**3GPP TSG-CT WG4 Meeting #99eC4-204256**

**E-Meeting, 18th – 28th August 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **29.502** | **CR** | **0375** | **rev** | **1** | **Current version:** | **16.4.0** |  |
|  | | | | | | | | |
| *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** |

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| ***Title:*** | Handover Cancel 5GS to EPS | | | | | | | | | |
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| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI16 | | | | |  | ***Date:*** | | | 2020-08-24 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 3GPP TS 23.502 has specified source AMF shall delete resources reserved in CN during PDU session preparation: 4.11.1.2.3 Handover Cancel ….    Figure 4.11.1.2.3-1: Handover Cancel procedure  …  7. [Conditional] If indirect forwarding tunnel is setup during handover preparation phase then cancellation of handover triggers the source CN node to release the temporary resources used for indirect forwarding.  How AMF can inform SMF during 5GS to EPS HO cancellation to release the CN resources is not specified in TS 29.502. | | | | | | | | |
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| ***Summary of change:*** | | 1/ Clarify the AMF shall update SMF with "HO\_CANCEL" to inform SMF to release the resources reserved during HO preparation and continue the PDU session.  2/ Clarify the "resource for EPS Bearer" cannot be reserved for handover failure scenarios, instead of "resources for data forwarding". | | | | | | | | |
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| ***Consequences if not approved:*** | | AMF cannot inform SMF during 5GS to EPS handover cancellation procedure. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.2.3.9 | | | | | | | | |
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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 does not require version update on any OpenAPI file. | | | | | | | | |
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| ***This CR's revision history:*** | | Rev1:  - Editorial enhancement for readability.  - Add sub-clauses under 5.2.2.3.9 for scenarios of indirect data forwarding tunnel setup and removal. | | | | | | | | |

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

##### 5.2.2.3.9 5GS to EPS Handover using N26 interface

###### 5.2.2.3.9.1 General

The NF Service Consumer (e.g. AMF) shall request the SMF to setup indirect data forwarding tunnel when needed during 5GS to EPS handover using N26 interface, and to remove the indirect data forwarding tunnel previously established when the handover is cancelled or failed.

###### 5.2.2.3.9.2 Indirect data forwarding tunnels setup during 5GS to EPS handover

If data forwarding applies to the 5GS to EPS handover, the NF Service Consumer (e.g. AMF) shall provide the SMF with the data forwarding information received from the MME, as specified in clause 4.11.1.2.1 of 3GPP TS 23.502 [3]), as follows.



Figure 5.2.2.3.9-1: 5GS to EPS Handover using N26 interface (data forwarding tunnels setup)

1. The NF Service Consumer shall send a POST request, as specified in clause 5.2.2.3.1, with the following information:

- dataForwarding IE set to true;

- EPS bearer contexts received from the MME in the Forward Relocation Response, including F-TEID(s) for DL data forwarding tunnel(s) towards the target eNB (for direct data forwarding) or towards the forwarding SGW (for indirect data forwarding).

2a. If indirect data forwarding applies, the SMF shall map the EPS bearers for Data Forwarding to the 5G QoS flows based on the association between the EPS bearer ID(s) and QFI(s) for the QoS flow(s).  
  
The SMF shall return a 200 OK response including the following information:

- N2 SM information (see Handover Command Transfer IE in clause 9.3.4.10 of 3GPP TS 38.413 [9]) containing DL forwarding tunnel information to be sent to the source 5G-AN by the AMF if direct or indirect data forwarding applies (see step 11f of clause 4.9.1.3.2 of 3GPP TS 23.502 [3]).

If direct data forwarding applies, the DL forwarding tunnel information shall contain the E-UTRAN tunnel info for data forwarding per EPS bearer received from the MME.   
  
If indirect data forwarding applies, the DL forwarding tunnel information shall contain the CN transport layer address and tunnel endpoint (i.e. UPF's GTP-U F-TEID) for Data Forwarding and the QoS flows for Data Forwarding for this PDU session.

2b. If the SMF cannot proceed with the request, the SMF shall return an error response, as specified for step 2b of figure 5.2.2.3.1-1.

###### 5.2.2.3.9.3 Indirect data forwarding tunnels removal for 5GS to EPS handover cancellation or failure

During 5GS to EPS handover, if indirect data forwarding tunnel(s) have been previously established during the preparation phase and the handover is cancelled, the AMF shall update the SMF of handover cancellation by sending a POST request with the cause attribute set to "HO\_CANCEL" and dataForwarding IE set to false with an empty list of EPS bearer contexts. The SMF shall then release the resources prepared for the handover and proceed with the PDU session as if no handover procedure had taken place.

If no resources for EPS bearer(s) can be assigned for any PDU session attempted to be handed over, the AMF shall update the SMF with the information that the handover preparation failed by sending a POST request with the cause attribute set to "HO\_FAILURE" and with an empty list of EPS bearer contexts (and without the dataForwarding IE). The SMF shall then release the resources prepared for the handover and proceed with the PDU session as if no handover procedure had taken place.

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