**3GPP TSG-CT WG1 Meeting #136-eC1-223380**

**E-Meeting, 12th – 20th May 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.554** | **CR** | **0077** | **rev** | **-** | **Current version:** | **17.0.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Formats for messages transmitted over the PC3ch interface |
|  |  |
| ***Source to WG:*** | CATT |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5G\_ProSe |  | ***Date:*** | 2022-05-05 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | Formats for messages transmitted over the PC3ch interface are to be defined to support 5G ProSe charging as specified in TS 32.277. |
|  |  |
| ***Summary of change:*** | Add descriptions of formats for messages transmitted over the PC3ch interface. |
|  |  |
| ***Consequences if not approved:*** | 5G ProSe charging cannot be supported, without defining formats of the messages to be used. |
|  |  |
| ***Clauses affected:*** | 11.x (new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* 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 23.304: "Proximity based Services (ProSe) in the 5G System (5GS); Stage 2".

[3] IETF RFC 7230: "Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing".

[4] IETF RFC 7231: "Hypertext Transfer Protocol (HTTP/1.1): Semantics and Content".

[5] 3GPP TS 24.526: "UE policies for 5G System (5GS); Stage 3".

[6] OMA-WAP-TS-PushOTA-V2\_1-20110405-A: "Push Over the Air".

[7] OMA-AD-Push-V2\_2-20110809-A: "Push Architecture".

[8] WAP-168-ServiceLoad-20010731-a: "Service Loading".

[9] 3GPP TS 29.555: "Inter-5G Direct Discovery Name Management Function (DDNMF) signalling aspects; Stage 3".

[10] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".

[11] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[12] 3GPP TS 23.003: "Numbering, addressing and identification".

[13] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol Specification".

[14] 3GPP TS 23.122: "Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode".

[15] 3GPP TS 38.304: "User Equipment (UE) procedures in Idle mode and RRC Inactive state".

[16] 3GPP TS 38.323: "NR; Packet Data Convergence Protocol (PDCP) specification".

[17] 3GPP TS 24.555: "Proximity-services (ProSe) in 5G System (5GS); User Equipment (UE) policies; Stage 3".

[18] 3GPP TS 24.587: "Vehicle-to-Everything (V2X) services in 5G System (5GS); Protocol aspects; Stage 3".

[19] 3GPP TS 29.557: "5G System; Application Function ProSe Service; Stage 3".

[20] 3GPP TS 24.007: "Mobile radio interface signalling layer-3; General aspects".

[21] 3GPP TS 38.300: "NR; NR and NG-RAN Overall Description; Stage 2".

[22] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[23] IETF RFC 2131: "Dynamic Host Configuration Protocol".

[24] IETF RFC 4039: "Rapid Commit Option for the Dynamic Host Configuration Protocol version 4 (DHCPv4)".

[25] IETF RFC 4862: "IPv6 Stateless Address Autoconfiguration".

[26] 3GPP TS 24.502: "Access to the 5G System (5GS) via non-3GPP access networks; Stage 3".

[27] ITU-T Recommendation E.212: "The international identification plan for mobile terminals and mobile users".

[28] ISO/IEC 10118-3:2018: "IT Security techniques – Hash-functions – Part 3: Dedicated hash-functions".

[29] W3C REC-xmlschema-2-20041028: "XML Schema Part 2: Datatypes".

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

[31] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols; Stage 3".

[32] IETF RFC 826: "An Ethernet Address Resolution Protocol".

[33] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".

[34] 3GPP TS 33.503: "Security Aspects of Proximity based Services (ProSe) in the 5G System (5GS)".

[35] 3GPP TS 23.303: "Proximity-based services (ProSe); Stage 2".

[36] 3GPP TS 33.303: "Proximity-based Services (ProSe); Security aspects".

[37] 3GPP TS 33.536: "Security aspects of 3GPP support for advanced Vehicle-to-Everything (V2X) services".

[38] IETF RFC 3927: "Dynamic Configuration of IPv4 Link-Local Addresses".

[rrfc1166] IETF RFC 1166: "Internet Numbers".

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

## 11.x Formats for messages transmitted over the PC3ch interface

### 11.x.1 Data types format in XML schema

To exchange structured information over the transport protocol, XML text format/notation is introduced.

The corresponding XML data types for the data types used in 5G ProSe PC3ch messages are provided in table 11.x.1.

Table 11.x.1: Primitive or derived types for 5G ProSe PC3ch Parameter Type

|  |  |
| --- | --- |
| 5G ProSe Parameter Type | Type in XML Schema |
| Integer | xs:integer |
| String | xs:string |
| Boolean | xs:boolean |
| Binary | xs:hexBinary |
| Bit string | xs:hexBinary |
| Time | xs:dateTime |

For complex data types described in subclause 11.x.2, an XML "complexType" can be used.

Message construction shall be compliant with W3C REC-xmlschema-2-20041028: "XML Schema Part 2: Datatypes" [29].

### 11.x.2 Parameters in messages transmitted over the PC3ch interface

#### 11.x.2.1 Transaction ID

This parameter is used to uniquely identify a message transmitted over the PC3ch interface when it is combined with another message transmitted over the PC3ch interface in the same transport message. The UE shall set this parameter to a new number for each outgoing new message which includes this information element and is transmitted over the PC3ch interface. The transaction ID is an integer in the 0-255 range.

#### 11.x.2.2 Sequence number

This parameter is used to indicate sequence number of the usage information report. The sequence number is an integer in the 0-4294967295 range. The sequence number is set to 0 on UE power up and is increased by 1 whenever a new usage information report is created.

#### 11.x.2.3 In coverage

This parameter is used to indicate whether the UE was in NG-RAN coverage. It is a Boolean value coded as follows:

True the UE is in NG-RAN coverage.

False the UE is out of NG-RAN coverage.

#### 11.x.2.4 NCGI

This parameter is used to indicate NG-RAN Cell Global Identification of the NG-RAN cell where the UE was camping on or which the UE used in the 5GMM-CONNECTED mode. The coding of NCGI is defined in 3GPP TS 23.003 [4].

#### 11.x.2.5 5G ProSe direct communication radio parameters

This parameter is used to indicate the radio parameters used for 5G ProSe direct communication. Format of the value is according to the SL-PreconfigurationNR-r16 ASN.1 data type described in 3GPP TS 38.331 [13].

#### 11.x.2.6 Cause value

This parameter is used to indicate the particular reason why the 5G DDNMF CTF (ADF) rejects PROSE\_USAGE\_INFORMATION\_REPORT\_LIST message. It is an integer in the 0-255 range encoded as follows:

0 Reserved

2 UE authorisation failure

3 Invalid message format

10 Unable to process usage information report list

1, 4-9, 11-255 Unused

#### 11.x.2.7 Timestamp

This parameter is used to indicate time and date. The format of this parameter follows the XML data type defined in table 11.x.1 for 5G ProSe PC3ch message parameter type "Time".

#### 11.x.2.8 ProSe layer-2 group ID

This parameter is used to indicate a ProSe layer-2 group ID. The value of ProSe layer-2 group ID is a 24-bit bit-string.

#### 11.x.2.9 5G ProSe Group IP multicast address

This parameter is used to indicate a 5G ProSe Group IP multicast address. If the IP address is an IPv4 address, its value is coded as a string representing the dotted-decimal format of the IPv4 address as specified in IETF RFC 1166 [rrfc1166]. If the IP address is an IPv6 address, its value is coded as a string representing the canonical text representation format of the IPv6 address as specified in IETF RFC 5952 [29].

#### 11.x.2.10 UE IP address

This parameter is used to indicate an IP address used by the UE as a source address. If the IP address is an IPv4 address, its value is coded as a string representing the dotted-decimal format of the IPv4 address as specified in IETF RFC 1166 [28]. If the IP address is an IPv6 address, its value is coded as a string representing the canonical text representation format of the IPv6 address as specified in IETF RFC 5952 [29].

#### 11.x.2.11 UE layer-2 ID

This parameter is used to indicate the layer-2 ID used by the UE. The value of UE layer-2 ID is a 24-bit bit-string.

#### 11.x.2.12 Data amount

This parameter is used to indicate the amount of transmitted or received data in octets. The value of this parameter is coded as an integer.

#### 11.x.2.13 Radio resources indicator

This parameter is used to indicate whether the operator-provided radio resources or the configured radio resources were used for 5G ProSe direct communication.

It is an integer in the 0-255 range encoded as follows:

0 Reserved

1 the operator-provided radio resources

2 the configured radio resources

3-255 Unused

#### 11.x.2.14 Radio frequency

This parameter is used to indicate the radio frequency used for 5G ProSe direct communication.

Format of the value is according to the ARFCN-ValueNR ASN.1 data type described in 3GPP TS 38.331 [13].

#### 11.x.2.15 PC5 QoS flow identifier

This parameter is used to indicate the PC5 QoS flow identifier used to identify the QoS flow for 5G ProSe direct communication. It is coded as specified in Table 11.3.5.1.

#### 11.x.2.16 PQI

This parameter is used to indicate the PQI of PC5 QoS flow used for 5G ProSe direct communication. It is coded as specified in Table 11.3.5.1.

#### 11.x.2.17 GFBR

This parameter is used to indicate the guaranteed flow bit rate (GFBR) of PC5 QoS flow used for 5G ProSe direct communication. It is coded as specified in Table 11.3.5.1.

#### 11.x.2.18 MFBR

This parameter is used to indicate the maximum flow bit rate (MFBR) of PC5 QoS flow used for 5G ProSe direct communication. It is coded as specified in Table 11.3.5.1.

#### 11.x.2.19 Averaging window

This parameter is used to indicate the averaging window of PC5 QoS flow used for 5G ProSe direct communication. It is coded as specified in Table 11.3.5.1.

#### 11.x.2.20 Resource type

This parameter is used to indicate the resource type of PC5 QoS flow used for 5G ProSe direct communication. It is coded as specified in Table 11.3.5.1.

#### 11.x.2.21 Default priority level

This parameter is used to indicate the default priority level of PC5 QoS flow used for 5G ProSe direct communication. It is coded as specified in Table 11.3.5.1.

#### 11.x.2.22 Packet delay budget

This parameter is used to indicate the packet delay budget of PC5 QoS flow used for 5G ProSe direct communication. It is coded as specified in Table 11.3.5.1.

#### 11.x.2.23 Packet error rate

This parameter is used to indicate the packet error rate of PC5 QoS flow used for 5G ProSe direct communication. It is coded as specified in Table 11.3.5.1.

#### 11.x.2.24 Default maximum data burst volume

This parameter is used to indicate the default maximum data burst volume of PC5 QoS flow used for 5G ProSe direct communication. It is coded as specified in Table 11.3.5.1.

\* \* \* End of Changes \* \* \* \*