**3GPP TSG-CT WG1 Meeting #123-eC1-20xxxx**

**Electronic meeting, 16-24 April 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.501** | **CR** | **2205** | **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 | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Addition of 5GSM cause #59 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | MediaTek Inc. | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GProtoc16 | | | | |  | ***Date:*** | | | 2020-04-22 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | ESM cause #59 “unsupported QCI value” was introduced in EPS which is used in the field. Upon receipt of ESM cause #59, the UE behaviour is unspecified and up to the UE implementation (e.g., indicating ERROR: 181 (unsupported QCI value) by using AT command to the upper layer, and the upper layer solves the issue).  Since 5QI (the same concept as QCI) is used in 5GS, and the UE can request a QoS flow with a specific 5QI, we believe the similar error case still happens in 5GS and hence 5GSM cause #59 is required in 5GS as well. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 5GSM cause #59 “Unsupported 5QI value” is introduced.  The network can use 5GSM cause #59 “Unsupported 5QI value” in the UE-requested PDU session modification procedure. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | If the UE requests an unsupported 5QI value, the corresponding 5GSM cause is not defined. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.4.2.4.1, 6.4.2.4.3, 9.11.4.2, B.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

\*\*\*\*\* Next 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.

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.

\*\*\*\*\* Next 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 or the USIM is removed; 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 or the USIM is removed;

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 or the USIM is removed; 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 or the USIM is removed; 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", the UE shall proceed as follows:

1) 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

2) 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.

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.

\*\*\*\*\* Next change \*\*\*\*\*

#### 9.11.4.2 5GSM cause

The purpose of the 5GSM cause information element is to indicate the reason why a 5GSM request is rejected.

The 5GSM cause information element is coded as shown in figure 9.11.4.2.1 and table 9.11.4.2.1.

The 5GSM cause is a type 3 information element with 2 octets length.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| 5GSM cause IEI | | | | | | | | octet 1 |
| Cause value | | | | | | | | octet 2 |

Figure 9.11.4.2.1: 5GSM cause information element

Table 9.11.4.2.1: 5GSM cause information element

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cause value (octet 2) | | | | | | | | | | | | | | | | | | | | |
| Bits | | | | | | | | | | | | | | | | | | | | |
| 8 | | 7 | | 6 | | 5 | | 4 | | 3 | | 2 | | 1 | |  | |  | | |
| 0 | | 0 | | 0 | | 0 | | 1 | | 0 | | 0 | | 0 | |  | | Operator determined barring | | |
| 0 | | 0 | | 0 | | 1 | | 1 | | 0 | | 1 | | 0 | |  | | Insufficient resources | | |
| 0 | | 0 | | 0 | | 1 | | 1 | | 0 | | 1 | | 1 | |  | | Missing or unknown DNN | | |
| 0 | | 0 | | 0 | | 1 | | 1 | | 1 | | 0 | | 0 | |  | | Unknown PDU session type | | |
| 0 | | 0 | | 0 | | 1 | | 1 | | 1 | | 0 | | 1 | |  | | User authentication or authorization failed | | |
| 0 | | 0 | | 0 | | 1 | | 1 | | 1 | | 1 | | 1 | |  | | Request rejected, unspecified | | |
| 0 | | 0 | | 1 | | 0 | | 0 | | 0 | | 0 | | 0 | |  | | Service option not supported | | |
| 0 | | 0 | | 1 | | 0 | | 0 | | 0 | | 0 | | 1 | |  | | Requested service option not subscribed | | |
| 0 | | 0 | | 1 | | 0 | | 0 | | 0 | | 1 | | 0 | |  | | Service option temporarily out of order | | |
| 0 | | 0 | | 1 | | 0 | | 0 | | 0 | | 1 | | 1 | |  | | PTI already in use | | |
| 0 | | 0 | | 1 | | 0 | | 0 | | 1 | | 0 | | 0 | |  | | Regular deactivation | | |
| 0 | | 0 | | 1 | | 0 | | 0 | | 1 | | 1 | | 0 | |  | | Network failure | | |
| 0 | | 0 | | 1 | | 0 | | 0 | | 1 | | 1 | | 1 | |  | | Reactivation requested | | |
| 0 | | 0 | | 1 | | 0 | | 1 | | 0 | | 0 | | 1 | |  | | Semantic error in the TFT operation | | |
| 0 | | 0 | | 1 | | 0 | | 1 | | 0 | | 1 | | 0 | |  | | Syntactical error in the TFT operation | | |
| 0 | | 0 | | 1 | | 0 | | 1 | | 0 | | 1 | | 1 | |  | | Invalid PDU session identity | | |
| 0 | | 0 | | 1 | | 0 | | 1 | | 1 | | 0 | | 0 | |  | | Semantic errors in packet filter(s) | | |
| 0 | | 0 | | 1 | | 0 | | 1 | | 1 | | 0 | | 1 | |  | | Syntactical error in packet filter(s) | | |
| 0 | | 0 | | 1 | | 0 | | 1 | | 1 | | 1 | | 0 | |  | | Out of LADN service area | | |
| 0 | | 0 | | 1 | | 0 | | 1 | | 1 | | 1 | | 1 | |  | | PTI mismatch | | |
| 0 | | 0 | | 1 | | 1 | | 0 | | 0 | | 1 | | 0 | |  | | PDU session type IPv4 only allowed | | |
| 0 | | 0 | | 1 | | 1 | | 0 | | 0 | | 1 | | 1 | |  | | PDU session type IPv6 only allowed | | |
| 0 | | 0 | | 1 | | 1 | | 0 | | 1 | | 1 | | 0 | |  | | PDU session does not exist | | |
| 0 | | | 0 | | 1 | | 1 | | 1 | | 0 | | 0 | | 1 | |  | | PDU session type IPv4v6 only allowed | |
| 0 | | | 0 | | 1 | | 1 | | 1 | | 0 | | 1 | | 0 | |  | | PDU session type Unstructured only allowed | |
| 0 | | | 0 | | 1 | | 1 | | 1 | | 0 | | 1 | | 1 | |  | | Unsupported 5QI value | |
| 0 | | | 0 | | 1 | | 1 | | 1 | | 1 | | 0 | | 1 | |  | | PDU session type Ethernet only allowed | |
| 0 | | 1 | | 0 | | 0 | | 0 | | 0 | | 1 | | 1 | |  | | Insufficient resources for specific slice and DNN | | |
| 0 | | 1 | | 0 | | 0 | | 0 | | 1 | | 0 | | 0 | |  | | Not supported SSC mode | | |
| 0 | | 1 | | 0 | | 0 | | 0 | | 1 | | 0 | | 1 | |  | | Insufficient resources for specific slice | | |
| 0 | | 1 | | 0 | | 0 | | 0 | | 1 | | 1 | | 0 | |  | | Missing or unknown DNN in a slice | | |
| 0 | | 1 | | 0 | | 1 | | 0 | | 0 | | 0 | | 1 | |  | | Invalid PTI value | | |
| 0 | | 1 | | 0 | | 1 | | 0 | | 0 | | 1 | | 0 | |  | | Maximum data rate per UE for user-plane integrity protection is too low | | |
| 0 | | 1 | | 0 | | 1 | | 0 | | 0 | | 1 | | 1 | |  | | Semantic error in the QoS operation | | |
| 0 | | 1 | | 0 | | 1 | | 0 | | 1 | | 0 | | 0 | |  | | Syntactical error in the QoS operation | | |
| 0 | | 1 | | 0 | | 1 | | 0 | | 1 | | 0 | | 1 | |  | | Invalid mapped EPS bearer identity | | |
| 0 | | 1 | | 0 | | 1 | | 1 | | 1 | | 1 | | 1 | |  | | Semantically incorrect message | | |
| 0 | | 1 | | 1 | | 0 | | 0 | | 0 | | 0 | | 0 | |  | | Invalid mandatory information | | |
| 0 | | 1 | | 1 | | 0 | | 0 | | 0 | | 0 | | 1 | |  | | Message type non-existent or not implemented | | |
| 0 | | 1 | | 1 | | 0 | | 0 | | 0 | | 1 | | 0 | |  | | Message type not compatible with the protocol state | | |
| 0 | | 1 | | 1 | | 0 | | 0 | | 0 | | 1 | | 1 | |  | | Information element non-existent or not implemented | | |
| 0 | | 1 | | 1 | | 0 | | 0 | | 1 | | 0 | | 0 | |  | | Conditional IE error | | |
| 0 | | 1 | | 1 | | 0 | | 0 | | 1 | | 0 | | 1 | |  | | Message not compatible with the protocol state | | |
| 0 | | 1 | | 1 | | 0 | | 1 | | 1 | | 1 | | 1 | |  | | Protocol error, unspecified | | |
|  | |  | |  | |  | |  | |  | |  | |  | |  | |  | | |
| Any other value received by the UE shall be treated as 0010 0010, "service option temporarily out of order". Any other value received by the network shall be treated as 0110 1111, "protocol error, unspecified". | | | | | | | | | | | | | | | | | | | | |

\*\*\*\*\* Next change \*\*\*\*\*

## B.1 Causes related to nature of request

Cause #8 – Operator Determined Barring

This 5GSM cause is used by the network to indicate that the requested service was rejected by the SMF due to Operator Determined Barring.

Cause #26 – Insufficient resources

This 5GSM cause is used by the UE or by the network to indicate that the requested service cannot be provided due to insufficient resources.

Cause #27 – Missing or unknown DNN

This 5GSM cause is used by the network to indicate that the requested service was rejected by the external DN because the DNN was not included although required or if the DNN could not be resolved.

Cause #28 – Unknown PDU session type

This 5GSM cause is used by the network to indicate that the requested service was rejected by the external DN because the requested PDU session type could not be recognised or is not allowed.

Cause #29 – User authentication or authorization failed

This 5GSM cause is used by the network to indicate that the requested service was rejected by the external DN due to a failed user authentication, revoked by the external DN, or rejected by 5GCN due to a failed user authentication or authorization.

Cause #31 – Request rejected, unspecified

This 5GSM cause is used by the network or by the UE to indicate that the requested service or operation or the request for a resource was rejected due to unspecified reasons.

Cause #32 – Service option not supported

This 5GSM cause is used by the network when the UE requests a service which is not supported by the PLMN.

Cause #33 – Requested service option not subscribed

This 5GSM cause is sent when the UE requests a service option for which it has no subscription.

Cause #35 – PTI already in use

This 5GSM cause is used by the network to indicate that the PTI included by the UE is already in use by another active UE requested procedure for this UE.

Cause #36 – Regular deactivation

This 5GSM cause is used to indicate a regular UE or network initiated release of PDU session resources.

Cause #38 – Network failure

This 5GSM cause is used by the network to indicate that the requested service was rejected due to an error situation in the network.

Cause #39 – Reactivation requested

This 5GSM cause is used by the network to request a PDU session reactivation.

Cause #41 – Semantic error in the TFT operation

This 5GSM cause is used by the UE to indicate a semantic error in the TFT operation included in the request.

Cause #42 – Syntactical error in the TFT operation

This 5GSM cause is used by the UE to indicate a syntactical error in the TFT operation included in the request.

Cause #43 –Invalid PDU session identity

This 5GSM cause is used by the network or the UE to indicate that the PDU session identity value provided to it is not a valid value or the PDU session identified by the PDU session identity IE in the request or the command is not active.

Cause #44 – Semantic errors in packet filter(s)

This 5GSM cause is used by the network or the UE to indicate that the requested service was rejected due to one or more semantic errors in packet filter(s) of the QoS rule included in the request.

Cause #45 – Syntactical error in packet filter(s)

This 5GSM cause is used by the network or the UE to indicate that the requested service was rejected due to one or more syntactical errors in packet filter(s) of the QoS rule included in the request.

Cause #46 –Out of LADN service area

This 5GSM cause is used by the network to indicate the UE is out of the LADN service area.

Cause #47 –PTI mismatch

This 5GSM cause is used by the network or UE to indicate that the PTI provided to it does not match any PTI in use.

Cause #50 – PDU session type IPv4 only allowed

This 5GSM cause is used by the network to indicate that only PDU session type IPv4 is allowed for the requested IP connectivity.

Cause #51 – PDU session type IPv6 only allowed

This 5GSM cause is used by the network to indicate that only PDU session type IPv6 is allowed for the requested IP connectivity.

Cause #54 –PDU session does not exist

This 5GSM cause is used by the network to indicate that the network does not have any information about the PDU session which is requested by the UE to transfer between 3GPP access and non-3GPP access or from the EPS to the 5GS.

Cause #57 – PDU session type IPv4v6 only allowed

This 5GSM cause is used by the network to indicate that only PDU session types IPv4, IPv6 or IPv4v6 are allowed for the requested IP connectivity.

Cause #58 – PDU session type Unstructured only allowed

This 5GSM cause is used by the network to indicate that only PDU session type Unstructured is allowed for the requested DN connectivity.

Cause #59 – Unsupported 5QI value

This 5GSM cause is used by the network if the 5QI indicated in the UE request cannot be supported.

Cause #61 – PDU session type Ethernet only allowed

This 5GSM cause is used by the network to indicate that only PDU session type Ethernet is allowed for the requested DN connectivity.

Cause #67 – Insufficient resources for specific slice and DNN

This 5GSM cause is by the network to indicate that the requested service cannot be provided due to insufficient resources for specific slice and DNN.

Cause #68 – Not supported SSC mode

This 5GSM cause is used by the network to indicate that the requested SSC mode is not supported.

Cause #69 –Insufficient resources for specific slice

This 5GSM cause is used by the network to indicate that the requested service cannot be provided due to insufficient resources for specific slice.

Cause #70 – Missing or unknown DNN in a slice

This 5GSM cause is used by the network to indicate that the requested service was rejected by the external DN because the DNN was not included although required or if the DNN could not be resolved, in the slice.

Cause #81 – Invalid PTI value

This 5GSM cause is used by the network or UE to indicate that the PTI provided to it is invalid for the specific 5GSM message.

Cause #82 – Maximum data rate per UE for user-plane integrity protection is too low

This 5GSM cause is used by the network to indicate that the requested service cannot be provided because the maximum data rate per UE for user-plane integrity protection is too low.

Cause #83 – Semantic error in the QoS operation

This 5GSM cause is used by the network or the UE to indicate that the requested service was rejected due to a semantic error in the QoS operation included in the request.

Cause #84 – Syntactical error in the QoS operation

This 5GSM cause is used by the network or the UE to indicate that the requested service was rejected due to a syntactical error in the QoS operation included in the request.

Cause #85 – Invalid mapped EPS bearer identity

This 5GSM cause is used by the network or the UE to indicate that the mapped EPS bearer identity value provided to it is not a valid value or the mapped EPS bearer identified by the mapped EPS bearer identity does not exist.