**3GPP TSG-CT WG1 Meeting #127-eC1-20xxxx**

**Electronic meeting, 13-20 November 2020 *was* C1-207454**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.501** | **CR** | **2936** | **rev** | **1** | **Current version:** | **16.6.0** |  |
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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 | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | MA PDU session modification rejection during change from S1 mode to N1 mode | | | | | | | | | |
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| ***Source to WG:*** | ZTE | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ATSSS | | | | |  | ***Date:*** | | | 2020-11-16 |
|  |  | | | |  | |  | | |  |
| ***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) Rel-17 (Release 17)* | |
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| ***Reason for change:*** | | It is not specified the network and UE behavior during the procedure of rejecting the PDU modification request for MA PDU during inter-system change from S1 mode to N1 mode. | | | | | | | | |
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| ***Summary of change:*** | | If the UE requests a PDU session modification to modifiy the PDU session transferred from EPS to an MA PDU session with the Request type IE set to "MA PDU request" in the UL NAS TRANSPORT message, and the MA PDU session is not allowed due to operator policy and subscription and the SMF determines to reject the request, the SMF shall include the 5GSM cause value #33 "requested service option not subscribed" in the 5GSM cause IE of the PDU SESSION MODIFICATION REJECT message. | | | | | | | | |
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| ***Consequences if not approved:*** | | Incomplete specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.4.2.4.1, 6.4.2.4.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

\* \* \* 1st Change \* \* \* \*

##### 6.4.2.4.1 General

Upon receipt of a PDU SESSION MODIFICATION REQUEST message, if the SMF does not accepts the request to modify the PDU session, the SMF shall create a PDU SESSION MODIFICATION REJECT message.

The SMF shall set the 5GSM cause IE of the PDU SESSION MODIFICATION REJECT message to indicate the reason for rejecting the PDU session modification.

The 5GSM cause IE typically indicates one of the following SM cause values:

#26 insufficient resources;

#29 user authentication or authorization failed;

#31 request rejected, unspecified;

#32 service option not supported;

#33 requested service option not subscribed;

#35 PTI already in use;

#43 Invalid PDU session identity;

#46 out of LADN service area;

#59 unsupported 5QI value;

#67 insufficient resources for specific slice and DNN;

#69 insufficient resources for specific slice; or

#95 – 111 protocol errors.

If the UE requests a PDU session modification for an LADN when the UE is located outside of the LADN service area, the SMF shall include the 5GSM cause value #46 "out of LADN service area" in the 5GSM cause IE of the PDU SESSION MODIFICATION REJECT message.

If the Extended protocol configuration options IE of the PDU SESSION MODIFICATION REQUEST message indicates 3GPP PS data off UE status and the SMF detects the change of the 3GPP PS data off UE status, the SMF shall not include the 5GSM cause value #26 "insufficient resources", the 5GSM cause value #67 "insufficient resources for specific slice and DNN", the 5GSM cause value #69 "insufficient resources for specific slice" and the 5GSM cause value #46 "out of LADN service area" in the 5GSM cause IE of the PDU SESSION MODIFICATION REJECT message.

If the UE requests a PDU session modification to modifiy the PDU session transferred from EPS to an MA PDU session with the Request type IE set to "MA PDU request" in the UL NAS TRANSPORT message as specified in 3GPP TS 24.193 [13B], and the MA PDU session is not allowed due to operator policy and subscription and the SMF determines to reject the PDU SESSION MODIFICATION REQUEST message, the SMF shall include the 5GSM cause value #33 "requested service option not subscribed" in the 5GSM cause IE of the PDU SESSION MODIFICATION REJECT message.

NOTE: The SMF can determine to accept the PDU SESSION MODIFICATION REQUEST message even if the MA PDU session is not allowed due to operator policy and subscription. In this case, the PDU SESSION MODIFICATION REQUEST message is processed as single access PDU session and the ATSSS container IE cannot be included in the PDU SESSION MODIFICATION ACCEPT message.The network may include a Back-off timer value IE in the PDU SESSION MODIFICATION REJECT message.

If the 5GSM cause value is #26"insufficient resources", #67 "insufficient resources for specific slice and DNN", or #69 "insufficient resources for specific slice" and the PDU SESSION MODIFICATION REQUEST message was received from a UE configured for high priority access in selected PLMN or the request type provided during the PDU session establishment is set to "initial emergency request" or "existing emergency PDU session", the network shall not include a Back-off timer value IE.

The SMF shall send the PDU SESSION MODIFICATION REJECT message.

Upon receipt of a PDU SESSION MODIFICATION REJECT message and a PDU session ID, using the NAS transport procedure as specified in subclause 5.4.5, the UE shall stop timer T3581, release the allocated PTI value, and enter the state PROCEDURE TRANSACTION INACTIVE.

\* \* \* 2nd Change \* \* \* \*

##### 6.4.2.4.3 Handling of network rejection not due to congestion control

If the 5GSM cause value is different from #26 "insufficient resources", #46 "out of LADN service area", #59 "unsupported 5QI value", #67 "insufficient resources for specific slice and DNN", and #69 "insufficient resources for specific slice", and the Back-off timer value IE is included, the UE shall behave as follows: (if the UE is a UE configured for high priority access in selected PLMN, exceptions are specified in subclause 6.2.12):

a) if the timer value indicates neither zero nor deactivated and:

1) if the UE provided DNN and S-NSSAI to the network during the PDU session establishment, the UE shall start the back-off timer with the value provided in the Back-off timer value IE for the PDU session modification procedure and [PLMN, DNN, S-NSSAI] combination. The UE shall not send another PDU SESSION MODIFICATION REQUEST message with exception of those identified in subclause 6.4.2.1, for the same DNN and S-NSSAI in the current PLMN, until the back-off timer expires, the UE is switched off, the USIM is removed, or the entry in the "list of subscriber data" for the current SNPN is updated; or

2) if the UE did not provide a DNN or S-NSSAI or any of the two parameters to the network during the PDU session establishment, it shall start the back-off timer accordingly for the PDU session modification procedure and the [PLMN, DNN, no S-NSSAI], [PLMN, no DNN, S-NSSAI] or [PLMN, no DNN, no S-NSSAI] combination. Dependent on the combination, the UE shall not send another PDU SESSION MODIFICATION REQUEST message with exception of those identified in subclause 6.4.2.1, for the same [PLMN, DNN, no S-NSSAI], [PLMN, no DNN, S-NSSAI] or [PLMN, no DNN, no S-NSSAI] combination in the current PLMN, until the back-off timer expires, the UE is switched off, the USIM is removed, or the entry in the "list of subscriber data" for the current SNPN is updated;

b) if the timer value indicates that this timer is deactivated and:

1) if the UE provided DNN and S-NSSAI to the network during the PDU session establishment, the UE shall not send another PDU SESSION MODIFICATION REQUEST message with exception of those identified in subclause 6.4.2.1, for the same DNN and S-NSSAI in the current PLMN, until the UE is switched off, the USIM is removed, or the entry in the "list of subscriber data" for the current SNPN is updated; or

2) if the UE did not provide a DNN or S-NSSAI or any of the two parameters to the network during the PDU session establishment, the UE shall not send another PDU SESSION MODIFICATION REQUEST message with exception of those identified in subclause 6.4.2.1, for the same [PLMN, DNN, no S-NSSAI], [PLMN, no DNN, S-NSSAI] or [PLMN, no DNN, no S-NSSAI] combination in the current PLMN, until the UE is switched off, the USIM is removed, or the entry in the "list of subscriber data" for the current SNPN is updated; and

c) if the timer value indicates zero, the UE may send another PDU SESSION MODIFICATION REQUEST message for the same combination of [PLMN, DNN, S-NSSAI], [PLMN, DNN, no S-NSSAI], [PLMN, no DNN, S-NSSAI], or [PLMN, no DNN, no S-NSSAI] in the current PLMN.

If the Back-off timer value IE is not included, then the UE shall ignore the Re-attempt indicator IE provided by the network in the PDU SESSION MODIFICATION REJECT message, if any.

a) Additionally, if the 5GSM cause value is #32 "service option not supported", or #33 "requested service option not subscribed", then:

1) the UE not operating in SNPN access mode shall proceed as follows:

i) if the UE is registered in the HPLMN or in a PLMN that is within the EHPLMN list, the UE shall behave as described above in the present subclause using the configured SM Retry Timer value as specified in 3GPP TS 24.368 [17] or in USIM file NASCONFIG as specified in 3GPP TS 31.102 [22], if available, as back-off timer value; and

ii) otherwise, if the UE is not registered in its HPLMN or in a PLMN that is within the EHPLMN list, or if the SM Retry Timer value is not configured, the UE shall behave as described above in the present subclause, using the default value of 12 minutes for the back-off timer; or

2) the UE operating in SNPN access mode shall proceed as follows:

i) if:

A) the SM Retry Timer value for the current SNPN as specified in 3GPP TS 24.368 [17] is available; or

B) the SM Retry Timer value in USIM file NASCONFIG as specified in 3GPP TS 31.102 [22] is available and the UE used the USIM for registration to the current SNPN;

then the UE shall behave as described above in the present subclause using the configured SM Retry Timer value as back-off timer value; or

NOTE 0: The way to choose one of the configured SM Retry Timer values for back-off timer value is up to UE implementation if both conditions in bullets A) and B) above are satisfied.

ii) otherwise, the UE shall behave as described above in the present subclause, using the default value of 12 minutes for the back-off timer.

b) For 5GSM cause values different from #32 "service option not supported", or #33 "requested service option not subscribed", the UE behaviour regarding the start of a back-off timer is unspecified.

The UE shall not stop any back-off timer:

a) upon a PLMN change;

b) upon an inter-system change; or

c) upon registration over another access type.

If the network indicates that a back-off timer for the PDU session modification procedure is deactivated, then it remains deactivated:

a) upon a PLMN change;

b) upon an inter-system change; or

c) upon registration over another access type.

NOTE 1: This means the back-off timer can still be running or be deactivated for the given 5GSM procedure when the UE returns to the PLMN or when it performs inter-system change back from S1 mode to N1 mode. Thus the UE can still be prevented from sending another PDU SESSION MODIFICATION REQUEST message for the combination of [PLMN, DNN, S-NSSAI], [PLMN, DNN, no S-NSSAI], [PLMN, no DNN, S-NSSAI], or [PLMN, no DNN, no S-NSSAI] in the PLMN.

If the back-off timer is started upon receipt of a PDU SESSION MODIFICATION REJECT (i.e. the timer value was provided by the network, a configured value is available or the default value is used as explained above) or the back-off timer is deactivated, the UE behaves as follows:

a) after a PLMN change the UE may send a PDU SESSION MODIFICATION REQUEST message for the combination of [new PLMN, DNN, S-NSSAI], [new PLMN, DNN, no S-NSSAI], [new PLMN, no DNN, S-NSSAI], or [new PLMN, no DNN, no S-NSSAI] in the new PLMN, if the back-off timer is not running and is not deactivated for the PDU session modification procedure and the combination of [new PLMN, DNN, S-NSSAI], [new PLMN, DNN, no S-NSSAI], [new PLMN, no DNN, S-NSSAI], or [new PLMN, no DNN, no S-NSSAI];

Furthermore, as an implementation option, for the 5GSM cause value #32 "service option not supported" or #33 "requested service option not subscribed", if the network does not include a Re-attempt indicator IE, the UE may decide not to automatically send another PDU SESSION MODIFICATION REQUEST message for the same combination of [PLMN, DNN, S-NSSAI], [PLMN, DNN, no S-NSSAI], [PLMN, no DNN, S-NSSAI], or [PLMN, no DNN, no S-NSSAI], if the UE is registered to a new PLMN which is in the list of equivalent PLMNs.

b) if the network does not include the Re-attempt indicator IE to indicate whether re-attempt in S1 mode is allowed, or the UE ignores the Re-attempt indicator IE, e.g. because the Back-off timer value IE is not included, then:

1) if the UE is registered in its HPLMN or in a PLMN that is within the EHPLMN list and the back-off timer is running for the combination of [PLMN, DNN, S-NSSAI] or [PLMN DNN, no S-NSSAI], the UE shall apply the configured value SM\_RetryAtRATChange value as specified in 3GPP TS 24.368 [17] or in USIM file NASCONFIG as specified in 3GPP TS 31.102 [22], if available, to determine whether the UE may attempt an EPS bearer resource allocation procedure or an EPS bearer resource modification procedure for the same [PLMN, DNN] combination in S1 mode; and

2) if the UE is not registered in its HPLMN or in a PLMN that is within the EHPLMN list, or if the NAS configuration MO as specified in 3GPP TS 24.368 [17] is not available and the value for inter-system change is not configured in the USIM file NASCONFIG, then the UE behaviour regarding an EPS bearer resource allocation procedure or an EPS bearer resource modification procedure for the same [PLMN, DNN] combination in S1 mode is unspecified; and

c) if the network includes the Re-attempt indicator IE indicating that re-attempt in an equivalent PLMN is not allowed, then depending on the timer value received in the Back-off timer value IE, for each combination of a PLMN from the equivalent PLMN list and the respective [DNN, S-NSSAI], [DNN, no S-NSSAI], [no DNN, S-NSSAI], or [no DNN, no S-NSSAI] combination, the UE shall start a back-off timer for the PDU session modification procedure with the value provided by the network, or deactivate the respective back-off timer as follows:

1) if the Re-attempt indicator IE additionally indicates that re-attempt in S1 mode is allowed, the UE shall start or deactivate the back-off timer for N1 mode only; and

2) otherwise, the UE shall start or deactivate the back-off timer for S1 and N1 mode.

If the back-off timer for a [PLMN, DNN] or [PLMN, no DNN] combination was started or deactivated in S1 mode upon receipt of BEARER RESOURCE ALLOCATION REJECT message or BEARER RESOURCE MODIFICATION REJECT message (see 3GPP TS 24.301 [15]) and the network indicated that re-attempt in N1 mode is allowed, then this back-off timer does not prevent the UE from sending a PDU SESSION MODIFICATION REQUEST message in this PLMN for the same DNN after inter-system change to N1 mode. If the network indicated that re-attempt in N1 mode is not allowed, the UE shall not send any PDU SESSION MODIFICATION REQUEST message with exception of those identified in subclause 6.4.2.1, in this PLMN for the same DNN in combination with any S-NSSAI or without S-NSSAI, after inter-system change to N1 mode until the timer expires, the UE is switched off or the USIM is removed.

NOTE 2: The back-off timer is used to describe a logical model of the required UE behaviour. This model does not imply any specific implementation, e.g. as a timer or timestamp.

NOTE 3: Reference to back-off timer in this section can either refer to use of timer T3396 or to use of a different packet system specific timer within the UE. Whether the UE uses T3396 as a back-off timer or it uses different packet system specific timers as back-off timers is left up to UE implementation.

If the 5GSM cause value is #46 "out of LADN service area", the UE shall ignore the Back-off timer value IE and Re-attempt indicator IE provided by the network, if any. The UE shall not send another PDU SESSION MODIFICATION REQUEST message or another PDU SESSION ESTABLISHMENT REQUEST message for the LADN DNN provided by the UE during the PDU session establishment procedure until the LADN information for the specific LADN DNN is updated as described in subclause 5.4.4 and subclause 5.5.1. The UE shall not indicate the PDU session(s) for the LADN DNN provided by the UE during the PDU session establishment procedure in the Uplink data status IE included in the SERVICE REQUEST message until the LADN information for the specific LADN DNN is updated as described in subclause 5.4.4 and subclause 5.5.1.

If the 5GSM cause value is #59 "unsupported 5QI value", the UE shall ignore the Back-off timer value IE and Re-attempt indicator IE provided by the network, if any. The UE should pass the corresponding error cause to the upper layers.

NOTE 4: How to solve the issue of unsupported 5QI value in the upper layers is UE implementation specific.

If the 5GSM cause value is #33 "requested service option not subscribed" upon sending PDU SESSION MODIFICATION REQUEST to convert PDU session transferred from EPS to MA PDU session as specified in 3GPP TS 24.193 [13B], the UE shall ignore the Back-off timer value IE and Re-attempt indicator IE provided by the network, if any. The UE shall not send another PDU SESSION MODIFICATION REQUEST to convert PDU session transferred from EPS to MA PDU session as specified in 3GPP TS 24.193 [13B].

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