**3GPP TSG-CT WG1 Meeting #137-eC1-224917**

**E-Meeting, 18th – 26th August 2022**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **24.501** | **CR** | **4585** | **rev** | **-** | **Current version:** | **17.7.1** |  |
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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 | **X** |

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|  |
| ***Title:***  | PDU session status IE handling for MBS session |
|  |  |
| ***Source to WG:*** | MediaTek Inc. |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5MBS |  | ***Date:*** | 2022-08-09 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | The UE or the SMF will locally release the PDU session when handling the PDU session status IE. However, it’s not defined what should the UE or the SMF deal with the PDU session status that is locally released when handling the PDU session status IE received during the SR or notification procedure. |
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| ***Summary of change:*** | The SMF will consider the UE as removed from the MBS sessions when handling PDU status IE in the SR or notification message.The UE will locally release MBS session when receiving the service accept message. |
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| ***Consequences if not approved:*** | The SMF won’t consider the UE as removed from the MBS sessions when handling PDU status IE in the SR or notification message.The UE won’t locally release MBS session when receiving the service accept message. |
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| ***Clauses affected:*** | 5.6.1.4.1, 5.6.1.4.2, 5.6.3.3 |
|  |  |
|  | **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 \* \* \* \*

##### 5.6.1.4.1 UE is not using 5GS services with control plane CIoT 5GS optimization

For cases other than h) in subclause 5.6.1.1, the UE shall treat the reception of the SERVICE ACCEPT message as successful completion of the procedure. The UE shall reset the service request attempt counter, stop timer T3517 and enter the state 5GMM-REGISTERED.

For case h) in subclause 5.6.1.1,

a) the UE shall treat the indication from the lower layers when the UE has changed to S1 mode or E-UTRA connected to 5GCN (see 3GPP TS 23.502 [9]) as successful completion of the procedure and stop timer T3517;

b) if a UE operating in single-registration mode has changed to S1 mode, it shall disable the N1 mode capability for 3GPP access (see subclause 4.9.2); and

c) the AMF shall not check for CAG restrictions.

If the PDU session status information element is included in the SERVICE REQUEST message, then:

a) for single access PDU sessions, the AMF shall:

1) perform a local release of all those PDU sessions which are not in 5GSM state PDU SESSION INACTIVE on the AMF side associated with the access type the SERVICE REQUEST message is sent over, but are indicated by the UE as being in 5GSM state PDU SESSION INACTIVE; and

2) request the SMF to perform a local release of all those PDU sessions. If any of those PDU sessions is associated with one or more MBS sessions, the SMF shall consider the UE as removed from the associated MBS sessions; and

b) for MA PDU sessions, the AMF shall:

1) for MA PDU sessions having user plane resources established in the AMF only on the access the SERVICE REQUEST message is sent over, but are indicated by the UE as no user plane resources established:

i) for all those MA PDU sessions without a PDN connection established as a user-plane resource, perform a local release of all those MA PDU sessions and request the SMF to perform a local release of all those MA PDU sessions. If the MA PDU session is associated with one or more MBS sessions, the SMF shall consider the UE as removed from the associated MBS sessions; and

ii) for all those MA PDU sessions with a PDN connection established as a user-plane resource, perform a local release of user plane resources of all those PDU sessions on the access the SERVICE REQUEST message is sent over and request the SMF to perform a local release of user plane resources of all those PDU sessions on the access type the SERVICE REQUEST message is sent over; and

2) for MA PDU sessions having user plane resources established on both accesses in the AMF, but are indicated by the UE as no user plane resources established:

i) perform a local release of user plane resources of all those PDU sessions on the access the SERVICE REQUEST message is sent over; and

ii) request the SMF to perform a local release of user plane resources of all those PDU sessions on the access type the SERVICE REQUEST message is sent over. If the SERVICE REQUEST message is sent over 3GPP access and the MA PDU session is associated with one or more MBS sessions, the SMF shall consider the UE as removed from the associated MBS sessions.

If the AMF needs to initiate PDU session status synchronization or a PDU session status IE was included in the SERVICE REQUEST message, the AMF shall include a PDU session status IE in the SERVICE ACCEPT message to indicate:

- which single access PDU sessions associated with the access type the SERVICE ACCEPT message is sent over are not in 5GSM state PDU SESSION INACTIVE in the AMF; and

- which MA PDU sessions are not in 5GSM state PDU SESSION INACTIVE and having user plane resources established in the AMF on the access the SERVICE ACCEPT message is sent over.

If the PDU session status information element is included in the SERVICE ACCEPT message, then:

a) for single access PDU sessions, the UE shall perform a local release of all those PDU sessions which are not in 5GSM state PDU SESSION INACTIVE or PDU SESSION ACTIVE PENDING on the UE side associated with the access type the SERVICE ACCEPT message is sent over, but are indicated by the AMF as in 5GSM state PDU SESSION INACTIVE. If a locally released PDU session is associated with one or more MBS sessions, the UE shall locally leave the associated MBS sessions; and

b) for MA PDU sessions, for all those PDU sessions which are not in 5GSM state PDU SESSION INACTIVE or PDU SESSION ACTIVE PENDING and have user plane resources established on the UE side associated with the access the SERVICE ACCEPT message is sent over, but are indicated by the AMF as no user plane resources established:

1) for MA PDU sessions having user plane resources established only on the access type the SERVICE ACCEPT message is sent over, the UE shall perform a local release of those MA PDU sessions. If a locally released MA PDU session is associated with one or more MBS sessions, the UE shall locally leave the associated MBS sessions; and

2) for MA PDU sessions having user plane resources established on both accesses, the UE shall perform a local release on the user plane resources on the access type the SERVICE ACCEPT message is sent over. If the user plane resources over 3GPP access are released and the MA PDU session is associated with one or more MBS sessions, the UE shall locally leave the associated MBS sessions.

If the Uplink data status IE is included in the SERVICE REQUEST message and the UE is:

a) not in NB-N1 mode; or

b) in NB-N1 mode and the UE does not indicate a request to have user-plane resources established for a number of PDU sessions that exceeds the UE's maximum number of supported user-plane resources;

the AMF shall:

a) indicate the SMF to re-establish the user-plane resources for the corresponding PDU sessions;

b) include the PDU session reactivation result IE in the SERVICE ACCEPT message to indicate the user-plane resources re-establishment result of the PDU sessions for which the UE requested to re-establish the user-plane resources; and

c) determine the UE presence in LADN service area and forward the UE presence in LADN service area towards the SMF, if the corresponding PDU session is a PDU session for LADN.

If the Allowed PDU session status IE is included in the SERVICE REQUEST message, the AMF shall:

a) for a 5GSM message from each SMF that has indicated pending downlink signalling only, forward the received 5GSM message via 3GPP access to the UE after the SERVICE ACCEPT message is sent;

b) for each SMF that has indicated pending downlink data only:

1) notify the SMF that reactivation of the user-plane resources for the corresponding PDU session(s) associated with non-3GPP access cannot be performed if the corresponding PDU session ID(s) are not indicated in the Allowed PDU session status IE; and

2) notify the SMF that reactivation of the user-plane resources for the corresponding PDU session(s) associated with non-3GPP access can be performed if:

i) for a UE not in NB-N1 mode, the corresponding PDU session ID(s) are indicated in the Allowed PDU session status IE; or

ii) for a UE in NB-N1 mode, the corresponding PDU session ID(s) are indicated in the Allowed PDU session status IE, and the resulting number of PDU sessions with established user-plane resources does not exceed the UE's maximum number of supported user-plane resources;

c) for each SMF that have indicated pending downlink signalling and data:

1) notify the SMF that reactivation of the user-plane resources for the corresponding PDU session(s) associated with non-3GPP access cannot be performed if the corresponding PDU session ID(s) are not indicated in the Allowed PDU session status IE;

2) notify the SMF that reactivation of the user-plane resources for the corresponding PDU session(s) associated with non-3GPP access can be performed if:

i) for a UE not in NB-N1 mode, the corresponding PDU session ID(s) are indicated in the Allowed PDU session status IE; or

ii) for a UE in NB-N1 mode, the corresponding PDU session ID(s) are indicated in the Allowed PDU session status IE, and the resulting number of PDU sessions with established user-plane resources does not exceed the UE's maximum number of supported user-plane resources; and

3) discard the received 5GSM message for PDU session(s) associated with non-3GPP access; and

d) include the PDU session reactivation result IE in the SERVICE ACCEPT message to indicate the successfully re-established user-plane resources for the corresponding PDU sessions, if any.

If due to regional subscription restrictions or access restrictions the UE is not allowed to access the TA or due to CAG restrictions the UE is not allowed to access the cell, but the UE has an emergency PDU session established, the AMF may accept the SERVICE REQUEST message and indicate to the SMF to perform a local release of all non-emergency PDU sessions (associated with 3GPP access if it is due to CAG restrictions) and informs the UE via the PDU session status IE in the SERVICE ACCEPT message. The AMF shall not indicate to the SMF to release the emergency PDU session. If the AMF indicated to the SMF to perform a local release of all non-emergency PDU sessions (associated with 3GPP access if it is due to CAG restrictions), the network shall behave as if the UE is registered for emergency services.

If the PDU session reactivation result IE is included in the SERVICE ACCEPT message indicating that the user-plane resources have been successfully reactivated for a PDU session that was requested by the UE in the Allowed PDU session status IE, the UE considers the corresponding PDU session to be associated with the 3GPP access. If the user-plane resources of a PDU session have been successfully reactivated over the 3GPP access, the AMF and SMF update the associated access type of the corresponding PDU session.

If the user-plane resources cannot be established for a PDU session, the AMF shall include the PDU session reactivation result IE in the SERVICE ACCEPT message indicating that user-plane resources for the corresponding PDU session cannot be re-established, and:

a) if the user-plane resources cannot be established because the SMF indicated to the AMF that the UE is located out of the LADN service area (see 3GPP TS 29.502 [20A]), the AMF shall include the PDU session reactivation result error cause IE with the 5GMM cause set to #43 "LADN not available";

b) if the user-plane resources cannot be established because the SMF indicated to the AMF that only prioritized services are allowed (see 3GPP TS 29.502 [20A]), the AMF shall include the PDU session reactivation result error cause IE with the 5GMM cause set to #28 "restricted service area";

c) if the user-plane resources cannot be established because the SMF indicated to the AMF that the resource is not available in the UPF (see 3GPP TS 29.502 [20A]), the AMF shall include the PDU session reactivation result error cause IE with the 5GMM cause set to #92 "insufficient user-plane resources for the PDU session";

e) if the user-plane resources cannot be established because the SMF indicated to the AMF that the S-NSSAI associated with the PDU session is unavailable due to NSAC (see 3GPP TS 29.502 [20A]), the AMF shall include the PDU session reactivation result error cause IE with the 5GMM cause set to #69 "insufficient resources for specific slice"; or

d) otherwise, the AMF may include the PDU session reactivation result error cause IE to indicate the cause of failure to re-establish the user-plane resources.

NOTE 1: It is up to UE implementation when to re-send a request for user-plane re-establishment for the associated PDU session after receiving a PDU session reactivation result error cause IE with a 5GMM cause set to #92 "insufficient user-plane resources for the PDU session".

NOTE 2: The UE can locally start a back-off timer after receiving a PDU session reactivation result error cause IE with a 5GMM cause set to #69 "insufficient resources for specific slice". The value of the back-off timer is up to UE implementation. Upon expiry of the back-off timer, the UE can re-send a request for user-plane re-establishment for the associated PDU session.

If the PDU session reactivation result IE is included in the SERVICE ACCEPT message indicating that the user-plane resources cannot be established for a PDU session that was requested by the UE in the Allowed PDU session status IE, the UE considers the corresponding PDU session to be associated with the non-3GPP access.

If the MUSIM UE does not include the Paging restriction IE in the SERVICE REQUEST message, the AMF shall delete any stored paging restriction for the UE and stop restricting paging.

For case m in subclause 5.6.1.1 when the MUSIM UE sets the Request type to "NAS signalling connection release" in the SERVICE REQUEST message, the AMF shall initiate the release of the N1 NAS signalling connection after the completion of the service request procedure.

For cases o and p in subclause 5.6.1.1 when the MUSIM UE sets the Request type to "NAS signalling connection release" or to "Rejection of paging" in the UE request type IE in the SERVICE REQUEST message and if the UE requests restriction of paging by including the Paging restriction IE, the AMF:

- if accepts the paging restriction, shall include the 5GS additional request result IE in the SERVICE ACCEPT message and set the Paging restriction decision to "paging restriction is accepted". The AMF shall store the paging restriction of the UE and enforce these restrictions in the paging procedure as described in clause 5.6.2; or

- if rejects the paging restriction, shall include the 5GS additional request result IE in the SERVICE ACCEPT message and set the Paging restriction decision to "paging restriction is rejected", and shall discard the received paging restriction. The AMF shall delete any stored paging restriction for the UE and stop restricting paging; and

the AMF shall initiate the release of the N1 NAS signalling connection as follows:

- for case o in subclause 5.6.1.1, after the completion of the service request procedure;

- for case p in subclause 5.6.1.1, after the completion of the generic UE configuration update procedure that is triggered after the completion of the service request procedure.

If the SERVICE REQUEST message is for emergency services fallback, the AMF triggers the emergency services fallback procedure as specified in subclause 4.13.4.2 of 3GPP TS 23.502 [9].

If the UE having an emergency PDU session sent the SERVICE REQUEST message via:

a) a CAG cell and none of the CAG-IDs of the CAG cell are included in the "Allowed CAG list" for the current PLMN in the UE's subscription; or

b) a non-CAG cell in a PLMN for which the UE's subscription contains an "indication that the UE is only allowed to access 5GS via CAG cells";

the network shall accept the SERVICE REQUEST message and release all non-emergency PDU sessions locally. The emergency PDU session shall not be released.

If the AMF received the list of TAIs from the satellite NG-RAN as described in 3GPP TS 23.501 [8], and determines that any but not all TAIs in the received list of TAIs is forbidden for roaming or for regional provision of service as per information from the UDM and operator's choice, the AMF shall include the TAI(s) in:

a) the Forbidden TAI(s) for the list of "5GS forbidden tracking areas for roaming" IE; or

b) the Forbidden TAI(s) for the list of "5GS forbidden tracking areas for regional provision of service" IE; or

c) both;

in the SERVICE ACCEPT message.

NOTE 9: "5GS forbidden tracking areas for roaming" corresponds to cause values #13 and #15, and "5GS forbidden tracking areas for regional provision of service" corresponds cause value #12.

If the UE receives the Forbidden TAI(s) for the list of "5GS forbidden tracking areas for roaming" IE in the SERVICE ACCEPT message and the TAI(s) included in the IE is not part of the list of "5GS forbidden tracking areas for roaming", the UE shall store the TAI(s) included in the IE into the list of "5GS forbidden tracking areas for roaming" and remove the TAI(s) from the stored TAI list if present.

If the UE receives the Forbidden TAI(s) for the list of "5GS forbidden tracking areas for regional provision of service" IE in the SERVICE ACCEPT message and the TAI(s) included in the IE is not part of the list of "5GS forbidden tracking areas for regional provision of service", the UE shall store the TAI(s) included in the IE into the list of "5GS forbidden tracking areas for regional provision of service" and remove the TAI(s) from the stored TAI list if present.

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

##### 5.6.1.4.2 UE is using 5GS services with control plane CIoT 5GS optimization

For case a in subclause 5.6.1.1, upon receipt of the CONTROL PLANE SERVICE REQUEST message with Control plane service type indicating "mobile terminating request", after completion of the 5GMM common procedures (if initiated) according to subclause 5.6.1.3, the AMF shall send a SERVICE ACCEPT message.

For cases c, d and m in subclause 5.6.1.1, upon receipt of the CONTROL PLANE SERVICE REQUEST message with Control plane service type indicating "mobile originating request", after completion of the 5GMM common procedures (if initiated) according to subclause 5.6.1.3, the AMF shall send a SERVICE ACCEPT message, except for case d when the DDX field of the Release assistance indication IE or the DDX field of the CIoT small data container IE indicates "No further uplink and no further downlink data transmission subsequent to the uplink data transmission is expected".

For case a, c and d:

a) if the CIoT small data container IE is included in the message, the AMF shall decipher the value part of the CIoT small data container IE and:

1) if the Data type field indicates "control plane user data", extract the PDU session ID and data content from the CIoT small data container IE, look up a PDU session routing context for the UE and the PDU session ID, and forward the content of the CIoT small data container IE to the SMF associated with the UE;

2) if the Data type field indicates "SMS", forward the content of the CIoT small data container IE to the SMSF associated with the UE; or

3) if the Data type field indicates "Location services message container", and if

i) length of additional information field in the CIoT small data container IE is zero, forward the value of Data type field and the content of the CIoT small data container IE to the to the location services application; or

ii) otherwise forward the value of Data type field and the content of the CIoT small data container IE to the LMF associated with the routing information that is included in the additional information field of the CIoT small data container IE; or

NOTE 1: If the AMF determines there is no pending data or signalling for the UE, the AMF provides an indication of control plane CIoT 5GS Optimisation to the LMF as specified in 3GPP TS 29.518 [20B].

b) otherwise, the AMF shall decipher the value part of NAS message container IE and:

1) if the Payload container IE is included in the CONTROL PLANE SERVICE REQUEST message and if the Payload container type IE is set to "CIoT user data container", the AMF shall look up a PDU session routing context for the UE and the PDU session ID, and forward the content of the Payload container IE to the SMF associated with the UE;

2) if the Payload container IE is included in the CONTROL PLANE SERVICE REQUEST message and if the Payload container type IE is set to "SMS", the AMF shall forward the content of the Payload container IE to the SMSF associated with the UE;

3) if the PDU session status IE is included in the CONTROL PLANE SERVICE REQUEST message or the AMF needs to perform a PDU session status synchronization, the AMF shall include a PDU session status IE in the SERVICE ACCEPT message to indicate which PDU sessions associated with the access type the SERVICE ACCEPT message is sent over are active in the AMF;

4) if the Uplink data status IE is included in the CONTROL PLANE SERVICE REQUEST message and the UE is:

i) not in NB-N1 mode; or

ii) in NB-N1 mode and the UE does not indicate a request to have user-plane resources established for a number of PDU sessions that exceeds the UE's maximum number of supported user-plane resources;

 the AMF shall:

i) indicate the SMF to re-establish the user-plane resources for the corresponding PDU sessions; and

ii) include the PDU session reactivation result IE in the SERVICE ACCEPT message to indicate the user-plane resources re-establishment result of the PDU sessions for which the UE requested to re-establish the user-plane resources;

5) if the Uplink data status IE is included in the CONTROL PLANE SERVICE REQUEST, the UE is in NB-N1 mode, and the UE indicates a request to have user-plane resources established for a number of PDU sessions that exceeds the UE's maximum number of supported user-plane resources, the AMF shall not indicate to the SMF to re-establish the user-plane resources for the corresponding PDU sessions; or

6) otherwise, if the Payload container IE is included in the message and if the Payload container type IE is set to "Location services message container", the AMF shall forward the Payload container type and the content of the Payload container IE to the LMF associated with the routing information included in the Additional information IE of the CONTROL PLANE SERVICE REQUEST message.

NOTE 2: If the AMF determines there is no pending data or signalling for the UE, the AMF provides an indication of control plane CIoT 5GS Optimisation to the LMF as specified in 3GPP TS 29.518 [20B].

For case k) in subclause 5.6.1.1, if the Uplink data status IE is included in the CONTROL PLANE SERVICE REQUEST message and the UE is:

a) not in NB-N1 mode; or

b) in NB-N1 mode and the UE does not indicate a request to have user-plane resources established for a number of PDU sessions that exceeds the UE's maximum number of supported user-plane resources,

the AMF shall:

a) indicate the SMF to re-establish the user-plane resources for the corresponding PDU sessions; and

b) include the PDU session reactivation result IE in the SERVICE ACCEPT message to indicate the user-plane resources re-establishment result of the PDU sessions for which the UE requested to re-establish the user-plane resources.

If the Allowed PDU session status IE is included in the CONTROL PLANE SERVICE REQUEST message, the AMF shall:

a) for a 5GSM message from each SMF that has indicated pending downlink signalling only, forward the received 5GSM message via 3GPP access to the UE after the SERVICE ACCEPT message is sent;

b) for each SMF that has indicated pending downlink data only:

1) notify the SMF that reactivation of the user-plane resources for the corresponding PDU session(s) associated with non-3GPP access cannot be performed if the corresponding PDU session ID(s) are not indicated in the Allowed PDU session status IE; and

2) notify the SMF that reactivation of the user-plane resources for the corresponding PDU session(s) associated with non-3GPP access can be performed if:

i) for a UE not in NB-N1 mode, the corresponding PDU session ID(s) are indicated in the Allowed PDU session status IE; or

ii) for a UE in NB-N1 mode, the corresponding PDU session ID(s) are indicated in the Allowed PDU session status IE and the resulting number of PDU sessions with established user-plane resources does not exceed the UE's maximum number of supported user-plane resources;

c) for each SMF that have indicated pending downlink signalling and data:

1) notify the SMF that reactivation of the user-plane resources for the corresponding PDU session(s) associated with non-3GPP access cannot be performed if the corresponding PDU session ID(s) are not indicated in the Allowed PDU session status IE;

2) notify the SMF that reactivation of the user-plane resources for the corresponding PDU session(s) associated with non-3GPP access can be performed if:

i) for a UE not in NB-N1 mode, the corresponding PDU session ID(s) are indicated in the Allowed PDU session status IE; or

ii) for a UE in NB-N1 mode, the corresponding PDU session ID(s) are indicated in the Allowed PDU session status IE and the resulting number of PDU sessions with established user-plane resources does not exceed the UE's maximum number of supported user-plane resources; and

3) discard the received 5GSM message for PDU session(s) associated with non-3GPP access; and

d) include the PDU session reactivation result IE in the SERVICE ACCEPT message to indicate the successfully re-established user-plane resources for the corresponding PDU sessions, if any.

If the DDX field in the CIoT small data container IE or the DDX field of the Release assistance indication IE indicates:

1) "No further uplink and no further downlink data transmission subsequent to the uplink data transmission is expected" and if there is no downlink signalling or downlink data for the UE; or

2) "Only a single downlink data transmission and no further uplink data transmission subsequent to the uplink data transmission is expected" and upon subsequent delivery of the next received downlink data transmission to the UE and if there is no additional downlink signalling or downlink data for the UE,

the AMF initiates the release of the N1 NAS signalling connection (see 3GPP TS 23.502 [9]).

If the MUSIM UE does not include the Paging restriction IE in the CONTROL PLANE SERVICE REQUEST message, the AMF shall delete any stored paging restriction for the UE and stop restricting paging.

For case m in subclause 5.6.1.1 when the MUSIM UE sets the Request type to "NAS signalling connection release" in the CONTROL PLANE SERVICE REQUEST message, the AMF shall initiate the release of the N1 NAS signalling connection after the completion of the service request procedure.

For cases o and p in subclause 5.6.1.1 when the MUSIM UE sets the Request type to "NAS signalling connection release" or to "Rejection of paging" in the UE request type IE in the CONTROL PLANE SERVICE REQUEST message and if the UE requests restriction of paging by including the Paging restriction IE, the AMF:

- if accepts the paging restriction, shall include the 5GS additional request result IE in the SERVICE ACCEPT message and set the Paging restriction decision to "paging restriction is accepted". The AMF shall store the paging restriction of the UE and enforce these restrictions in the paging procedure as described in clause 5.6.2; or

- if rejects the paging restriction, shall include the 5GS additional request result IE in the SERVICE ACCEPT message and set the Paging restriction decision to "paging restriction is rejected", and shall discard the received paging restriction. The AMF shall delete any stored paging restriction for the UE and stop restricting paging; and

the AMF shall send the SERVICE ACCEPT message and initiate the release of the N1 NAS signalling connection as follows:

- for case o in subclause 5.6.1.1, after the completion of the service request procedure;

- for case p in subclause 5.6.1.1, after the completion of the generic UE configuration update procedure that is triggered after the completion of the service request procedure.

Upon successful completion of the procedure, the UE shall reset the service request attempt counter, stop the timer T3517 and enter the state 5GMM-REGISTERED.

If the PDU session status information element is included in the CONTROL PLANE SERVICE REQUEST message, then the AMF:

a) shall perform a local release of all those PDU sessions which are not in 5GSM state PDU SESSION INACTIVE on the AMF side associated with the access type the CONTROL PLANE SERVICE REQUEST message is sent over, but are indicated by the UE as being inactive, and

b) request the SMF to perform a local release of all those PDU sessions. If any of those PDU sessions is associated with one or more MBS sessions, the SMF shall consider the UE as removed from the associated MBS sessions.

If the PDU session status information element is included in the SERVICE ACCEPT message, then the UE shall perform a local release of all those PDU sessions which are not in 5GSM state PDU SESSION INACTIVE or PDU SESSION ACTIVE PENDING on the UE side associated with the 3GPP access but are indicated by the AMF as being inactive. If a locally released PDU session is associated with one or more MBS sessions, the UE shall locally leave the associated MBS sessions.

If the user-plane resources cannot be established for a PDU session, the AMF shall include the PDU session reactivation result IE in the SERVICE ACCEPT message indicating that user-plane resources for the corresponding PDU session cannot be re-established, and:

a) if the user-plane resources cannot be established because the SMF indicated to the AMF that the UE is located out of the LADN service area (see 3GPP TS 29.502 [20A]), the AMF shall include the PDU session reactivation result error cause IE with the 5GMM cause set to #43 "LADN not available";

b) if the user-plane resources cannot be established because the SMF indicated to the AMF that only prioritized services are allowed (see 3GPP TS 29.502 [20A]), the AMF shall include the PDU session reactivation result error cause IE with the 5GMM cause set to #28 "restricted service area"; or

c) if the user-plane resources cannot be established because:

1) the SMF indicated to the AMF that the resource is not available in the UPF (see 3GPP TS 29.502 [20A]); or

2) the UE is in NB-N1 mode and the result will lead to user-plane resources established for more than two PDU sessions (see 3GPP TS 23.502 [9])

 the AMF shall include the PDU session reactivation result error cause IE with the 5GMM cause set to #92"insufficient user-plane resources for the PDU session":

NOTE 3: For a UE that is not in NB-N1 mode, it is up to UE implementation when to re-send a request for user-plane re-establishment for the associated PDU session after receiving a PDU session reactivation result error cause IE with a 5GMM cause set to #92 "insufficient user-plane resources for the PDU session".

If the PDU session reactivation result IE is included in the SERVICE ACCEPT message indicating that the user-plane resources cannot be established for a PDU session that was requested by the UE in the Allowed PDU session status IE, the UE considers the corresponding PDU session to be associated with the non-3GPP access.

For case d) in subclause 5.6.1.1, the UE shall also treat the indication from the lower layers that the RRC connection has been released as successful completion of the procedure. The UE shall reset the service request attempt counter, stop the timer T3517 and enter the state 5GMM-REGISTERED.

Upon receipt of the CONTROL PLANE SERVICE REQUEST message with uplink data:

- if the DDX field of the Release assistance indication IE or the DDX field of the CIoT small data container IE is set to "No further uplink and no further downlink data transmission subsequent to the uplink data transmission is expected" in the message;

- if the AMF decides to forward the uplink data piggybacked in the CONTROL PLANE SERVICE REQUEST message; and

- if the AMF decides to activate the congestion control for transport of user data via the control plane,

then the AMF shall send SERVICE ACCEPT message with the T3448 value IE included.

If the AMF decides to deactivate the congestion control for transport of user data via the control plane, then the AMF shall delete the stored control plane data back-off time for the UE and the AMF shall not include timer T3448 value IE in the SERVICE ACCEPT message.

If the T3448 value IE is present in the received SERVICE ACCEPT message and the value indicates that this timer is neither zero nor deactivated, the UE shall:

a) stop timer T3448 if it is running;

b) consider the transport of user data via the control plane as successful; and

c) start timer T3448 with the value provided in the T3448 value IE.

If the UE is using 5GS services with control plane CIoT 5GS optimization, the T3448 value IE is present in the SERVICE ACCEPT message and the value indicates that this timer is either zero or deactivated, the UE shall ignore the T3448 value IE and proceed as if the T3448 value IE was not present.

If the UE in 5GMM-IDLE mode initiated the service request procedure by sending a CONTROL PLANE SERVICE REQUEST message and the SERVICE ACCEPT message does not include the T3448 value IE and if timer T3448 is running, then the UE shall stop timer T3448.

For case h) in subclause 5.6.1.1,

a) the UE shall treat the indication from the lower layers when the UE has changed to S1 mode as successful completion of the procedure and stop timer T3517;

b) if a UE operating in single-registration mode has changed to S1 mode, it shall disable the N1 mode capability for 3GPP access (see subclause 4.9.2); and

c) the AMF shall not check for CAG restrictions.

If the CONTROL PLANE SERVICE REQUEST message is for emergency services fallback, the AMF triggers the emergency services fallback procedure as specified in subclause 4.13.4.2 of 3GPP TS 23.502 [9].

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

#### 5.6.3.3 Notification procedure completion

Upon reception of SERVICE REQUEST message, CONTROL PLANE SERVICE REQUEST message or REGISTRATION REQUEST message, the AMF shall stop timer T3565 and proceed service request procedure as specified in subclauses 5.6.3.1 or registration procedure for mobility and periodic registration update as specified in subclauses 5.5.1.3. If no user-plane resources of PDU session(s) need to be re-established, the AMF should notify the SMF that the UE was reachable but did not accept to re-establish the user-plane resources of PDU session(s).

When the 5GMM entity in the AMF receives an indication from the lower layer that it has received the NGAP UE context resume request message as specified in 3GPP TS 38.413 [31], the AMF shall stop timer T3565.

Upon reception of NOTIFICATION RESPONSE message over non-3GPP access, the AMF shall stop timer T3565 and should notify the SMF that the UE is unreachable.

If the NOTIFICATION RESPONSE message includes the PDU session status information element, then:

a) for single access PDU sessions, the AMF shall:

1) perform a local release of all those PDU sessions which are not in 5GSM state PDU SESSION INACTIVE on the AMF side associated with 3GPP access, but are indicated by the UE in the PDU session status information element in the NOTIFICATION RESPONSE message as being in 5GSM state PDU SESSION INACTIVE; and

2) shall request the SMF to perform a local release of all those PDU sessions associated with 3GPP access. If any of those PDU sessions is associated with one or more MBS sessions, the SMF shall consider the UE as removed from the associated MBS sessions; and

b) For MA PDU sessions, the AMF shall:

1) for MA PDU sessions having user plane resources established only on the 3GPP access in the AMF side, but are indicated by the UE in the PDU session status information element in the NOTIFICATION RESPONSE message as no user plane resources established on the 3GPP access:

i) perform a local release of all those MA PDU sessions; and

ii) request the SMF to perform a local release of all those MA PDU sessions. If the MA PDU session is associated with one or more MBS sessions, the SMF shall consider the UE as removed from the associated MBS sessions; and

2) for MA PDU sessions having user plane resources established on both accesses in the AMF side, but are indicated by the UE in the PDU session status information element in the NOTIFICATION RESPONSE message as no user plane resources established on the 3GPP access:

i) perform a local release of 3GPP access user plane resources of all those MA PDU sessions; and

ii) request the SMF to perform a local release of 3GPP access user plane resources of all those MA PDU sessions. If the MA PDU session is associated with one or more MBS sessions, the SMF shall consider the UE as removed from the associated MBS sessions.

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