**3GPP TSG-CT WG1 Meeting #141eC1-23xxxx**

**Online 17– 21 April 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **24.554** | **CR** | **0288** | **rev** | **1** | **Current version:** | **18.0.0** |  |
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| *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 |  |

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| ***Title:***  | Updates on path switching procedure between Uu and PC5 |
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| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** | 2023-04-20 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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)* |
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| ***Reason for change:*** | This CR intends to align with the main updates on path switching procedure between Uu and PC5 in SA2#155 (TS 23.304 CR0169 rev13) for clarifications:* **for IP type traffic**, the IP addresses/prefixes of the peer UEs over the Uu reference point can be shared via the existing PC5 connection.
* for path switching from Uu to PC5, a NOTE is added to clarify when the UEs cannot successfully exchange Path Switch Request/Response due to, e.g. the PC5 unicast link suddenly breaks, whether to perform path switching to Uu path is left to UE implementation.
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| ***Summary of change:*** | Clarify that it is in the case of the 5G ProSe direct link with IP data unit type, the IP addresses, IPv6 prefixes, or both for the direct communication path over PC5 can be shared via the existing 5G ProSe direct link.Clarify that "the other UE" is the "peer UE that the "initiating UE" is communicating with".Add a NOTE under the abnormal case at the initiating UE: after the third expiry of timer, whether the UE perform path switching procedure to the direct communication path over Uu is up to UE implementations. |
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| ***Consequences if not approved:*** | Not align with stage 2 requirement |
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| ***Clauses affected:*** | 7.7.1, 7.7.2.1, 7.7.3.1, 7.7.3.6.1 |
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|  | **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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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

### 7.7.1 General

This clause describes the procedures for path switching procedure between the direct communication path over Uu and the direct communication path over PC5.

The communication path of direct communication path over Uu refers to the communication path between two ProSe-enabled UEs that is performed via the network over Uu reference point. The communication path of direct communication path over PC5 refers to the communication path between two ProSe-enabled UEs that is performed via the unicast mode 5G ProSe direct communication over PC5 as specified in clause 7.2.

The ProSe application to path switching mapping rules as specified in clause 5.2.4 is provisioned to UE to indicate whether the ProSe application identified by a ProSe identifier is authorized to perform the commnucation path switching between the direct communication path over Uu and the direct communication path over PC5, whether all the ProSe applications are authorized to perform the path switching procedure between the direct communication path over Uu and the direct communication path over PC5, or both. Only the ProSe application(s) that are authorized to perform the commnucation path switching are allowed to perform the path switching procedure between the direct communication path over Uu and the direct communication path over PC5.

Editor's note: The path switching mapping rules related content in clause 7.X will be revisited once SA2 determines the final requirement of path switching mapping rules.

The following procedures are defined for path switching procedure between the direct communication path over Uu and the direct communication path over PC5:

a) path switching procedure from the direct communication path over Uu to the direct communication path over PC5; and

b) path switching procedure from the direct communication path over PC5 to the direct communication path over Uu.

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

#### 7.7.2.1 General

The purpose of the path switching procedure from the direct communication path over Uu to the direct communication path over PC5 is to enable a ProSe-enabled UE to switch the communication path from the direct communication path over Uu to the direct communication path over PC5 when the UE is communicating with another ProSe-enabled UE via the direct communication path over Uu.

A UE may initiate a path switching procedure from the direct communication path over Uu to the direct communication path over PC5:

a) when the peer UE that the UE is communicating with via the direct communication path over Uu is in proximity; or

b) when the UE needs to switch the communication path from the direct communication path over Uu to the direct communication path over PC5 on demand (e.g. to offload some traffic from the network, a request from upper layers, etc.).

In this procedure, the UE initiating the path switching procedure from the direct communication path over Uu to the direct communication path over PC5 is called the "initiating UE" and the peer UE that the "initiating UE" is communicating with is called the "target UE".

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

#### 7.7.3.1 General

The purpose of the path switching procedure from the direct communication path over PC5 to the direct communication path over Uu is to enable a ProSe-enabled UE to switch the communication path from the direct communication path over PC5 to the direct communication path over Uu when the UE is communicating with another ProSe-enabled UE via the direct communication path over PC5.

For the 5G ProSe direct link with IP data unit type, the IP addresses, IPv6 prefixes, or both for the direct communication path over PC5 can be shared via the existing 5G ProSe direct link to assist the initiating UE and the target UE to establish the communication with each other via the direct communication path over the Uu.

Editor's note: UE-1 and UE-2 may share the IP addresses/prefixes used for Uu path for each accepted ProSe application via the existing PC5 connection. When and how to share the IP address/prefixes is FFS.

A UE may initiate a path switching procedure from the direct communication path over PC5 to the direct communication path over Uu:

a) when the PC5 signal strength of the direct communication path over PC5 with the peer UE becomes weak (e.g. reaching a certain configured signal strength threshold); or

b) when the UE needs to switch the communication path from the direct communication path over PC5 to the direct communication path over Uu on demand (e.g. a request from upper layers).

In this procedure, the UE initiating the path switching procedure from the direct communication path over PC5 to the direct communication path over Uu is called the "initiating UE" and the peer UE that the "initiating UE" is communicating with is called the "target UE".

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

##### 7.7.3.6.1 Abnormal cases at the initiating UE

The following abnormal cases can be identified:

a) Expiry of timer T5aaa:

 On the first expiry of the timer T5aaa, the UE shall resend the PROSE PATH SWITCHING REQUEST message and shall reset and restart timer T5aaa. This retransmission is repeated two times, i.e. on the third expiry of timer T5aaa, the UE shall abort the procedure and consider the target UE is not in proximity or the path switching procedure from the direct communication path over PC5 to the direct communication path over Uu is not accepted by the target UE.

NOTE: After the third expiry of timer T5aaa, whether the UE performs path switching procedure to the direct communication path over Uu is up to UE implementations.

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