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| **3GPP TSG-SA5 Meeting #145-e *S5-225510rev1*****e-meeting, 15 - 24 Aug 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **32.277** | **CR** | **0047** | **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** |
|  |
| ***Title:***  | Editorial clean up |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** | SA5 |
|  |  |
| ***Work item code:*** | TEI17, ProSe |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** | **D** |  | ***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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | There are some editorial errors. |
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| ***Summary of change:*** | Fix editorial issue  |
|  |  |
| ***Consequences if not approved:*** | The spec is not easy to read and may lead misundstanding. |
|  |  |
| ***Clauses affected:*** | 5.1.2.3, 5.4.2.7.2, 5.4.2.7.3 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |   |
|  |  |
| ***This CR's revision history:*** |  |

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| **First change** |

#### 5.1.2.3 Charging information for ProSe one-to-many Direction Communication

For the ProSe one-to-many Direct Communication for Public Safety Use, the UE shall collect the following information, and be included in the usage information report to the ProSe Function for charging purposes, if configured by the network:

- UE identity, e.g. IMSI;

- For every collection period:

- Sequence number of the report;

- List of the locations of the UE when in coverage, e.g. ECGIs, and the corresponding timestamps;

- Configured Radio Parameters used for the ProSe Direct Communication, as defined in TS 24.333 [241];

- List of timestamps of when the UE goes in/out of E-UTRAN coverage;

- For every ProSe Direct Communication Group (identified by ProSe L2 Group ID):

- Group Parameters used for the ProSe Direct Communication, as defined in TS 24.333 [241], e.g. ProSe L2 Group ID, IP Multicast Address, Source IP address, etc.;

- Timestamp of the first one-to-many communication transmission/reception;

- Identities of the transmitters in the one-to-many communication session, e.g. Source L2 ID and IP address;

- List of non-zero amount of data transmitted by UE;

- List of amount of data transmitted by UE when in E-UTRAN coverage at each location, with ECGI and the corresponding timestamps, and indicator of which radio resources used (i.e., operator-provided in coverage or configured) and the radio frequency used;

- List of amount of data transmitted by UE for each out of E-UTRAN coverage period and the corresponding timestamps and the radio frequency used ;

- List of non-zero amount of data received by UE;

- List of amount of data received by UE when in E-UTRAN coverage at each location, with ECGI and the corresponding timestamps, and indicator of which radio resources used (i.e., operator-provided in coverage or configured) and the radio frequency used;

- List of amount of data received by UE for each out of E-UTRAN coverage period and the corresponding timestamps and the radio frequency used;

- Application specific data, e.g. application specific session floor control information, Application layer User ID of group members in the communication.

- QoS flow information, e.g. PC5 QoS Flow Id, QoS information, QoS Characteristics.

NOTE For broadcast mode of 5G ProSe direct communication over PC5 reference point, the UE is configured with the Destination Layer-2 ID(s) to be used for ProSe applications. For groupcast mode of 5G ProSe direct communication over PC5 reference point, the application layer may provide Application Layer Group ID. The UE self-selects a Source Layer-2 ID.

The network shall be able to configure the UE with information to be included in the usage information report as per following:

- Whether the Group Parameters need to be reported;

- Whether timestamps of the first transmission/reception need to be reported;

- Whether the amount of data transmitted by UE needs to be reported, and whether with location information;

- Whether the amount of data received by UE needs to be reported, and whether with location information;

- Whether the list of locations of the UE when in E-UTRAN coverage needs to be reported;

- Whether the list of timestamps of when UE goes in/out of E-UTRAN coverage need to be recorded.

- Whether the indicator of radio resources used and radio frequency are to be reported with the amount of data transmitted and received.

- Whether the QoS flow information need to be reported;

For 5G ProSe Broadcast and Groupcast Direct Communication, the UE and network shall collect the charging information with the following modification:

- the E-UTRAN is replaced by NG-RAN and E-UTRA is replaced with NR;

- the ECGI is replaced by NCGI;

- corresponding 5GS identifiers replace the EPS identifiers, e.g. use SUPI instead of IMSI, and use GPSI instead of MSISDN;

- PC5\_tech parameter is omitted and the intended PC5 radio technology is NR;

- both public safety use and commercial services are applicable for Direct Communication.

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| **Next change** |

##### 5.4.2.7.2 Message flows for ProSe Unicast Direct Communication - PEC



Figure 5.4.2.7.2 -1: Message flows for ProSe Unicast Direct Communication - PEC

1. UE-1 sends a Direct Communication Request message to UE-2 in order to trigger mutual authentication.

2-3. UE-2 initiates the procedure for mutual authentication. The successful completion of the authentication procedure completes the establishment of the secure layer-2 link over PC5 and then UE performs unicast mode Direct Communication.

4. UE-1 sends a Disconnect Request message to UE-2 in order to release the layer-2 link and deletes all context data associated with.

5. Upon reception of the Disconnect Request message UE-2 responds with a Disconnect Response message and deletes all context data associated with the layer-2 link.

6. When UE-1 decides that reporting criteria are met, according to the pre-configuration, the UE creates the corresponding usage information report.

NOTE 1: Both UE-1 and UE-2 can decide that reporting criteria are met and trigger the usage reporting procedure.

7. UE-1 triggers the usage reporting procedure sends the usage information report to the CTF(ADF).

8ch-a. Upon reception of Direct Communication usage information report, the CTF(ADF) triggers the Charging Data Request [Event].The CTF(ADF) sends Charging Data Request [Event] to CHF.

8ch-b. The ProSe unicast mode Direct Communication CDR is generated by CHF for the UE-1 and UE-2.

8ch-c. The CHF acknowledges by sending Charging Data Response [Event] to the CTF(ADF).

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| **Next change** |

##### 5.4.2.7.3 Message flows for ProSe Unicast Direct Communication - SCUR



Figure 5.4.2.7.3-1: Message flows for ProSe Unicast Direct Communication - SCUR

1-3. These steps are the same as described in figure 5.4.2.7.2-1.

4. When the UE decides that reporting criteria are met, according to the pre-configuration, the UE creates the corresponding usage information report. UE triggers the usage reporting procedure.

5. UE sends the usage information report to the CTF located in ProSe NF (e.g. 5G-DDNMF).

6ch-a. The NF (CTF) determines the number of units depending on the service requested by the UE, and sends the Charging Data Request[Initial] to the CHF when there is no open charging session.

6ch-b. Based on policies, the CHF opens a CDR related to the service.

6ch-c. The CHF grants authorization to NF (CTF) for the service to start, and returns Charging Data Response.

7. UE-1 decides that reporting criteria are met, according to the pre-configuration, the UE creates the corresponding usage information report.

NOTE 1: Both UE-1 and UE-2 can decide that reporting criteria are met and trigger the usage reporting procedure.

8. UE-1 triggers the usage reporting procedure sends the usage information report to the CTF(ADF).

9ch-a. If there is a charging session for the session of unicast mode direct communication, upon reception of direct communication usage information report for the session, the NF (CTF) triggers the Charging Data Request[Update]. The NF (CTF) sends the Charging Data Request[Update] to the corresponding CHF.

9ch-b. The CDR for the ProSe unicast Direct Communication is updated by CHF for the UE.

9ch-c. The CHF returns Charging Data Response corresponding to the received Charging Data Request.

NOTE 2: The Step 9ch-a to 9ch-c may occur multiple times for update.

10. Upon reception of the Disconnect Request message UE2 responds with a Disconnect Response message and deletes all context data associated with the layer-2 link.

11. Upon reception of the Disconnect Response from UE-2, the UE-1 triggers the usage reporting procedure.UE1 sends the usage information report to the NF (CTF),

12. UE-1 decides that reporting criteria are met, according to the pre-configuration, the UE creates the corresponding usage information report.

13. UE-1 sends the usage information report to the NF (CTF).

NOTE 3: The Step 13 may occur before step 10 and step 11.

14ch-a. The NF (CTF) decides that the charging session should be closed, and triggers the Charging Data Request[Termination]. The NF (CTF) sends the Charging Data Request[Termination] to the corresponding CHF.

14ch-b. The CDR for the ProSe unicast Direct Communication is closed by CHF for the UE.

14ch-c. The CHF returns Charging Data Response corresponding to the received Charging Data Request.

NOTE 4: The procedure applies to UE1 to UE2 independently, i.e. each of the UE sends the respective usage information reports to the network using either the under coverage procedure or out of coverage procedure.

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| **End of changes** |