**3GPP TSG-CT WG1 Meeting #126-eC1-206048**

**Electronic meeting, 15-23 October 2020**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.587** | **CR** | **0128** | **rev** | **1** | **Current version:** | **16.2.1** |  |
|  | | | | | | | | |
| *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:*** | Align cause value | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | OPPO | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eV2XARC | | | | |  | ***Date:*** | | | 2020-9-16 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **D** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In current 24.587, the cause value in some subclauses is not numbered and does not align with the code value in PC5 signalling protocol cause IE.  The cause value should be changed to the same number as PC5 signalling protocol cause IE.  The new added cause value “Security policy not aligned” is mising in the IE table. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Align cause value to the number in PC5 signalling protocol cause IE.  2. Add “Security policy not aligned” to the PC5 signalling protocol value IE table. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Wrong cause value. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.1.2.6.5, 6.1.2.7.5, 8.4.9 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 of change \*\*\*\*\*

##### 6.1.2.6.5 PC5 unicast link authentication procedure not accepted by the target UE

If the DIRECT LINK AUTHENTICATION REQUEST message cannot be accepted, the target UE shall create a DIRECT LINK AUTHENTICATION REJECT message. In this message, the target UE shall include a PC5 signaling protocol cause IE indicating one of the following cause values:

#6: authentication failure.

After the DIRECT LINK AUTHENTICATION REJECT message is generated, the target 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.

The target UE shall abort the ongoing procedure that triggered the initiation of the PC5 unicast link authentication procedure.

Upon receipt of the DIRECT LINK AUTHENTICATION REJECT message, the initiating UE shall stop timer T5006 and abort the ongoing procedure that triggered the initiation of the PC5 unicast link authentication procedure.

\*\*\*\*\* Second of change \*\*\*\*\*

##### 6.1.2.7.5 PC5 unicast link security mode control procedure not accepted by the target UE

If the DIRECT LINK SECURITY MODE COMMAND message cannot be accepted, the target UE shall send a DIRECT LINK SECURITY MODE REJECT message and abort the ongoing procedure that triggered the initiation of the PC5 unicast link security mode control procedure. The DIRECT LINK SECURITY MODE REJECT message contains a PC5 signalling protocol cause IE indicating one of the following cause values:

#6: authentication failure;

#7: integrity failure;

#8: UE security capabilities mismatch;

#9: LSBs of KNRP-sess ID conflict;

#10: UE PC5 unicast signalling security policy mismatch; or

#111: protocol error, unspecified.

If the DIRECT LINK SECURITY MODE COMMAND message cannot be accepted because the PC5 unicast link security mode control procedure was triggered during a PC5 unicast link establishment procedure, that the selected security algorithms in the DIRECT LINK SECURITY MODE COMMAND message included the null integrity protection algorithm and the target UE’s PC5 unicast signalling integrity protection policy is set to "signalling integrity protection required", the target UE shall include PC5 signalling protocol cause #10 "UE PC5 unicast signalling security policy mismatch" in the SECURITY MODE REJECT message.

If the DIRECT LINK SECURITY MODE COMMAND message cannot be accepted because the PC5 unicast link security mode control procedure was triggered during a PC5 unicast link re-keying procedure, the integrity protection algorithm currently in use for the PC5 unicast link is different from the null integrity protection algorithm and the selected security algorithms in the DIRECT LINK SECURITY MODE COMMAND message include the null integrity protection algorithm, the target UE, the target UE shall include PC5 signalling protocol cause #10 "UE PC5 unicast signalling security policy mismatch" in the SECURITY MODE REJECT message.

Upon receipt of the DIRECT LINK SECURITY MODE REJECT message, the initiating UE shall stop timer T5007 and:

a) if the PC5 signalling protocol cause IE in the DIRECT LINK SECURITY MODE REJECT message is set to #9, retransmit the DIRECT LINK SECURITY MODE COMMAND message with a different value for the 8 LSBs of KNRP-sess ID; and

\*\*\*\*\* Third of change \*\*\*\*\*

### 8.4.9 PC5 signalling protocol cause

The purpose of the PC5 signalling protocol cause information element is to indicate the cause used in the PC5 signalling protocol procedures.

The PC5 signalling protocol cause is a type 3 information element with a length of 2 octets.

The PC5 signalling protocol cause information element is coded as shown in figure 8.4.9.1 and table 8.4.9.1.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| PC5 signalling protocol cause IEI | | | | | | | | octet 1 |
| PC5 signalling cause value | | | | | | | | octet 2 |

Figure 8.4.9.1: PC5 signalling protocol cause information element

Table 8.4.9.1: PC5 signalling protocol cause information element

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PC5 signalling cause value (octet 2) | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | |
| Bits | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | 7 | | 6 | | 5 | | 4 | | 3 | | | 2 | | | 1 | | |  | | |  | | |
| 0 | | 0 | | 0 | | 0 | | 0 | | | 0 | | | 0 | | | 1 | | |  | | | Direct communication to the target UE not allowed | | |
| 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | | 1 | | | 0 | | |  | | | Direct communication to the target UE no longer needed | | |
| 0 | | 0 | | 0 | | 0 | | 0 | | | 0 | | | 1 | | | 1 | | |  | | | Conflict of layer-2 ID for unicast communication is detected | | |
| 0 | | 0 | | 0 | | 0 | | 0 | | 1 | | | 0 | | | 0 | | |  | | | Direct connection is not available anymore | | |
| 0 | | 0 | | 0 | | 0 | | 0 | | | 1 | | | 0 | | | 1 | | |  | | | Lack of resources for PC5 unicast link | | |
| 0 | | 0 | | 0 | | 0 | | 0 | | | 1 | | | 1 | | | 0 | | |  | | | Authentication failure | | |
| 0 | | 0 | | 0 | | 0 | | 0 | | | 1 | | | 1 | | | 1 | | |  | | | Integrity failure | | |
| 0 | | 0 | | 0 | | 0 | | 1 | | | 0 | | | 0 | | | 0 | | |  | | | UE security capabilities mismatch | | |
| 0 | | 0 | | 0 | | 0 | | 1 | | | 0 | | | 0 | | | 1 | | |  | | | LBSs of KNRP-sess ID conflict | | |
| 0 | | 0 | | 0 | | 0 | | 1 | | | 0 | | | 1 | | | 0 | | |  | | | UE PC5 unicast signalling security policy mismatch | | |
| 0 | | 0 | | 0 | | 0 | | 1 | | | 0 | | | 1 | | | 1 | | |  | | | Required service not allowed | | |
| 0 | | 0 | | 0 | | 0 | | 1 | | | 1 | | | 0 | | | 0 | | |  | | | Security policy not aligned | | |
|  | |  | |  | |  | |  | | |  | | |  | | |  | | |  | | |  | | |
|  | |  | |  | |  | |  | | |  | | |  | | |  | | |  | | |  | | |
| 0 | | 1 | | 1 | | 0 | | 1 | | | 1 | | | 1 | | | 1 | | |  | | | Protocol error, unspecified | | |
|  | |  | |  | |  | |  | | |  | | |  | | |  | | |  | | |  | | |
| Any other value received by the UE shall be treated as 0110 1111, "protocol error, unspecified". | | | | | | | | | | | | | | | | | | | | | | | | | |

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