.5. This parameter shall be used any time location information from Namf\_EventExposure Service operations needs to be reported.  | C |
| fourGPositioningInfo | FourGPositioningInfo | 0..1 | Location information type derived from the data present in the Location-Report-Answer structure defined in TS 29.172 [53] clause 7.3.2 and the Provide Subscriber Location Answer defined in TS 29.172 [53] Table 6.2.2-2. This parameter shall be used any time information from LCS operations needs to be reported from the EPC. This structure may also be used any time information from the Provide-Location-Answer structure needs to be reported. | C |
| fourGLocationInfo | FourGLocationInfo | 0..1 | Location information type derived from the data present in the EPS-Location-Info structure defined in TS 29.272 [Re3] clause 7.3.111 and the User Location Information structure defined in TS 29.274 [87] clause 8.21. This parameter shall be used any time information from the EPSLocationInformation structure needs to be reported. This parameter shall also be used whenever information from the EPSUserLocation type needs to be reported. | C |
| iMSLocation | IMSLocation | 0..1 | Location information type derived from the data present in IMS SIP P-Access-Network-Info, Cellular-Network-Info and Geolocation headers. This parameter shall be used any time location information needs to be reported from IMS. This parameter shall only be used to report the target’s location. | C |

##### 7.3.3.X.3 Type: LocationInfo

The LocationInfo type is derived from the data present in the ProvideLocInfo type (see TS 29.518 [22] clause 6.4.6.2.6). If the NF has locations from multiple RAT types, all appropriate location fields within the userLocation parameter shall be used.

Table 7.3.3.X.3-1 contains the details for the LocationInfo type.

Table 7.3.3.X.3-1: Definition of type LocationInfo

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| userLocation | UserLocation | 0..1 | Location information type derived from the data defined in the UserLocation type defined in TS 29.571 [17] clause 5.4.4.7. See clause 7.3.3.X.4 for details on this data type.This field shall be used to convey one or more of the following: - E-UTRA user location. - NR user location. - Non-3GPP access user location. - UTRA Location. - GERA Location. | C |
| currentLoc | BOOLEAN | 0..1 | This parameter shall be present if it can be determined for the reported location.When present, this parameter shall be set as following: - TRUE: the current location of the UE is returned. - FALSE: the last known location of the UE is returned. | C |
| geoInfo | GeographicArea | 0..1 | This parameter shall be present if the geoInfo parameter of the ProvideLocInfo structure (see TS 29.518 [22] clause 6.4.6.2.6) is used. See clause 7.3.3.X.10 for details on this structure. | C |
| rATType | RATType | 0..1 | This parameter shall be present if the RATType of the UE is known at the NF. See clause 7.3.3.X.20 for details on this structure. | C |
| timeZone | TimeZone | 0..1 | This parameter shall be present if the local timeZone of the UE is known at the NF. | C |
| additionalCellIDs | SEQUENCE OF CellInformation | 0..MAX | This parameter shall be present if the NF has additional cell information for the UE. Shall be used whenever Dual Connectivity is activated or whenever secondary cell information is available at the NF where the POI is located. | C |

##### 7.3.3.X.4 Type: UserLocation

The UserLocation type is derived from the data present in the UserLocation type defined in TS 29.571 [17] clause 5.4.4.7. If the NF has locations from multiple RAT types, all appropriate location fields within the userLocation parameter shall be used.

Table 7.3.3.X.4-1 contains the details for the UserLocation type.

Table 7.3.3.X.4-1: Definition of type UserLocation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| eUTRALocation | EUTRALocation | 0..1 | Location information type derived from the data present in the EutraLocation type defined in TS 29.571 [17] clause 5.4.4.8. See clause 7.3.3.X.5 for details on this data type.This parameter shall be present if an EUTRA Location is available at the NF. | C |
| nRLocation | NRLocation | 0..1 | Location information type derived from the data present in the NrLocation type defined in TS 29.571 [17] clause 5.4.4.9. See clause 7.3.3.X.6 for details on this data type.This parameter shall be present if an NR Location is available at the NF. | C |
| n3GALocation | N3GALocation | 0..1 | Location information type derived from the data present in the N3gaLocation type defined in TS 29.571 [17] clause 5.4.4.10. See clause 7.3.3.X.7 for details on this data type.This parameter shall be present if a non-3GPP access Location is available at the NF. | C |
| uTRALocation | UTRALocation | 0..1 | Location information type derived from the data present in the UtraLocation type defined in TS 29.571 [17] clause 5.4.4.52. See clause 7.3.3.X.8 for details on this data type.This parameter shall be present if a UTRAN Access Location is available at the NF. | C |
| gERALocation | GERALocation | 0..1 | Location information type derived from the data present in the GeraLocation type defined in TS 29.571 [17] clause 5.4.4.53. See clause 7.3.3.X.9 for details on this data type.This parameter shall be present if a GERAN Access Location is available at the NF. | C |

##### 7.3.3.X.5 Type: EUTRALocation

The EUTRALocation type is derived from the data present in the EutraLocation type defined in TS 29.571 [17] clause 5.4.4.8.

Table 7.3.3.X.5-1 contains the details for the EUTRALocation type.

Table 7.3.3.X.5-1: Definition of type EUTRALocation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| tAI | TAI | 1 | Tracking Area Identity of the target.If the TAI information is not available, the TAC of the TAI shall be set to one reserved value (e.g. 0x0000, see clause 19.4.2.3 of 3GPP TS 23.003 [19]) and the value of the ignoreTAI parameter shall be set to TRUE. | M |
| eCGI | ECGI | 1 | E-UTRA Cell Identity for the cell where the target is located. | M |
| ageOfLocationInfo | AgeOfLocation | 0..1 | The value represents the elapsed time in minutes since the last network contact of the mobile station.Shall be present if known at the NF where the POI is located. | C |
| uELocationTimestamp | Timestamp | 0..1 | The value represents the UTC time when the EUTRALocation information was acquired. Shall be present if known at the NF where the POI is located. | C |
| geographicalInformation | UTF8String | 0..1 | Shall be present if known at the NF where the POI is located. If present, this parameter shall be populated with the Hexidecimal value of the location encoded as described in TS 23.032 [Re1] clauses 6 and 7.3.  | C |
| geodeticInformation | UTF8String | 0..1 | Shall be present if known at the NF where the POI is located. If present, this parameter shall be populated with the Hexidecimal value of the location encoded as described in ITU-T Recommendation Q.763 (1999) [Re2] clause 3.88. | C |
| globalNGENbID | GlobalRANNodeID | 0..1 | Indicates the global identity of the ng-eNodeB in which the UE is currently located. Shall be present if known at the NF where the POI is located. | C |
| cellSiteInformation | CellSiteInformation | 0..1 | Contains location information for the cell site being reported. Shall be present if known at the NF where the POI is located or known at the MDF. | C |
| globalENbID | GlobalRANNodeID | 0..1 | Indicates the global identity of the eNodeB in which the UE is currently located. Shall be present if known at the NF where the POI is located. | C |
| ignoreTAI | BOOLEAN | 0..1 | This flag, when present, shall indicate if the tAI shall be ignored.When present, it shall be set as follows: - TRUE: tAI shall be ignored.- FALSE: tAI shall not be ignored. | C |
| ignoreECGI | BOOLEAN | 0..1 | This flag, when present, shall indicate if the eCGI shall be ignored.When present, it shall be set as follows: - TRUE: eCGI shall be ignored. - FALSE: eCGI shall not be ignored. | C |

##### 7.3.3.X.6 Type: NRLocation

The NRLocation type is derived from the data present in the NrLocation type defined in TS 29.571 [17] clause 5.4.4.9.

Table 7.3.3.X.6-1 contains the details for the NRLocation type.

Table 7.3.3.X.6-1: Definition of type NRLocation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| tAI | TAI | 1 | Tracking Area Identity of the target.If the TAI information is not available, the TAC of the TAI shall be set to one reserved value (e.g. 0x0000, see clause 19.4.2.3 of 3GPP TS 23.003 [19]) and the value of the ignoreTAI parameter shall be set to TRUE. | M |
| nCGI | NCGI | 1 | NR Cell Identity for the cell where the target is located. | M |
| ageOfLocationInfo | AgeOfLocation | 0..1 | The value represents the elapsed time in minutes since the last network contact of the mobile station.Shall be present if known at the NF where the POI is located. | C |
| uELocationTimestamp | Timestamp | 0..1 | The value represents the UTC time when the NRLocation information was acquired. Shall be present if known at the NF where the POI is located. | C |
| geographicalInformation | UTF8String | 0..1 | Shall be present if known at the NF where the POI is located. If present, this parameter shall be populated with the Hexidecimal value of the location encoded as described in TS 23.032 [Re1] clauses 6 and 7.3.  | C |
| geodeticInformation | UTF8String | 0..1 | Shall be present if known at the NF where the POI is located. If present, this parameter shall be populated with the Hexidecimal value of the location encoded as described in ITU-T Recommendation Q.763 (1999) [Re2] clause 3.88. | C |
| globalGNbID | GlobalRANNodeID | 0..1 | Indicates the global identity of the gNodeB in which the UE is currently located. Shall be present if known at the NF where the POI is located. | C |
| cellSiteInformation | CellSiteInformation | 0..1 | Contains location information for the cell site being reported. Shall be present if known at the NF where the POI is located or known at the MDF. | C |
| ignoreNCGI | BOOLEAN | 0..1 | This flag, when present, shall indicate if the nCGI shall be ignored.When present, it shall be set as follows: - TRUE: nCGI shall be ignored. - FALSE: nCGI shall not be ignored. | C |

##### 7.3.3.X.7 Type: N3GALocation

The N3GALocation type is derived from the data present in the N3gaLocation type defined in TS 29.571 [17] clause 5.4.4.10.

Table 7.3.3.X.7-1 contains the details for the N3GALocation type.

Table 7.3.3.X.7-1: Definition of type N3GALocation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| tAI | TAI | 0..1 | Tracking Area Identity used by the target for non-3GPP access. Shall be present if known at the NF where the POI is located. | C |
| n3IWFID | N3IWFIDNGAP | 0..1 | This field shall contain the N3IWF identifier received over NGAP if it is known at the NF where the POI is located. | C |
| uEIPAddr | IPAddr | 0..1 | The IP address used by the UE on the non-3GPP access network. Shall be present if known at the NF where the POI is located. | C |
| portNumber | INTEGER | 0..1 | The source port number used by the UE for non-3GPP access. Shall be present if known at the NF where the POI is located. | C |
| tNAPID | TNAPID | 0..1 | The TNAP Identifier for the TNAP in use by the UE. Shall be present if known at the NF where the POI is located. | C |
| tWAPID | TWAPID | 0..1 | The TWAP Identifier for the TWAP in use by the UE. Shall be present if known at the NF where the POI is located. | C |
| hFCNodeID | HFCNodeID | 0..1 | This field 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. | C |
| gLI | GLI | 0..1 | The Global Line Identifier for the access network being used by the UE. It shall be present for a 5G-BRG/FN-BRG accessing the 5GC via wireline access network. | C |
| w5GBANLineType | W5GBANLineType | 0..1 | Indicates the type of wireline access. Shall be present if known at the NF where the POI is located. | C |
| gCI | GCI | 0..1 | The Global Cable Identifier for the wireline access device used by the UE to access the core network. Shall be present if known at the NF where the POI is located. | C |
| ageOfLocationInfo | AgeOfLocation | 0..1 | The value represents the elapsed time in minutes since the last network contact of the mobile station.Shall be present if known at the NF where the POI is located. | C |
| uELocationTimestamp | Timestamp | 0..1 | The value represents the UTC time when the NRLocation information was acquired. Shall be present if known at the NF where the POI is located. | C |
| protocol | TransportProtocol | 0..1 | Indicates the transport protocol used by the UE to access the core network via a trusted or untrusted non-3GPP access and NAT is detected. Shall be present if known at the NF where the POI is located. | C |

##### 7.3.3.X.8 Type: UTRALocation

The UTRALocation type is derived from the data present in the EutraLocation type defined in TS 29.571 [17] clause 5.4.4.52.

Table 7.3.3.X.8-1 contains the details for the UTRALocation type.

Table 7.3.3.X.8-1: Definition of type UTRALocation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| cGI | CGI | 0..1 | The Cell Global Identification for the UTRA Cell the UE is currently located in. Shall be present if known at the NF where the POI is located. | C |
| sAI | SAI | 0..1 | Service Area Identity of the target.Shall be present if known at the NF where the POI is located. | C |
| lAI | LAI | 0..1 | Location Area Identity of the target.Shall be present if known at the NF where the POI is located. | C |
| rAI | RAI | 0..1 | Routing Area Identity of the target.Shall be present if known at the NF where the POI is located. | C |
| ageOfLocationInfo | AgeOfLocation | 0..1 | The value represents the elapsed time in minutes since the last network contact of the mobile station.Shall be present if known at the NF where the POI is located. | C |
| uELocationTimestamp | Timestamp | 0..1 | The value represents the UTC time when the EUTRALocation information was acquired. Shall be present if known at the NF where the POI is located. | C |
| geographicalInformation | UTF8String | 0..1 | Shall be present if known at the NF where the POI is located. If present, this parameter shall be populated with the Hexidecimal value of the location encoded as described in TS 23.032 [Re1] clauses 6 and 7.3.  | C |
| geodeticInformation | UTF8String | 0..1 | Shall be present if known at the NF where the POI is located. If present, this parameter shall be populated with the Hexidecimal value of the location encoded as described in ITU-T Recommendation Q.763 (1999) [Re2] clause 3.88. | C |
| cellSiteInformation | CellSiteInformation | 0..1 | Contains location information for the cell site being reported. Shall be present if known at the NF where the POI is located or known at the MDF. | C |

##### 7.3.3.X.9 Type: GERALocation

The GERALocation type is derived from the data present in the GeraLocation type defined in TS 29.571 [17] clause 5.4.4.53.

Table 7.3.3.X.9-1 contains the details for the GERALocation type.

Table 7.3.3.X.9-1: Definition of type GERALocation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| locationNumber | GERALocationNumber | 0..1 | The Location Number within the PLMN where the UE is currently located. Shall be present if known at the NF where the POI is located. | C |
| cGI | CGI | 0..1 | The Cell Global Identification for the GERA Cell the UE is currently located in. Shall be present if known at the NF where the POI is located. | C |
| rAI | RAI | 0..1 | Routing Area Identity of the target.Shall be present if known at the NF where the POI is located. | C |
| sAI | SAI | 0..1 | Service Area Identity of the target.Shall be present if known at the NF where the POI is located. | C |
| lAI | LAI | 0..1 | Location Area Identity of the target.Shall be present if known at the NF where the POI is located. | C |
| vLRNumber | UTF8String | 0..1 | The VLR Number for the VLR where the UE is currently registered. Shall be present if known at the NF where the POI is located. | C |
| mSCNumber | UTF8String | 0..1 | The MSC Number for the MSC currently serving the UE. Shall be present if known at the NF where the POI is located. |  |
| ageOfLocationInfo | AgeOfLocation | 0..1 | The value represents the elapsed time in minutes since the last network contact of the mobile station.Shall be present if known at the NF where the POI is located. | C |
| uELocationTimestamp | Timestamp | 0..1 | The value represents the UTC time when the EUTRALocation information was acquired. Shall be present if known at the NF where the POI is located. | C |
| geographicalInformation | UTF8String | 0..1 | Shall be present if known at the NF where the POI is located. If present, this parameter shall be populated with the Hexidecimal value of the location encoded as described in TS 23.032 [Re1] clauses 6 and 7.3.  | C |
| geodeticInformation | UTF8String | 0..1 | Shall be present if known at the NF where the POI is located. If present, this parameter shall be populated with the Hexidecimal value of the location encoded as described in ITU-T Recommendation Q.763 (1999) [Re2] clause 3.88. | C |
| cellSiteInformation | CellSiteInformation | 0..1 | Contains location information for the cell site being reported. Shall be present if known at the NF where the POI is located or known at the MDF. | C |

##### 7.3.3.X.10 Type: GeographicArea

The GeographicArea type is derived from the data present in the GeographicArea type defined in TS 29.572 [24] clause 6.1.6.2.5.

Table 7.3.3.X.10-1 contains the details for the GeographicArea type.

Table 7.3.3.X.10-1: Definition of Choices for GeographicArea

|  |  |  |
| --- | --- | --- |
| CHOICE | Type | Description |
| point | Point | Geographical area consisting of a single point, represented by its longitude and latitude. |
| pointUncertaintyCircle | PointUncertaintyCircle | Geographical area consisting of a point and an uncertainty value.  |
| pointUncertaintyEllipse | PointUncertaintyEllipse | Geographical area consisting of a point, plus an uncertainty ellipse and a confidence value. |
| polygon | Polygon | Geographical area consisting of a list of points (between 3 to 15 points). |
| pointAltitude | PointAltitude | Geographical area consisting of a point and an altitude value. |
| pointAltitudeUncertainty | PointAltitudeUncertainty | Geographical area consisting of a point, an altitude value and an uncertainty value. |
| ellipsiodArc | EllipsoidArc | Geographical area consisting of an ellipsoid arc. |

##### 7.3.3.X.11 Type: Point

The Point type is derived from the data present in the Point type defined in TS 29.572 [24] clause 6.1.6.2.6.

Table 7.3.3.X.11-1 contains the details for the Point type.

Table 7.3.3.X.11-1: Definition of type Point

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| geographicalCoordinates | GeographicalCoordinates | 1 | Indicates a geographic point represented by its longitude and latitude. | M |

##### 7.3.3.X.12 Type: geoCoord

The GeographicalCoordinates type is derived from the data present in the GeographicalCoordinates type defined in TS 29.572 [24] clause 6.1.6.2.4.

Table 7.3.3.X.12-1 contains the details for the GeographicalCoordinates type.

Table 7.3.3.X.12-1: Definition of type GeographicalCoordinates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| latitude | UTF8String | 1 | Shall contain a string representation of the latitude. | M |
| longitude | UTF8String | 1 | Shall contain a string representation of the longitude. | M |
| mapDatumInformation | OGCURN | 0..1 | The reference datum used for the GeographicalCoordinates. Shall be present if known by the operator. | C |
| NOTE: The order of the latitude and longitude parameters in the localy defined GeographicalCoordinates type are different than the order of the parameters defined by the GeographicalCoordinates type defined in TS 29.572 [24] clause 6.1.6.2.4. |

##### 7.3.3.X.13 Type: PointUncertaintyCircle

The PointUncertaintyCircle type is derived from the data present in the PointUncertaintyCircle type defined in TS 29.572 [24] clause 6.1.6.2.7.

Table 7.3.3.X.13-1 contains the details for the PointUncertaintyCircle type.

Table 7.3.3.X.13-1: Definition of type PointUncertaintyCircle

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| geographicalCoordinates | GeographicalCoordinates | 1 | Indicates the geographic point for the center of the circle represented by its longitude and latitude. | M |
| uncertainty | Uncertainty | 1 | This parameter has been deprecated and shall always be set to 0. | M |
| uncertaintySBI | UncertaintySBI | 0..1 | Indicates the radius of the uncertainty circle. Expressed in meters. | M |

##### 7.3.3.X.14 Type: PointUncertaintyEllipse

The PointUncertaintyEllipse type is derived from the data present in the PointUncertaintyEllipse type defined in TS 29.572 [24] clause 6.1.6.2.8.

Table 7.3.3.X.14-1 contains the details for the PointUncertaintyEllipse type.

Table 7.3.3.X.14-1: Definition of type PointUncertaintyEllipse

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| geographicalCoordinates | GeographicalCoordinates | 1 | Indicates a geographic point for the center of the ellipse represented by its longitude and latitude. | M |
| uncertainty | UncertaintyEllipse | 1 | Describes an uncertainty ellipse. | M |
| confidence | Confidence | 1 | Indicates the confidence of the location as a percentage. | M |

##### 7.3.3.X.15 Type: UncertaintyEllipse

The UncertaintyEllipse type is derived from the data present in the UncertaintyEllipse type defined in TS 29.572 [24] clause 6.1.6.2.22.

Table 7.3.3.X.15-1 contains the details for the UncertaintyEllipse type.

Table 7.3.3.X.15-1: Definition of type UncertaintyEllipse

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| semiMajor | Uncertainty | 1 | This parameter has been deprecated and shall always be set to 0. | M |
| semiMinor | Uncertainty | 1 | This parameter has been deprecated and shall always be set to 0. | M |
| orientationMajor | Orientation | 1 | Indicates the orientation of the major axis in degrees. | M |
| semiMajorSBI | UncertaintySBI | 1 | Indicates the semi-major axis of the uncertainty ellipse in meters. | M |
| semiMinorSBI | UncertaintySBI | 1 | Indicates the semi-minor axis of the uncertainty ellipse in meters. | M |

##### 7.3.3.X.16 Type: Polygon

The Polygon type is derived from the data present in the Polygon type defined in TS 29.572 [24] clause 6.1.6.2.9.

Table 7.3.3.X.16-1 contains the details for the Polygon type.

Table 7.3.3.X.16-1: Definition of type Polygon

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| pointList | SET OF GeographicalCoordinates | 3..15 | Contains a list of 3-15 points defining the corners of a polygon. | M |

##### 7.3.3.X.17 Type: PointAltitude

The PointAltitude type is derived from the data present in the PointAltitude type defined in TS 29.572 [24] clause 6.1.6.2.10.

Table 7.3.3.X.17-1 contains the details for the PointAltitude type.

Table 7.3.3.X.17-1: Definition of type PointAltitude

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| geographicalCoordinates | GeographicalCoordinates | 1 | Indicates a geographic point represented by its longitude and latitude. | M |
| altitude | Altitude | 1 | Indicates the altitude of the UE in meters. | M |

##### 7.3.3.X.18 Type: PointAltitudeUncertainty

The PointAltitudeUncertainty type is derived from the data present in the PointAltitudeUncertainty type defined in TS 29.572 [24] clause 6.1.6.2.11.

Table 7.3.3.X.18-1 contains the details for the PointAltitudeUncertainty type.

Table 7.3.3.X.18-1: Definition of type PointAltitudeUncertainty

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| geographicalCoordinates | GeographicalCoordinates | 1 | Indicates a geographic point represented by its longitude and latitude. | M |
| altitude | Altitude | 1 | Indicates the altitude of the UE in meters. | M |
| uncertaintyEllipse | UncertaintyEllipse | 1 | Describes an uncertainty ellipse. | M |
| uncertaintyAltitude | Uncertainty | 1 | This parameter has been deprecated and shall be set to 0. | M |
| confidence | Confidence | 1 | Indicates the confidence of the location as a percentage. | M |
| uncertaintyAltitudeSBI | UncertaintySBI | 1 | Indicates the uncertainty of the altitude in meters. | M |

##### 7.3.3.X.19 Type: EllipsoidArc

The EllipsoidArc type is derived from the data present in the EllipsoidArc type defined in TS 29.572 [24] clause 6.1.6.2.12.

Table 7.3.3.X.19-1 contains the details for the EllipsoidArc type.

Table 7.3.3.X.19-1: Definition of type EllipsoidArc

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| geographicalCoordinates | GeographicalCoordinates | 1 | Indicates a geographic point represented by its longitude and latitude. | M |
| innerRadius | InnerRadius | 1 | Indicates the inner radius of the ellipsoid arc in meters. | M |
| uncertaintyRadius | Uncertainty | 1 | This parameter has been deprecated and shall be set to 0. | M |
| offsetAngle | Angle | 1 | Indicates the angle from North to the first defining radius of the arc in degrees. | M |
| includedAngle | Angle | 1 | Indicates the angle from the first defining radus of the arc to the second in degrees. | M |
| confidence | Confidence | 1 | Indicates the confidence of the location as a percentage. | M |
| uncertaintyRadiusSBI | UncertaintySBI | 1 | Indicates the width of the uncertainty arc in meters. | M |

##### 7.3.3.X.20 Enumeration: RATType

The RATType type is derived from the data present in the RATType type defined in TS 29.571 [17] clause 5.4.3.2.

Table 7.3.3.X.20-1 contains the details for the RATType type.

Table 7.3.3.X.20-1: Enumeration for RATType

|  |  |
| --- | --- |
| Enumeration | Description |
| nR(1) | New Radio |
| eUTRA(2) | (WB) Evolved Universal Terrestrial Radio Access |
| wLAN(3) | Untrusted Wireless LAN (IEEE 802.11) access |
| nBIOT(4) | NB IoT |
| Wireline(5) | Wireline access |
| wirelineCable(6) | Wireline Cable Access |
| wirelineBBF(7) | Wireline BBF Access |
| lTEM(8) | LTE-M. Also used when a Category M UE using E-UTRA has brovided a Category M indication to the NG-RAN |
| nRU(9) | New Radio in unlicensed bands |
| eUTRAU(10) | (WB) Evolved Universal Terrerestrial Radio Access in unlicensed bands |
| trustedN3GA(11) | Trusted Non-3GPP access |
| trustedWLAN(12) | Trusted Wireless LAN (IEEE 802.11) access |
| uTRA(13) | UMTS Terrestrial Radio Access |
| gERA(14) | GSM EDGE Radio Access Network |
| nRLEO(15) | NR (LEO) satellite access type |
| nRMEO(16) | NR (MEO) satellite access type |
| nRGEO(17) | NR (GEO) satellite access type |
| nROTHERSAT(18) | NR (OTHERSAT) satellite access type |
| nRREDCAP(19) | NR RedCap access type |

##### 7.3.3.X.21 Type: CellInformation

Table 7.3.3.X.21-1 contains the details for the CellInformation type.

Table 7.3.3.X.21-1: Definition of type CellInformation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| rANCGI | RANCGI | 1 | The RAN CGI for the cell being reported. | M |
| cellSiteInformation | CellSiteInformation | 0..1 | Contains location information for the cell site being reported. Shall be present if known at the NF where the POI is located or at the MDF. | C |
| timeOfLocation | Timestamp | 0..1 | The time the cell site information was determined. | C |

##### 7.3.3.X.22 Type: RANCGI

Table 7.3.3.X.22-1 contains the details for the RANCGI type.

Table 7.3.3.X.22-1: Definition of Choices for RANCGI

|  |  |  |
| --- | --- | --- |
| CHOICE | Type | Description |
| eCGI | ECGI | Shall be used to report the E-UTRA Cell Identity. |
| nCGI | NCGI | Shall be used to report the NR Cell Identity. |
| CGI | CGI | Shall be used to report the GERA or UTRA Cell Identity. |

##### 7.3.3.X.23 Type: TAI

The TAI type is used to report the Tracking Area Identity. The TAI type is derived from the data present in the EutraLocation type defined in TS 29.571 [17] clause 5.4.4.4.

Table 7.3.3.X.23-1 contains the details for the TAI type.

Table 7.3.3.X.23-1: Definition of type TAI

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| pLMNID | PLMNID | 1 | The PLMN Identity of the TAI. | M |
| tAC | TAC | 1 | The Tracking Area Code for the Tracking Area being reported. | M |
| nID | NID | 0..1 | Network Identifier of the Tracking Area being reported. Shall be be present if the TAI being reported belongs to an SNPN. | C |

##### 7.3.3.X.24 Type: ECGI

The ECGI type is used to report the E-UTRA Cell Identity. The ECGI type is derived from the data present in the ECGI type defined in TS 29.571 [17] clause 5.4.4.5.

Table 7.3.3.X.24-1 contains the details for the ECGI type.

Table 7.3.3.X.24-1: Definition of type ECGI

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| pLMNID | PLMNID | 1 | The PLMN Identity of the cell being reported. | M |
| eUTRACellID | EUTRACellID | 1 | The E-UTRA Cell Identity for the cell being reported. | M |
| nID | NID | 0..1 | Network Identifier of the cell being reported. Shall be be present if the cell being reported belongs to an SNPN. | C |

##### 7.3.3.X.25 Type: GlobalRANNodeID

The GlobalRANNodeID type is derived from the data present in the GlobalRANNodeID type defined in TS 29.571 [17] clause 5.4.4.28.

Table 7.3.3.X.25-1 contains the details for the GlobalRANNodeID type.

Table 7.3.3.X.25-1: Definition of type GlobalRANNodeID

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| pLMNID | PLMNID | 1 | The PLMN Identity of the RAN Node. | M |
| aNNodeID | ANNodeID | 1 | The Global Identifier for the Access Node. | M |
| nID | NID | 0..1 | Network Identifier of the cell being reported. Shall be be present if the cell being reported belongs to an SNPN. | C |

##### 7.3.3.X.26 Type: ANNodeID

The ANNodeID type is derived from the data present in the GlobalRANNodeID type defined in TS 29.571 [17] clause 5.4.4.28.

Table 7.3.3.X.26-1 contains the details for the ANNodeID type.

Table 7.3.3.X.26-1: Choices for ANNodeID

|  |  |  |
| --- | --- | --- |
| CHOICE | Type | Description |
| n3IWFID | N3IWFIDSBI | Shall be chosen if the AN node represents a N3IWF. When present, this field shall contain the identifier of the N3IWF. |
| gNBID | GNBID | Shall be chosen if the RAN Node ID represents a gNB. When present, this field shall contain the identifier of the gNB. |
| nGENbID | NGENbID | Shall be chosen if the RAN Node ID represents a NG-eNB. When present, this field shall contain the identifier of the NG-eNB. |
| eNbID | ENbID | Shall be chosen if the RAN Node ID represents a eNB. When present, this field shall contain the identifier of the eNB. |
| wAGFID | WAGFID | if the RAN Node ID represents a WAGF. When present, this field shall contain the identifier of the WAGF. |
| tNGFID | TNGFID | Shall be present if the RAN Node ID represents a TNGF. When present, this field shall contain the identifier of the TNGF. |

##### 7.3.3.X.27 Type: NgENBID

The nGENbID type is derived from the data present in the NgeNbId type defined in TS 29.571 [17] table 5.4.2-1.

Table 7.3.3.X.27-1 contains the details for the NGENbID type.

Table 7.3.3.X.27-1: Definition of type NGENbID

|  |  |  |
| --- | --- | --- |
| CHOICE | Type | Description |
| macroNGENbID | BIT STRING (SIZE(20)) | Shall be chosen if the ng-eNB ID is a Macro ng-eNB ID. Shall be encoded as described in TS 38.413 [23] clause 9.3.1.8. |
| shortMacroNGENbID | BIT STRING (SIZE(18)) | Shall be chosen if the ng-eNB ID is a Short Macro ng-eNB ID. Shall be encoded as described in TS 38.413 [23] clause 9.3.1.8. |
| longMacroNGENbID | BIT STRING (SIZE(21)) | Shall be chosen if the ng-eNB ID is a Long Macro ng-eNB ID. Shall be encoded as described in TS 38.413 [23] clause 9.3.1.8. |

##### 7.3.3.X.28 Type: NCGI

The NCGI type is used to report the NR Cell Identity. The NCGI type is derived from the data present in the NCGI type defined in TS 29.571 [17] clause 5.4.4.6.

Table 7.3.3.X.28-1 contains the details for the NCGI type.

Table 7.3.3.X.28-1: Definition of type NCGI

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| pLMNID | PLMNID | 1 | The PLMN Identity of the cell being reported. | M |
| nRCellID | NRCellID | 1 | The NR Cell Identity for the cell being reported. | M |
| nID | NID | 0..1 | Network Identifier of the cell being reported. Shall be be present if the cell being reported belongs to an SNPN. | C |

##### 7.3.3.X.29 Type: IPAddr

The IPAddr type is used to report IP Addresses.

Table 7.3.3.X.29-1 contains the details for the IPAddr type.

Table 7.3.3.X.29-1: Definition of type IPAddr

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| iPv4Address | IPv4Address | 0..1 | The IPv4 address being reported. Shall be included if known at the NF where the POI is located. | C |
| iPv6Address | IPv6Address | 0..1 | The IPv6 address being reported. Shall be included if known at the NF where the POI is located. | C |

##### 7.3.3.X.30 Type: TNAPID

The TNAPID type is used to report the TNAP Identity. The TNAPID type is derived from the data present in the TnapId type defined in TS 29.571 [17] clause 5.4.4.62.

Table 7.3.3.X.30-1 contains the details for the TNAPID type.

Table 7.3.3.X.30-1: Definition of type TNAPID

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| sSID | SSID | 0..1 | The SSID of the access point to which the UE is attached. This parameter shall be present when the UE is accessing the 5GC via a trusted WLAN or if known at the NF where the POI is located. | C |
| bSSID | BSSID | 0..1 | The SSID of the access point to which the UE is attached. This parameter shall be present if known at the NF where the POI is located. | C |
| civicAddress | CivicAddressBytes | 0..1 | The civic address of the TNAP to which the UE is attached including the associated Location-Information and Location-Data (see TS 29.571 [17] Table 5.4.4.62-1. This parameter shall be present if known at the NF where the POI is located. | C |

##### 7.3.3.X.31 Type: TWAPID

The TWAPID type is used to report the TWAP Identity. The TWAPID type is derived from the data present in the TwapId type defined in TS 29.571 [17] clause 5.4.4.63.

Table 7.3.3.X.31-1 contains the details for the TWAPID type.

Table 7.3.3.X.31-1: Definition of type TWAPID

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| sSID | SSID | 0..1 | The SSID of the access point to which the UE is attached. | MD |
| bSSID | BSSID | 0..1 | The SSID of the access point to which the UE is attached. This parameter shall be present if known at the NF where the POI is located. | C |
| civicAddress | CivicAddressBytes | 0..1 | The civic address of the TNAP to which the UE is attached including the associated Location-Information and Location-Data (see TS 29.571 [17] Table 5.4.4.62-1. This parameter shall be present if known at the NF where the POI is located. | C |

##### 7.3.3.X.32 Enumeration: W5GBANLineType

The W5GBANLineType indicates the type of wireline access used connect to the 5GS. The W5GBANLineType type is derived from the data present in the LineType type defined in TS 29.571 [17] clause 5.4.3.33.

Table 7.3.3.X.32-1 contains the details for the W5GBANLineType type.

Table 7.3.3.X.32-1: Enumeration W5GBANLineType

|  |  |
| --- | --- |
| Enumeration value | Description |
| dSL(1) | DSL Line |
| pON(2) | PON Line |

##### 7.3.3.X.33 Enumeration: TransportProtocol

The TransportProtocol indicates the transport protocol used to connect to the 5GS. The TransportProtocol type is derived from the data present in the TransportProtocol type defined in TS 29.571 [17] clause 5.4.4.10 and table 5.4.3.38.

Table 7.3.3.X.33-1 contains the details for the clause TransportProtocol type.

Table 7.3.3.X.33-1: Enumeration TransportProtocol Type

|  |  |
| --- | --- |
| Enumeration value | Description |
| uDP(1) | UDP is in use. |
| tCP(2) | TCP is in use. |

##### 7.3.3.X.34 Type: PLMNID

The PLMNID type is used to report the PLMN Identity. The PLMNID type is derived from the data present in the PlmnId type defined in TS 29.571 [17] clause 5.4.4.3.

Table 7.3.3.X.34-1 contains the details for the PLMNID type.

Table 7.3.3.X.34-1: Definition of type PLMNID

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| mCC | MCC | 1 | The Mobile Country Code | M |
| mNC | MNC | 1 | The Mobile Network Code | M |

##### 7.3.3.X.35 Type: ENbID

The ENbID type is used to report the ENb Identity. The ENbID type is derived from the data present in the ENbId type defined in TS 29.571 [17] clause 5.4.2.

Table 7.3.3.X.35-1 contains the details for the PLMNID type.

Table 7.3.3.X.35-1: Definition of type ENbID

|  |  |  |
| --- | --- | --- |
| CHOICE | Type | Description |
| macroENbID | BIT STRING (SIZE(20)) | Shall be chosen if the eNB ID is a Macro eNB ID. Shall be encoded as described in TS 36.413 [38] clause 9.2.1.37 |
| homeENbID | BIT STRING (SIZE(28)) | Shall be chosen if the eNB ID is a Home eNB ID.Shall be encoded as descriped in TS 36.413 [38] clause 9.2.1.37 |
| shortMacroENbID | BIT STRING (SIZE(18)) | Shall be chosen if the eNB ID is a Short Macro eNB ID. Shall be encoded as described in TS 36.413 [38] clause 9.2.1.37. |
| longMacroENbID | BIT STRING (SIZE(21)) | Shall be chosen if the eNB ID is a Long Macro eNB ID. Shall be encoded as described in TS 36.413 [38] clause 9.2.1.37. |

##### 7.3.3.X.36 Type: PositioningInfo

The PositioningInfo type is derived from the data present in the ProvidePosInfo type defined in TS 29.518 [22] clause 6.4.6.2.3.

Table 7.3.3.X.36-1 contains the details for the PositioningInfo type.

Table 7.3.3.X.36-1: Definition of type PositioningInfo

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| positionInfo | LocationData | 0..1 | This parameter shall be used any time information from LCS operations needs to be reported from the 5GC. This structure may also be used any time information from the ProvidePosInfo structure needs to be reported. This field is derived from the data present in the ProvidePosInfo type defined in TS 29.518 [22] clause 6.4.6.2.3 | C |
| rawMLPResponse | RawMLPResponse | 0..1 | This field shall be used in the location field of the LALSReport record see clause 7.3.1.4. This field contains a copy of the unparsed XML code of the MLP Answer and Report messages. The contents of this field is described in OMA-TS-MLP-V3\_5-20181211-C [20] clause 5.2.3.2. | C |

##### 7.3.3.X.37 Type: LocationData

The LocationData type is derived from the data present in the LocationData type defined in TS 29.572 [24] clause 6.1.6.2.3.

Table 7.3.3.X.37-1 contains the details for the LocationData type.

Table 7.3.3.X.37-1: Definition of type LocationData

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| locationEstimate | GeographicArea | 1 | This field shall contain an estimate of the location of the UE in universal coordinates and the accuracy of the estimate. TS 29.572 [24], clause 6.1.6.2.5 | M |
| accuracyFulfilmentIndicator | AccuracyFulfilmentIndicator | 0..1 | This enumerated field shall be present to represent whether the requested accuracy was fulfilled or not. Shall be encoded as described in TS 29.572 [24] clause 6.1.3.12 | C |
| ageOfLocationEstimate | AgeOfLocationEstimate | 0..1 | This field shall be present if information is available at the NF. Shall be encoded as described in TS 29.572 [24], table 6.1.6.3.2-1  | C |
| velocityEstimate | VelocityEstimate | 0..1 | This field shall be present if information is available at the NF. Shall be encoded as described in TS 29.572 [24], clause 6.1.6.2.17 | C |
| civicAddress | CivicAddress | 0..1 | This field shall be present if information is available at the NF. Shall be encoded as described in TS 29.572 [24] clause 6.1.2.14 | C |
| positioningDataList | SET OF PositioningMethodAndUsage | 0..MAX | This field shall be present if information is available at the NF. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.2.15 | C |
| gNSSPositioningDataList | SET OF GNSSPositioningMethodAndUsage | 0..MAX | This field shall be present if information is available at the NF. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.2.16 | C |
| eCGI | ECGI | 0..1 | This field shall be present if information is available at the NF. Shall be encoded as described in TS 29.571 [17] clause 5.4.4.5. | C |
| nCGI | NCGI | 0..1 | This field shall be present if information is available at the NF. Shall be encoded as described in TS 29.571 [17] clause 5.4.4.6. | C |
| altitude | Altitude | 0..1 | This field shall be present if information is available at the NF. Shall be encoded as described in TS 29.572 [24], table 6.1.6.3.2-1 | C |
| barometricPressure | BarometricPressure | 0..1 | This field shall be present if information is available at the NF. Shall be encoded as described in TS 29.572 [24], table 6.1.6.3.2-1 | C |

##### 7.3.3.X.38 Type: RawMLPResponse

The RawMLPResponse type is derived from the data present in the slia MLP message described in OMA-TS-MLP-V3\_5-20181211-C [20], clause 5.2.3.2.2 or the slirep MLP message described in OMA-TS-MLP-V3\_5-20181211-C [20], clause 5.2.3.2.3 along with the OMA MLP result id defined in OMA-TS-MLP-V3\_5-20181211-C [20], Clause 5.4

Table 7.3.3.X.38-1 contains the details for the RawMLPResponse type.

Table 7.3.3.X.38-1: Choices for type RawMLPResponse

|  |  |  |
| --- | --- | --- |
| CHOICE | Type | Description |
| mLPPositionData | UTF8String | This field contains a copy of unparsed XML code of the MLP response message. The slia response message of this field are described in OMA-TS-MLP-V3\_5-20181211-C [20], clause 5.2.3.2.2 and the slirep response message of this field is described in OMA-TS-MLP-V3\_5-20181211-C [20], clause 5.2.3.2.3 |
| mLPErrorCode | INTEGER (1..699) | This field contains the OMA MLP result id defined in OMA-TS-MLP-V3\_5-20181211-C [20], Clause 5.4 |

##### 7.3.3.X.39 Type: VelocityEstimate

The VelocityEstimate type is derived from the data present in VelocityEstimate type in TS 29.572 [24] clause 6.1.6.2.17

Table 7.3.3.X.39-1 contains the details for the VelocityEstimate type.

Table 7.3.3.X.39-1: Definition of type VelocityEstimate

|  |  |  |
| --- | --- | --- |
| CHOICE | Type | Description |
| horVelocity | HorizontalVelocity | Velocity estimate including horizontal speed and bearing. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.2.18 |
| horWithVertVelocity | HorizontalWithVerticalVelocity | Velocity estimate including horizontal speed and bearing, and also vertical speed and vertical direction. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.2.19 |
| horVelocityWithUncertainty | HorizontalVelocityWithUncertainty | Velocity estimate including horizontal speed and bearing; it also includes an uncertainty value. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.2.20 |
| horWithVertVelocityAndUncertainty | HorizontalWithVerticalVelocityAndUncertainty | Velocity estimate including horizontal speed and bearing, and also vertical speed and vertical direction; it also includes uncertainty value for horizontal and vertical speeds. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.2.21 |

##### 7.3.3.X.40 Type: CivicAddress

The CivicAddress type is derived from the data present in the CivicAddress type defined in TS 29.572 [24] clause 6.1.6.2.14.

Table 7.3.3.X.40-1 contains the details for the CivicAddress type.

Table 7.3.3.X.40-1: Definition of type CivicAddress

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| Country | UTF8String | 1 | The two-letter ISO 3166 country code in capital ASCII letters, e.g., DE or US. Shall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | M |
| a1 | UTF8String | 0..1 | National subdivisions (state, canton, region, province, prefecture). Shall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| a2 | UTF8String | 0..1 | County, parish, gun (JP), district (IN). Shall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| a3 | UTF8String | 0..1 | City, township, shi (JP). Shall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| a4 | UTF8String | 0..1 | City division, borough, city district, ward, chou (JP). Shall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| a5 | UTF8String | 0..1 | Neighbourhood, blockShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| a6 | UTF8String | 0..1 | Group of streets below the neighbourhood levelShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| prd | UTF8String | 0..1 | Leading street directionShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| pod | UTF8String | 0..1 | Trailing street suffixShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| sts | UTF8String | 0..1 | Street suffix or typeShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| hno | UTF8String | 0..1 | House numberShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| hns | UTF8String | 0..1 | House number suffixShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| lmk | UTF8String | 0..1 | Landmark or vanity addressShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| loc | UTF8String | 0..1 | Additional location informationShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| nam | UTF8String | 0..1 | Name (residence and office occupant)Shall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| pc | UTF8String | 0..1 | Postal/zip code Shall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| bld | UTF8String | 0..1 | Building (structure)Shall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| unit | UTF8String | 0..1 | Unit (apartment, suite)Shall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| flr | UTF8String | 0..1 | FloorShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| room | UTF8String | 0..1 | RoomShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| plc | UTF8String | 0..1 | Place-typeShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| pcn | UTF8String | 0..1 | Postal community nameShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| pobox | UTF8String | 0..1 | Post office box (P.O. box)Shall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| addcode | UTF8String | 0..1 | Additional codeShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| seat | UTF8String | 0..1 | Seat (desk, cubicle, workstation)Shall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| rd | UTF8String | 0..1 | Primary road or streetShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| rdsec | UTF8String | 0..1 | Road clauseShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| rdbr | UTF8String | 0..1 | Road branchShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| rdsubbr | UTF8String | 0..1 | Road sub-branchShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| prm | UTF8String | 0..1 | Road pre-modifierShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |
| pom | UTF8String | 0..1 | Road post-modifierShall be encoded as described in TS 29.572 [24] table 6.1.6.2.14-1 | C |

##### 7.3.3.X.41 Type: PositioningMethodAndUsage

The PositioningMethodAndUsage type is derived from the data present in the PositioningMethodAndUsage type defined in TS 29.572 [24] clause 6.1.6.2.15.

Table 7.3.3.X.41-1 contains the details for the PositioningMethodAndUsage type.

Table 7.3.3.X.41-1: Definition of type PositioningMethodAndUsage

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| method | PositioningMethod | 1 | Indicates the related positioning method.Shall be encoded as described in TS 29.572 [24] clause 6.1.6.3.6 | M |
| mode | PositioningMode | 1 | Indicates the mode of the location measurement from the related positioning method. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.3.7 | M |
| usage | Usage | 1 | Indicates the usage of the location measurement from the related positioning method. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.3.9 | M |
| methodCode | MethodCode | 0..1 | This field shall be present when the method field is set as "networkSpecific".Shall be encoded as described in TS 29.572 [24] clause 6.1.6.2.15 | C |

##### 7.3.3.X.42 Type: GNSSPositioningMethodAndUsage

The GNSSPositioningMethodAndUsage type is derived from the data present in the GNSSPositioningMethodAndUsage type defined in TS 29.572 [24] clause 6.1.6.2.16.

Table 7.3.3.X.42-1 contains the details for the GNSSPositioningMethodAndUsage type.

Table 7.3.3.X.42-1: Definition of type GNSSPositioningMethodAndUsage

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| mode | PositioningMode | 1 | Indicates the mode of the location measurement from the related positioning method. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.3.7 | M |
| gnss | GnssID | 1 | Indicates the related GNSS positioning method. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.3.8 | M |
| usage | Usage | 1 | Indicates the usage of the location measurement from the related positioning method. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.3.9 | M |

##### 7.3.3.X.43 Type: HorizontalVelocity

The HorizontalVelocity type is derived from the data present in the HorizontalVelocity type defined in TS 29.572 [24] clause 6.1.6.2.18.

Table 7.3.3.X.43-1 contains the details for the HorizontalVelocity type.

Table 7.3.3.X.43-1: Definition of type HorizontalVelocity

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| hSpeed | HorizontalSpeed | 1 | Horizontal speed in kilometres per hour. Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |
| bearing | Angle | 1 | Bearing angle in degrees, measured clockwise from North. Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |

##### 7.3.3.X.44 Type: HorizontalWithVerticalVelocity

The HorizontalWithVerticalVelocity type is derived from the data present in the HorizontalWithVerticalVelocity type defined in TS 29.572 [24] clause 6.1.6.2.19.

Table 7.3.3.X.44-1 contains the details for the HorizontalWithVerticalVelocity type.

Table 7.3.3.X.44-1: Definition of type HorizontalWithVerticalVelocity

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| hSpeed | HorizontalSpeed | 1 | Horizontal speed in kilometres per hour. Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |
| bearing | Angle | 1 | Bearing angle in degrees, measured clockwise from North. Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |
| vSpeed | VerticalSpeed | 1 | Vertical Seed in kilometres per hour. Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |
| vDirection | VerticalDirection | 1 | Vertical Direction: upward or downward. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.3.13 | M |

##### 7.3.3.X.45 Type: HorizontalVelocityWithUncertainty

The HorizontalVelocityWithUncertainty type is derived from the data present in the HorizontalVelocityWithUncertainty type defined in TS 29.572 [24] clause 6.1.6.2.20.

Table 7.3.3.X.45-1 contains the details for the HorizontalVelocityWithUncertainty type.

Table 7.3.3.X.45-1: Definition of type HorizontalVelocityWithUncertainty

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| hSpeed | HorizontalSpeed | 1 | Horizontal speed in kilometres per hour. Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |
| bearing | Angle | 1 | Bearing angle in degrees, measured clockwise from North. Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |
| uncertainty | SpeedUncertainty | 1 | Uncertainty of horizontal speed in kilometres per hour. Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |

##### 7.3.3.X.46 Type: HorizontalWithVerticalVelocityAndUncertainty

The HorizontalWithVerticalVelocityAndUncertainty type is derived from the data present in the HorizontalWithVerticalVelocityAndUncertainty type defined in TS 29.572 [24] clause 6.1.6.2.21.

Table 7.3.3.X.46-1 contains the details for the HorizontalWithVerticalVelocityAndUncertainty type.

Table 7.3.3.X.46-1: Definition of type HorizontalWithVerticalVelocityAndUncertainty

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| hSpeed | HorizontalSpeed | 1 | Horizontal speed in kilometres per hour. Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |
| bearing | Angle | 1 | Bearing angle in degrees, measured clockwise from North. Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |
| vSpeed | VerticalSpeed | 1 | Vertical Seed in kilometres per hour. Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |
| vDirection | VerticalDirection | 1 | Vertical Direction: upward or downward. Shall be encoded as described in TS 29.572 [24] clause 6.1.6.3.13 | M |
| hUncertainty | SpeedUncertainty | 1 | Uncertainty of horizontal speed in kilometres per hour Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |
| vUncertainty | SpeedUncertainty | 1 | Uncertainty of vertical speed in kilometres per hour. Shall be encoded as described in TS 29.572 [24] Table 6.1.6.3.2-1 | M |

##### 7.3.3.X.47 Type: LocationPresenceReport

The LocationPresenceReport type is used in the case the information is obtained from an AmfEventReport (TS 29.518 [22] clause 6.2.6.2.5) with event type Location\_Report or Presence\_In\_AOI\_Report.
Table 7.3.3.X.47-1 contains the details for the LocationPresenceReport type.

Table 7.3.3.X.47-1: Definition of type LocationPresenceReport

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| type | AMFEventType | 1 | Describes the type of event which triggers the report  | M |
| timestamp | Timestamp | 1 | This shall contain the time at which the event is generated. | M |
| areaList | SET OF AMFEventArea | 0..1 | This field shall be present when the AMFEventtype is set as “presenceInAOIReport”. When present, this field represents the specified Area(s) of Interest the UE is currently in or out or unknown. | C |
| timeZone | TimeZone | 0..1 | This parameter shall be present if the local timeZone of the UE is known at the NF | C |
| accessType | SET OF AccessType | 0..1 | Describes the access type(s) of the UE.When reporting that the UE is reachable for DL traffic, this field shall indicate the access type(s) through which the UE is reachable. | C |
| rMInfoList | SET OF RMInfo | 0..1 | Describes the registration management state of the UE. This field shald be present if it is known at the NF. Shall be encoded as defined in TS 29.518 [22] clause 6.2.6.2.8 | C |
| cMInfoList | SET OF CMInfo | 0..1 | Describes the connection management state of the UE. This field shald be present if it is known at the NF. Shall be encoded as defined in TS 29.518 [22] clause 6.2.6.2.9 | C |
| reachability | UEReachability | 0..1 | Describes the reachability of the UE. This field shald be present if it is known at the NF Shall be encoded as defined in TS 29.518 [22] clause 6.2.6.3.7 | C |
| location | UserLocation | 0..1 | Location information type derived from the data defined in the UserLocation type defined in TS 29.571 [17] clause 5.4.4.7. This field shall be used to convey one or more of the following: - E-UTRA user location. - NR user location. - Non-3GPP access user location. - UTRA Location. - GERA Location. | C |
| additionalCellIDs | SEQUENCE OF CellInformation | 0..1 | This parameter shall be present if the NF has additional cell information for the UE. Shall be used whenever Dual Connectivity is activated or whenever secondary cell information is available at the NF where the POI is located. | C |

##### 7.3.3.X.48 Type: AMFEventArea

The AMFEventArea type is derived from the data present in the AMFEventArea type defined in TS 29.518 [22] clause 6.2.6.2.16.
Table 7.3.3.X.48-1 contains the details for the AMFEventArea type.

Table 7.3.3.X.48-1: Definition of type AMFEventArea

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| presenceInfo | PresenceInfo | 0..1 | This field shall be present if the Area of Interest subscribed is not a LADN service area. | C |
| lADNInfo | LADNInfo | 0..1 | This field shall be present if the Area of Interest subscribed is a LADN service area. | C |

##### 7.3.3.X.49 Type: RMInfo

The RMInfo type is derived from the data present in the RMInfo type defined in TS 29.518 [22] clause 6.2.6.2.8.
Table 7.3.3.X.49-1 contains the details for the RMInfo type.

Table 7.3.3.X.49-1: Definition of type RMInfo

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| rMState | RMState | 1 | Describes the registration management state of the UE | M |
| accessType | AccessType | 1 | Describes the access type of the UE that applies to the registration management state reported. | M |

##### 7.3.3.X.50 Type: CMInfo

The CMInfo type is derived from the data present in the CMInfo type defined in TS 29.518 [22] clause 6.2.6.2.9.
Table 7.3.3.X.50-1 contains the details for the CMInfo type.

Table 7.3.3.X.50-1: Definition of type CMInfo

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| cMState | CMState | 1 | Describes the connection management state of the UE | M |
| accessType | AccessType | 1 | Describes the access type of the UE that applies to the connection management state reported. | M |

##### 7.3.3.X.51 Enumeration: AccuracyFulfilmentIndicator

The AccuracyFulfilmentIndicator indicates wheather the requested accuracy was fulfilled or not the AccuracyFulfilmentIndicator is derived from the data present in the AccuracyFulfilmentIndicator type defined in TS 29.572 [24] clause 6.1.6.3.12.

Table 7.3.3.X.51-1 contains the details of the AccuracyFulfilmentIndicator type.

Table 7.3.3.X.51-1: Enumeration for AccuracyFulfilmentIndicator

|  |  |
| --- | --- |
| Enumeration value | Description |
| requestedAccuracyFulfilled(1) | Requested accuracy is fulfilled. |
| requestedAccuracyNotFulfilled(2) | Requested accuracy is not fulfilled. |

##### 7.3.3.X.52 Enumeration: PositioningMethod

The PositioningMethod represents the method used to determine the location of the UE, the PositioningMethod is derived from the data present in the PositioningMethod type defined in TS 29.572 [24] clause 6.1.6.3.6.

Table 7.3.3.X.52-1 contains the details of the PositioningMethod type.

Table 7.3.3.X.52-1: Enumeration for PositioningMethod

|  |  |
| --- | --- |
| Enumeration value | Description |
| cellID(1) | Cell ID positioning method |
| eCID(2) | Enhanced cell ID methods based on LTE signals |
| oTDOA(3) | Observed time difference of arrival positioning based on LTE signals |
| barometricPressure(4) | Positioning method based on barometric Pressure Sensor |
| wLAN(5) | WLAN positioning |
| Bluetooth(6) | Bluetooth positioning |
| mBS(7) | Terrestrial Beacon System (TBS) positioning based on MBS signals |
| motionSensor(8) | Positioning method based on motion Sensor |
| dLTDOA(9) | Downlink Time Difference of Arrival (DL-TDOA) based on NR signals |
| dLAOD(10) | Downlink Angle-of-Departure (DL-AoD) based on NR signals |
| multiRTT(11) | Multi-Round Trip Time Positioning (Multi-RTT based on NR signals). |
| nRECID(12) | NR enhanced cell ID methods (NR E-CID) based on NR signals. |
| uLTDOA(13) | Uplink Time Difference of Arrival (UL-TDOA) based on NR signals |
| uLAOA(14) | Uplink Angle of Arrival (UL-AoA), including the Azimuth of Arrival (A-AoA) and the Zenith of Arrival (Z-AoA) based on NR signals. |
| networkSpecific(15) | Network specific position methods.  |

##### 7.3.3.X.53 Enumeration: PositioningMode

The PositioningMode represents the mode used to determine the location of the UE when a certain positioning method is used, the PositioningMode is derived from the data present in the PositioningMode type defined in TS 29.572 [24] clause 6.1.6.3.7.

Table 7.3.3.X.53-1 contains the details of the PositioningMode type.

Table 7.3.3.X.53-1: Enumeration for PositioningMode

|  |  |
| --- | --- |
| Enumeration value | Description |
| uEBased(1) | UE-based mode |
| uEAssisted(2) | UE-assisted mode |
| conventional(3) | Conventional mode |

##### 7.3.3.X.54 Enumeration: GNSSID

The GNSSID represents the different global navigation satellite systems, the GNSSID is derived from the data present in the GNSSID type defined in TS 29.572 [24] clause 6.1.6.3.8.

Table 7.3.3.X.54-1 contains the details of the GNSSID type.

Table 7.3.3.X.54-1: Enumeration for GNSSID

|  |  |
| --- | --- |
| Enumeration value | Description |
| gPS(1) | GPS |
| galileo(2) | Galileo |
| sBAS(3) | Space Based Augmentation Systems |
| modernizedGPS(4) | Modernized GPS |
| qZSS(5) | Quasi Zenith Satellite System |
| gLONASS(6) | Global Navigation Satellite System |
| bDS(7) | BeiDou Navigation Satellite System |
| nAVIC(8) | Navigation with Indian Constellation |

##### 7.3.3.X.55 Enumeration: Usage

The Usage represents the type of usage made of the location measurement from the UE, the Usage is derived from the data present in the Usage type defined in TS 29.572 [24] clause 6.1.6.3.9.

Table 7.3.3.X.55-1 contains the details of the Usage type.

Table 7.3.3.X.55-1: Enumeration for GNSSID

|  |  |
| --- | --- |
| Enumeration value | Description |
| unsuccess(1) | Not successful |
| successResultsNotUsed(2) | Successful result not used |
| successResultsUsedToVerifyLocation(3) | Successful result used to verify the location estimate |
| successResultsUsedToGenerateLocation(4) | Successful result used to generate the location estimate |
| successMethodNotDetermined(5) | Successful method not determined |

##### 7.3.3.X.56 Enumeration: VerticalDirection

The VerticalDirection represents the direction (upward/downward) of the vertical speed, the VerticalDirection is derived from the data present in the VerticalDirection type defined in TS 29.572 [24] clause 6.1.6.3.13.

Table 7.3.3.X.56-1 contains the details of the VerticalDirection type.

Table 7.3.3.X.56-1: Enumeration for VerticalDirection

|  |  |
| --- | --- |
| Enumeration value | Description |
| upward(1) | Vertical speed is upward |
| downward(2) | Vertical speed is downward |

##### 7.3.3.X.57 Type: IMSLocation

The IMSLocation type is used to report information derived from the IMS.

Table 7.3.3.X.57-1: Structure of the IMSLocation type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| pANIHeaderInfo | SEQUENCE OF PANIHeaderInfo | 0..MAX | Contains information from the P-Access-Network-Information header of the SIP Message. Shall be present if there are one or more PANI Header fields in the SIP message. One instance of PANIHeaderInfo shall be used for each P-Access-Network-Information header. | C |
| geolocationHeaderInfo | SEQUENCE OF SIPGeolocationHeaderInfo | 0..MAX | Contains the information from the Geolocation-header of the SIP Message. Shall be present if there are one or more Geolocation-header fields. One instance of SIPGeolocationHeaderInfo shall be used for each Geolocation-header. | C |
| cNIHeaderInfo | SEQUENCE OF SIPCNIHeaderInfo | 0..MAX | Contains the information from the Cellular-Network-Info header of the SIP Message. Shall be present if there are one or more Cellular-Network-Info header fields. One instance of SIPCNIHeaderInfo shall be used for each Cellular-Network-Info header. | C |

##### 7.3.3.X.58 Type: PANIHeaderInfo

The PANIHeaderInfo type is used to report information derived from the P-Access-Network-Information header field of the SIP Message (see TS 24.229 [74] clauses 7.2A.4.2 and 7.2A.4.3).

Table 7.3.3.X.58-1: Structure of the PANIHeaderInfo type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| accessNetworkInformation | SIPAccessNetworkInformation | 1 | Provides non-location related access network information. | M |
| accessInfo | SEQUENCE OF SIPAccessInfo | 0..MAX | Contains the location related information from the access-info field parameter of the PANI Header. One instance of SIPAccessInfo shall be used for each access-info field parameter of the PANI header. | C |
| pANILocation | SEQUENCE OF SIPLocationInfo | 0..MAX | Contains the location information from the PANI header in the LocationInfo structure. One instance of SIPLocationInfo shall be present for each access-info field parameter of a type that can be mapped to the LocationInfo structure. | C |

##### 7.3.3.X.59 Type: SIPGeolocationHeaderInfo

The SIPGeolocationHeaderInfo type is used to report information derived from the Geolocation-header of a SIP message.

Table 7.3.3.X.59-1: Structure of the SIPGeolocationHeader type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| locationValue | UTF8String | 1 | Contains information from the locationValue header parameter of the Geolocation-header of the SIP Message (see IETF RFC 6442 [Re4] clause 4.1). One instance of SIPGeolocationValue shall be used for each locationValue header parameter. | M |
| cidInfo | UTF8String | 0..1 | Contains the contents of the MIME bodypart if the locationValue is a cid-url (see IETF RFC 6442 [Re4] clauses 4.1 and 5). The value of the cidInfo field shall include the headers and contents of the MIME bodypart indicated by the cid-url. | C |

##### 7.3.3.X.60 Type: SIPLocationInfo

The SIPLocationInfo type is used to report location information derived from the P-Access-Network-Information or Cellular-Network-Info header of a SIP message.

Table 7.3.3.X.60-1: Structure of the SIPLocationInfo type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| locationInfo | LocationInfo | 0..1 | Shall be used to report location information received from a 5G Access Network. | C |
| cellInformation | CellInformation | 0..1 | Shall be used to report the cell site information and cell radio related information for the cell reporteg in the locationInfo field. Shall be present if known at the NF where the POI is located or at the MDF. | C |

##### 7.3.3.X.61 Type: SIPCNIHeaderInfo

The SIPCellularLocationInfo type is used to report cellular access network information derived from the Cellular-Network-Info (CNI) header of a SIP message (see TS 24.229 [74] clause 7.2.15.7).

Table 7.3.3.X.60-1: Structure of the SIPCNIHeaderInfo type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| cellularNetworkInformation | SIPCellularNetworkInformation | 1 | Provides non-location related cellular network information. | M |
| cellularAccessInfo | SEQUENCE OF SIPCellularAccessInfo | 0..MAX | Contains the location related information from the cellular-access-info field parameter of the CNI Header (see TS 24.229 [74] clause 7.2.15.7). Shall be present if the cellular-access-info field parameter of the CNI Header is present. | C |
| cNILocation | SEQUENCE OF SIPLocationInfo | 0..MAX | Contains the location information from the CNI header in the LocationInfo structure. One instance of SIPLocationInfo shall be present for each cellular-access-info field parameter of a type that can be mapped to the LocationInfo structure. | C |

#### 7.3.3.Y Reference datum

When the reference datum used for a latitude and longitude given in the GeographicalCoordinates structure is known by the operator, the reference datum shall be identified in the mapDatumInformation field. The reference datum identity shall be specified as an Open Geospatial Consortium URN, as defined in OGC 05-010 [35].

## \*\*\*\* END OF MAIN DOCUMENTS CHANGES \*\*\*

## \*\*\*\* END OF ALL CHANGES \*\*\*