**3GPP TSG-CT WG4 Meeting #105-eC4-214255r1**

**E-Meeting, 17th – 27th Aug 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **29.502** | **CR** | **0471** | **rev** | **1** | **Current version:** | **17.1.0** |  |
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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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  | SMF Response in case of AN-Requested PDU Session Resource Release |
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| ***Source to WG:*** | Samsung |
| ***Source to TSG:*** | CT4 |
|  |  |
| ***Work item code:*** | SBIProtoc17 |  | ***Date:*** | 2021-08-09 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-17 |
|  | *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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** |  When 5G-AN requests PDU session resource release by sending the NGAP PDU SESSION RESOURCE NOTIFY to the AMF, the SMF may decide to release the PDU Session, or keep the PDU Session with user-plane connection deactivated. This is specified in 3GPP TS 23.502 Clause 4.3.4.2 and Clause 4.3.4.3, Step #1d. In case SMF decides to keep the PDU session, it is unclear what response should be provided by SMF to the NF Service Consumers. |
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| ***Summary of change:*** |  It is proposed that SMF indicate “200 OK” when SMF decides to keep the session. |
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| ***Consequences if not approved:*** | Unclear specifications |
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| ***Clauses affected:*** | 5.2.2.3.2.1, 5.2.2.3.2.3, 5.2.2.8.2.15 |
|  |  |
|  | **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 makes no changes to the OpenAPI |
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| ***This CR's revision history:*** | V1:* Description of change moved to Clause 5.2.2.3.2.1
* Additional details in Clause 5.2.2.8.2.15 for the case SMF decides to release the PDU Session
* Additional detals in Clause 5.2.2.3.2.3 to clarify that request contains N2 SM Information
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\* \* \* First Change \* \* \* \*

###### 5.2.2.3.2.1 General

The upCnxState attribute of an SM context represents the state of the User Plane connection of the PDU session. The upCnxState attribute may take the following values:

- ACTIVATED: a N3 tunnel is established between the 5G-AN and UPF (F-TEIDs assigned for both uplink and downlink traffic);

- DEACTIVATED: no N3 tunnel is established between the 5G-AN and UPF;

- ACTIVATING: a N3 tunnel is being established (5G-AN's F-TEID for downlink traffic is not assigned yet).

Clauses 5.2.2.3.2.2 and 5.2.2.3.2.3 specify how the NF Service Consumer (e.g. AMF) request the SMF to activate or deactivate the User Plane connection of the PDU session, e.g. upon receiving a Service Request from the UE requesting to activate a PDU session or upon an AN release procedure respectively. Clause 5.2.2.3.2.3 also applies in case of 5G-AN requested PDU session resource release by sending the NGAP PDU SESSION RESOURCE NOTIFY to the AMF (see step 1d in clause 4.3.4.2 of 3GPP TS 23.502 [3]).

In scenarios where the SMF takes the initiative to activate or deactivate the User Plane connection of the PDU session, e.g. during a Network Triggered Service Request or CN-initiated selective deactivation of the User Plane connection of a PDU session respectively, the SMF invokes the Namf\_N1N2MessageTransfer procedure with the inclusion of N2 SM Information (and optionally of a N1 SM Container) as specified in 3GPP TS 23.502 [3] to request the establishment or release of the PDU session's resources in the 5G-AN. The Update SM Context service operation is then used as specified in clause 5.2.2.3.1 to transfer the response to the SMF.

Clause 5.2.2.3.2.4 specifies how the NF Service Consumer (e.g. AMF) indicates to the SMF that the access type of a PDU session can be changed from non-3GPP access to 3GPP access, during a Network Triggered Service Request initiated for a PDU session associated to the non-3GPP access, if the PDU Session for which the UE was paged or notified is in the List Of Allowed PDU Sessions provided by the UE and if the AMF has received N2 SM Information only or N1 SM Container and N2 SM Information for that PDU session from the SMF in step 3a of clause 4.2.3.3 of 3GPP TS 23.502 [3].

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

5.2.2.3.2.3 Deactivation of User Plane connectivity of a PDU session

The NF Service Consumer (e.g. AMF) shall request the SMF to deactivate the User Plane connectivity of an existing PDU session, i.e. release the N3 tunnel, as follows.

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**Figure 5.2.2.3.2.2-1: Deactivation of the User Plane connection of a PDU session**

1. The NF Service Consumer shall request the SMF to deactivate the user plane connection of the PDU session by sending a POST request, as specified in clause 5.2.2.3.1, with the following information:

- upCnxState attribute set to DEACTIVATED;

- user location and user location timestamp;

- cause of the user plane deactivation; the cause may indicate a cause received from the 5G-AN or due to an AMF internal event;

- N2 SM information received from the 5G-AN (see PDU Session Resource Notify Released Transfer IE in clause 9.3.4.13 of 3GPP TS 38.413 [9])), if the request is triggered due to 5G-AN requested PDU session resource release;

- other information, if necessary.

2. Upon receipt of such a request, the SMF shall deactivate release the N3 tunnel of the PDU session, set the upCnxState attribute to DEACTIVATED and return a 200 OK response including the upCnxState attribute set to DEACTIVATED.

If the request is triggered due to 5G-AN requested PDU session resource release, SMF may decide to keep the PDU Session (with user plane connection deactivated) or release the PDU Session. If the SMF decides to keep the PDU Session, it shall return "200 OK" with *upCnxState* attribute set to DEACTIVATED, but not including *n1SmMsg* and *n2SmInfo*. If the SMF decides to release the PDU Session, it shall return "200 OK" with *upCnxState* attribute set to DEACTIVATED, including *n1SmMsg* IE but not-including *n2SmInfo* IE.

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

5.2.2.8.2.15 5G-AN requested PDU session resource release

This clause applies only in case of 5G-AN requested PDU session resource release by sending the NGAP PDU SESSION RESOURCE NOTIFY to the AMF case (see step 1d in clause 4.3.4.3 of 3GPP TS 23.502 [3]).

The requirements specified in clause 5.2.2.8.2.1 shall apply with the following modifications.

1. Same as step 1 of Figure 5.2.2.8.2-1, with the following modifications.

The POST request shall contain:

- the requestIndication set to REL\_DUE\_TO\_5G\_AN\_REQUEST to indicate that the PDU session resource has been released by the 5G-AN.

After receving the request, the SMF may decide to keep the PDU Session (with user plane connection deactivated) or release the PDU Session. If the SMF decides to keep the PDU Session, it shall return "200 OK" not including *n1SmInfoToUe*. If the SMF decides to release the PDU Session, it shall return "200 OK" including *n1SmInfoToUe* binary data containing the Message Type “PDU Session Release Command” and possibly PCO and cause information.

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