**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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|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
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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:*** | Releasing 5G ProSe direct link due to starting emergency service | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_ProSe\_Ph2 | | | | |  | ***Date:*** | | | 2023-04-06 |
|  |  | | | |  | |  | | |  |
| ***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 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:*** | | TS 23.304 specifies the following (due to agreed stage-2 CR S2-2303868):  *- If the 5G ProSe Layer-3 Relay is relaying an emergency service for a 5G ProSe Layer-3 Remote UE, then it shall prioritise its own emergency service establishment and stop relaying the Remote UEs emergency service.*  The corresponding requirements for the above needs to be specified in stage-3. | | | | | | | | |
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| ***Summary of change:*** | | The layer-3 relay UE releases the 5G ProSe direct link established for emergency, when it starts an emergency service of its own. It is proposed to use the PC5 signalling protocol cause value #1 "direct communication to the target UE not allowed" as it matches the needed use case, where the Remote UE would reselect another relay UE upon getting that cause.  Also an EN is added in the change in this CR, to capture the ongoing discussion in SA2 about this aspect, specially that there is the following EN in stage-2 spec TS 23.304:  Editor's note: SA WG1 is expected to verify the service requirement for pre-empting relayed emergency service. | | | | | | | | |
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| ***Consequences if not approved:*** | | No handling for how layer-3 Relay UE would behave in the mentioned scenario, and stage-2 requirements are not implemented. | | | | | | | | |
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| ***Clauses affected:*** | | 7.2.6.2 | | | | | | | | |
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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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

#### 7.2.6.2 5G ProSe direct link release procedure initiation by initiating UE

The initiating UE shall initiate the procedure if a request from upper layers to release a 5G ProSe direct link with the target UE which uses a known layer-2 ID (for unicast communication) is received and there is an existing 5G ProSe direct link between these two UEs.

The initiating UE may initiate the procedure if the target UE has been non-responsive, e.g., no response in the 5G ProSe direct link modification procedure, 5G ProSe direct link identifier update procedure, 5G ProSe direct link re-keying procedure or 5G ProSe direct link keep-alive procedure.

The initiating UE may initiate the procedure to release an established 5G ProSe direct link if the UE has reached the maximum number of established 5G ProSe direct links and there is a need to establish a new 5G ProSe direct link. In this case, which 5G ProSe direct link is to be released is up to UE implementation.

The initiating UE may initiate the procedure to release an established 5G ProSe direct link upon expiry of the timer T5084.

If:

a) the initiating UE acts as 5G ProSe layer-3 UE-to-network relay UE; and

b) the PDU session established for relaying the traffic of the target UE is released by the initiating UE or the network as specified in 3GPP TS 24.501 [11] clause 6.3.3 or clause 6.4.3;

the initiating UE should initiate the 5G ProSe direct link release procedure.

If the initiating UE which is acting as 5G ProSe layer-3 UE-to-network relay UE establishes a new PDU session after receiving 5GSM cause value #39 "reactivation requested" as specified in 3GPP TS 24.501 [11] clause 6.3.2.3, the UE may initiate the 5G ProSe direct link release procedure.

If:

a) the initiating UE acts as 5G ProSe layer-2 remote UE or 5G ProSe layer-3 remote UE for relay with N3IWF support; and

b) the initiating UE is in 5GMM-IDLE mode;

the initiating UE may initiate the 5G ProSe direct link release procedure.

If:

a) the initiating UE acts as 5G ProSe layer-2 remote UE, 5G ProSe layer-3 remote UE or 5G ProSe layer-2 UE-to-network relay UE; and

b) the service authorization for the initiating UE to act as 5G ProSe layer-2 remote UE, 5G ProSe layer-3 remote UE or 5G ProSe layer-2 UE-to-network relay UE is revoked after receiving the configuration parameters for 5G ProSe UE-to-network relay as specified in clause 5.2.5;

the initiating UE should initiate the 5G ProSe direct link release procedure.

If:

a) the initiating UE acts as 5G ProSe layer-3 UE-to-network relay UE; and

b) the service authorization for the initiating UE to act as 5G ProSe layer-3 UE-to-network relay UE in the serving PLMN is revoked after receiving the configuration parameters for 5G ProSe UE-to-network relay as specified in clause 5.2.5;

the initiating UE should initiate the 5G ProSe direct link release procedure, and the initiating UE releases the PDU session established for relaying the traffic of the target UE as specified in 3GPP TS 24.501 [11] clause 6.4.3.

If:

a) the initiating UE acts as 5G ProSe layer-3 UE-to-network relay UE;

b) the 5G ProSe direct link was established with an RSC that is specific for emergency service; and

c) the initiating UE becomes involved into its own emergency service as specified in 3GPP TS 24.501 [11];

the initiating UE shall initiate the 5G ProSe direct link release procedure, and the initiating UE releases the PDU session established for relaying the traffic of the target UE as specified in 3GPP TS 24.501 [11] clause 6.4.3.

Editor’s note: Whether the initiating UE shall initiate the 5G ProSe direct link release procedure in the above case is subject to change, as it depends on the final requirement of SA2.

If:

a) the initiating UE acts as 5G ProSe end UE or 5G ProSe UE-to-UE relay UE; and

b) the service authorization for the initiating UE to act as 5G ProSe end UE or 5G ProSe UE-to-UE relay UE is revoked after receiving the configuration parameters for 5G ProSe UE-to-UE relay as specified in clause 5.2.7;

the initiating UE should initiate the 5G ProSe direct link release procedure.

If:

a) the initiating UE is acting as a 5G ProSe layer-3 UE-to-UE relay UE;

a) the direct link that is between a 5G ProSe layer-3 end UE and the initiating UE has been released; and

b) there are one or more direct links between the initiating UE and the peer 5G ProSe layer-3 end UEs that have PC5 QoS flow(s) only for the communication with the 5G ProSe layer-3 end UE;

the initiating UE may initiate the 5G ProSe direct link release procedure toward the peer 5G ProSe layer-3 end UEs.

Editor's note: It is FFS whether and how the 5G ProSe layer-3 UE-to-UE relay UE notifies the peer 5G ProSe layer-3 end UE that the direct link in first hop is released.

In order to initiate the 5G ProSe direct link release procedure, the initiating UE shall create a PROSE DIRECT LINK RELEASE REQUEST message with a PC5 signalling protocol cause IE indicating one of the following cause values:

#1 direct communication to the target UE not allowed;

#2 direct communication to the target UE no longer needed;

#4 direct connection is not available anymore;

#5 lack of resources for 5G ProSe direct link;

#13 congestion situation; or

#111 protocol error, unspecified.

If the 5G ProSe direct link was established for 5G ProSe UE-to-network relay and:

a) the NAS level mobility management congestion control as specified in clause 5.3.9 of TS 24.501 [11] is activated at the initiating UE acting as a 5G ProSe UE-to-network relay UE; or

b) the initiating UE acting as a 5G ProSe UE-to-network relay UE is under congestion;

the initiating UE shall send a PROSE DIRECT LINK RELEASE REQUEST message containing PC5 signalling protocol cause value #13 "congestion situation". The initiating UE may provide a back-off timer value to the target UE in the PROSE DIRECT LINK RELEASE REQUEST message. The initiating UE shall not accept any 5G ProSe direct link establishment request for 5G ProSe UE-to-network relaying if the back-off timer NAS level mobility management congestion control is running.

If the 5G ProSe direct link was established for 5G ProSe UE-to-UE relay and:

a) the initiating UE acting as a 5G ProSe UE-to-UE relay UE is under congestion;

the initiating UE shall send a PROSE DIRECT LINK RELEASE REQUEST message containing PC5 signalling protocol cause value #13 "congestion situation". The initiating UE may provide a back-off timer value to the target UE in the PROSE DIRECT LINK RELEASE REQUEST message.

NOTE 1: How the initiating UE determines that it is under congestion is implementation specific (e.g., any relaying related operational overhead, etc).

NOTE 2: In case the initiating UE is under the NAS level mobility management congestion control, it is an implementation option that the provided back-off timer value to the target UE is set to the mobility management back-off timer T3346 or with an additional offset value.

If the 5G ProSe direct link was established by the initiating UE which is a 5G ProSe layer-2 remote UE, and the NAS level mobility management congestion control as specified in clause 5.3.9 of 3GPP TS 24.501 [11] is activated at the initiating UE, then the initiating UE shall send a PROSE DIRECT LINK RELEASE REQUEST message containing PC5 signalling protocol cause value #13 "congestion situation".

If the initiating UE is no longer allowed to maintain the 5G ProSe direct link, e.g., based on operator policy or configuration parameters for ProSe direct communication over PC5 as specified in clause 5.2, or the initiating UE acting as a 5G ProSe layer-3 UE-to-network relay UE becomes involved into an emergency service of its own as specified in 3GPP TS 24.501 [11] and the 5G ProSe direct link was established with an emergency relay service code, the initiating UE shall send a PROSE DIRECT LINK RELEASE REQUEST message containing PC5 signalling protocol cause value #1 "direct communication to the target UE not allowed".

The initiating UE shall include the new 2 MSBs of KNRP ID in the PROSE DIRECT LINK RELEASE REQUEST message.

After the PROSE DIRECT LINK RELEASE REQUEST message is generated, the initiating UE shall pass this message to the lower layers for transmission along with the initiating UE's layer-2 ID for unicast communication and the target UE's layer-2 ID for unicast communication and shall stop T5090 if running. The initiating UE shall start timer T5087.



Figure 7.2.6.2.1: 5G ProSe direct link release procedure

\*\*\*\*\* End of changes \*\*\*\*\*