**3GPP TSG-SA2 Meeting #160-Ad Hoc-e *S2-2401158***

**Online, , 22nd Jan 2024 - 29th Jan 2024**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.304** | **CR** | **0423** | **rev** | **-** | **Current version:** | **18.4.0** |  |
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| *For* [***HELP***](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:*** | Update procedure for 5G ProSe UE-to-UE Relay Discovery with Model A | | | | | | | | | |
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| ***Source to WG:*** | InterDigital | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_ProSe\_Ph2 | | | | |  | ***Date:*** | | | 2024-01-12 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | U2U relay discovery with model A is intended to provide information of other end UEs in proximity via the U2U relay to the monitoring End UE. It is based on the information “user info ID of other UEs in proximity” in U2U relay discovery announcement message and it is assumed that the information are acquired during U2U relay discovery with model B procedure or during U2U relay communication procedure.  The assumption is not compliant to security requirement from SA3 which says direct discovery set in U2U relay discovery message is protected end-to-end between End UEs and it shall be transparent to U2U relay.  In TS 33.503 subclause 6.1.3.3.3, security procedure for 5G ProSE UE-to-UE Relay Discovery with Model A provides mechanism to provide the user info of other UEs via U2U relay in compliance with above security requirement.  Therefore, as alignment with security requirements from SA3, it is proposed to update U2U relay discovery with model A based on TS33.503. | | | | | | | | |
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| ***Summary of change:*** | | Update U2U relay discovery with model A procedure to be aligned with SA3. | | | | | | | | |
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| ***Consequences if not approved:*** | | U2U Relay discovery procedure does not satisfy the securtiy requirement from SA3. | | | | | | | | |
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| ***Clauses affected:*** | | 6.3.2.4.2, 6.3.2.4.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  |  | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* \* First change \* \* \* \*

##### 6.3.2.4.2 Procedure for 5G ProSe UE-to-UE Relay Discovery with Model A

Depicted in Figure 6.3.2.4.2-1 is the procedure for 5G ProSe UE-to-UE Discovery with Model A.



Figure 6.3.2.4.2-1: 5G ProSe UE-to-UE Relay Discovery with Model A

1. The 5G ProSe End UE may send a 5G ProSe UE-to-UE Relay Discovery Announcement message. The UE-to-UE Relay Discovery Announcement message from the announcing 5G ProSe End UE include RSC and direct discovery set. The UE-to-UE Relay Discovery Announcement message from 5G ProSe End UE is sent using the Source Layer-2 ID and Destination Layer-2 ID as described in clause 5.8.1.

2. The 5G ProSe UE-to-UE Relay has discovered other UEs in proximity (e.g. via a previous 5G ProSe UE-to-UE Relay Discovery with model A or 5G ProSe UE-to-UE Relay Communication procedures). The 5G ProSe UE-to-UE Relay obtains the direct discovery set from other UEs in proximity per RSC.

NOTE: For connected 5G ProSe End UEs, 5G ProSE UE-to-UE Relay obtains the direct discovery set via the secure PC5 unicast link established with the 5G ProSe End UE as described in TS 33.503.

3. The 5G ProSe UE-to-UE Relay sends a UE-to-UE Relay Discovery Announcement message. The UE-to-UE Relay Discovery Announcement message contains the Type of Discovery Message, User Info ID of the 5G ProSe UE-to-UE Relay, RSC and list of direct discovery set received from the 5G ProSe End UEs supporting the RSC. The UE-to-UE Relay Discovery Announcement message is sent using the Source Layer-2 ID and Destination Layer-2 ID as described in clause 5.8.4.

The 5G ProSe UE-to-UE Relay shall only announce User Info IDs of other UEs in proximity that did not include an Announce Prohibited Indication when they were previously discovered.

NOTE: 5G ProSe UE-to-UE Relay announces direct discovery set from other UEs in proximity only if their PC5 signal strength measured by the 5G ProSe UE-to-UE Relay is above configured signal strength threshold as specified in TS 38.331 [16]. A 5G ProSe End UE monitors announcement messages from a 5G ProSe UE-to-UE Relay. The 5G ProSe End UEs determine the Destination Layer-2 ID for signalling reception as specified in clause 5.1.

##### 6.3.2.4.3 Procedure for 5G ProSe UE-to-UE Relay Discovery with Model B

Depicted in Figure 6.3.2.4.3-1 is the procedure for 5G ProSe UE-to-UE Relay Discovery with Model B.



Figure 6.3.2.4.3-1: 5G ProSe UE-to-UE Relay Discovery with Model B

1. The discoverer 5G ProSe End UE (UE-1) sends a 5G ProSe UE-to-UE Relay Discovery Solicitation message. The 5G ProSe UE-to-UE Relay Discovery Solicitation message contains the Type of Discovery Message, User Info ID of itself, RSC and User Info ID of the discoveree 5G ProSe End UE (UE-2) and is sent using the Source Layer-2 ID and Destination Layer-2 ID as described in clause 5.8.4.

A 5G ProSe UE-to-UE Relay determines the Destination Layer-2 ID for signalling reception as specified in clause 5.1.

The discoverer 5G ProSe End UE may include an Announce Prohibited Indication in the UE-to-UE Relay Discovery Solicitation message. If a 5G ProSe UE-to-UE Relay receives a Relay Discovery Soliciation message with an Announce Prohibited Indication it does not consider the 5G ProSe End UE as discovered during this procedure for inclusion in 5G ProSe UE-to-UE Relay Discovery with Model A, see clause 6.3.2.4.2, step 1.

2. If the RSC contained in the solicitation message matches any of the (pre)configured RSC(s), as specified in clause 5.1.5.1, of a 5G ProSe UE-to-UE Relay, the 5G ProSe UE-to-UE Relay sends a 5G ProSe UE-to-UE Relay Discovery Solicitation message. The 5G ProSe UE-to-UE Relay Discovery Solicitation message contains the Type of Discovery Message, User Info ID of the discoverer 5G ProSe End UE (UE-1), User Info ID of UE-to-UE Relay, RSC and User Info ID of the discoveree 5G ProSe End UE (UE-2) and is sent using the Source Layer-2 ID and Destination Layer-2 ID as described in clause 5.8.4.

A 5G ProSe End UE determines the Destination Layer-2 ID for signalling reception as specified in clause 5.1.

3. If the RSC contained in the solicitation message matches any of the (pre)configured RSC(s), as specified in clause 5.1.5.1, of the discoveree 5G ProSe End UE (UE-2), and the discoveree 5G ProSe End UE (UE-2) matches the User Info ID of the discoveree 5G ProSe End UE (UE-2) contained in the solicitation message, then the discoveree 5G ProSe End UE (UE-2) responds to the 5G ProSe UE-to-UE Relay with a 5G ProSe UE-to-UE Relay Discovery Response message. The 5G ProSe UE-to-UE Relay Discovery Response message contains the Type of Discovery Message, RSC, User Info ID of the discoverer 5G ProSe End UE (UE-1) and User Info ID of discoveree 5G ProSe End UE (UE-2) and is sent using the Source Layer-2 ID and Destination Layer-2 ID as described in clause 5.8.4. If the discoveree 5G ProSe End UE (UE-2) receives multiple UE-to-UE Relay Discovery Solicitation messages from different 5G ProSe UE-to-UE Relays with the same RSC and the User Info ID of the discoveree 5G ProSe End UE (UE-2), it may choose to respond or not to a 5G ProSe UE-to-UE Relay (e.g. based on the PC5 signal strength of each message received).

The discoveree 5G ProSe End UE may include an Announce Prohibited Indication in the UE-to-UE Relay Discovery Response message. If a 5G ProSe UE-to-UE Relay receives a Relay Discovery Response message with an Announce Prohibited Indication it does not consider the 5G ProSe End UE as discovered during this procedure for inclusion in 5G ProSe UE-to-UE Relay Discovery with Model A, see clause 6.3.2.4.2, step 1.

4. The 5G ProSe UE-to-UE Relay sends a 5G ProSe UE-to-UE Relay Discovery Response message. The 5G ProSe UE-to-UE Relay Discovery Response message contains the Type of Discovery Message, User Info ID of UE-to-UE Relay, RSC, User Info ID of the discoverer 5G ProSe End UE (UE-1) and User Info ID of the discoveree 5G ProSe End UE (UE-2) and is sent using the Source Layer-2 ID and Destination Layer-2 ID as described in clause 5.8.4.

\* \* \* \* End of change \* \* \* \*