**3GPP TSG-CT WG1 Meeting #131-eC1-215034**

**E-meeting, 19-27 August 2021 (Revision of C1-214437)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.301** | **CR** | **3570** | **rev** | **1** | **Current version:** | **17.3.0** |  |
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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:*** | Correction on APN based congestion control | | | | | | | | | |
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| ***Source to WG:*** | OPPO | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | SAES17 | | | | |  | ***Date:*** | | | 2021-7-5 |
|  |  | | | |  | |  | | |  |
| ***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 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | In clause 6.5.4.4.1, there is the following description:  The network shall not include the ESM cause value #26 "insufficient resources" in the BEARER RESOURCE MODIFICATION REJECT message due to APN based congestion control being active.  However, the above is wrong since #26 should be sent to UE under APN based congestion control. | | | | | | | | |
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| ***Summary of change:*** | | Remove "not" to allow #26 is sent to UE due to APN based congestion control. | | | | | | | | |
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| ***Consequences if not approved:*** | | #26 is not sent to UE due to APN based congestion control. | | | | | | | | |
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| ***Clauses affected:*** | | 6.5.4.4.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

##### 6.5.4.4.1 General

If the bearer resource modification requested cannot be accepted by the network, the MME shall send a BEARER RESOURCE MODIFICATION REJECT message to the UE. The message shall contain the PTI and an ESM cause value indicating the reason for rejecting the UE requested bearer resource modification.

The ESM cause value typically indicates one of the following:

#26: insufficient resources;

#30: request rejected by Serving GW or PDN GW;

#31: request rejected, unspecified;

#32: service option not supported;

#33: requested service option not subscribed;

#34: service option temporarily out of order;

#35: PTI already in use;

#37: EPS QoS not accepted;

#41: semantic error in the TFT operation;

#42: syntactical error in the TFT operation;

#43: invalid EPS bearer identity;

#44: semantic error(s) in packet filter(s);

#45: syntactical error(s) in packet filter(s);

#56: collision with network initiated request;

#59: unsupported QCI value;

#60: bearer handling not supported; or

#95 – 111: protocol errors.

If the bearer resource modification requested is for an established LIPA PDN connection or SIPTO at the local network PDN connection, then the network shall reply with a BEARER RESOURCE MODIFICATION REJECT message with ESM cause #60 "bearer handling not supported".

If the requested new TFT is not available, then the BEARER RESOURCE MODIFICATION REJECT message shall be sent.

The TFT in the request message is checked by the network for different types of TFT IE errors as follows:

a) Semantic errors in TFT operations:

1) When the *TFT operation* is an operation other than "Replace packet filters in existing TFT", "Add packet filters to existing TFT", "Delete packet filters from existing TFT" or "No TFT operation".

2) When the *TFT operation* is "Replace packet filters in existing TFT", "Add packet filters to existing TFT" or "Delete packet filters from existing TFT", the EPS bearer context being modified is the default EPS bearer content and there is no TFT for the default EPS bearer context.

3) *TFT operation* = "Delete packet filters from existing TFT" when it would render the TFT empty.

In case 1 the network shall reject the modification request with ESM cause #41 "semantic error in the TFT operation".

In case 2, if the TFT operation is "Delete packet filters from existing TFT", the network shall further process the new request and, if no error according to items b, c, and d was detected, shall perform an EPS bearer context modification procedure including the value of EPS bearer identity for packet filter IE in the EPS bearer identity IE and a TFT IE with *TFT operation* = "Delete existing TFT" in the MODIFY EPS BEARER CONTEXT REQUEST message.

In case 2, if the TFT operation is "Replace packet filters in existing TFT" or "Add packet filters to existing TFT", the network shall process the new request as a request with TFT operation = "Create a new TFT".

In case 3, if the packet filters belong to a dedicated EPS bearer context, the network shall process the new deletion request and, if no error according to items b, c, and d was detected, delete the existing TFT. After successful deletion of the TFT, the network shall perform an EPS bearer context deactivation request procedure to deactivate the dedicated EPS bearer context between the UE and the network.

In case 3, if the packet filters belong to the default EPS bearer context, the network shall process the new deletion request and if no error according to items b, c, and d was detected then perform an EPS bearer context modification procedure to remove the existing TFT of the default EPS bearer context, this corresponds to using match-all packet filter for the default EPS bearer context.

b) Syntactical errors in TFT operations:

1) When the *TFT operation* = "Replace packet filters in existing TFT", "Add packet filters to existing TFT" or "Delete packet filters from existing TFT", and the packet filter list in the TFT IE is empty.

2) *TFT operation* = "No TFT operation" with a non-empty packet filter list in the TFT IE.

3) *TFT operation* = "Replace packet filters in existing TFT" when the packet filter to be replaced does not exist in the original TFT.

4) *TFT operation* = "Delete packet filters from existing TFT" when the packet filter to be deleted does not exist in the original TFT.

5)Void

6) When there are other types of syntactical errors in the coding of the TFT IE, such as a mismatch between the number of packet filters subfield, and the number of packet filters in the packet filter list.

7) *TFT operation* = "No TFT operation" with an empty parameters list.

In case 3 the network shall not diagnose an error, shall further process the replace request and, if no error according to items c and d was detected, shall perform an EPS bearer context modification procedure using *TFT operation* = "Add packet filters to existing TFT" to include the packet filters received to the existing TFT.

In case 4 the network shall not diagnose an error, shall further process the deletion request and, if no error according to items c and d was detected, shall perform an EPS bearer context modification procedure including the value of EPS bearer identity for packet filter IE in the EPS bearer identity IE and a TFT IE with *TFT operation* = "Delete packet filters from existing TFT" and the received packet filter identifier(s) in the MODIFY EPS BEARER CONTEXT REQUEST message.

Otherwise the network shall reject the modification request with ESM cause #42 "syntactical error in the TFT operation".

c) Semantic errors in packet filters:

1) When a packet filter consists of conflicting packet filter components which would render the packet filter ineffective, i.e. no IP packet will ever fit this packet filter. How the network determines a semantic error in a packet filter is outside the scope of the present document.

2) When the resulting TFT, which is assigned to a dedicated EPS bearer context, does not contain any packet filter applicable for the uplink direction.

The network shall reject the modification request with ESM cause #44 "semantic errors in packet filter(s)".

d) Syntactical errors in packet filters:

1) When the *TFT operation* = "Replace packet filters in existing TFT" or "Add packet filters to existing TFT", and two or more packet filters in the resultant TFT would have identical packet filter identifiers.

2) When the *TFT operation* = "Replace packet filters in existing TFT" or "Add packet filters to existing TFT", and two or more packet filters in all TFTs associated with the PDN connection would have identical packet filter precedence values.

3) When there are other types of syntactical errors in the coding of packet filters, such as the use of a reserved value for a packet filter component identifier.

In case 2, if the old packet filters do not belong to the default EPS bearer context, the network shall not diagnose an error, shall further process the new request and, if it was processed successfully, shall delete the old packet filters which have identical filter precedence values. Furthermore, the network shall perform an EPS bearer context deactivation procedure to deactivate the dedicated EPS bearer context(s) for which it has deleted the packet filters.

In case 2, if one or more old packet filters belong to the default EPS bearer context, the network shall release the relevant PDN connection using the EPS bearer context deactivation procedure. If the relevant PDN connection is the last one and EMM-REGISTERED without PDN connection is not supported by the UE or the MME, the network shall detach the UE using detach type "re-attach required".

Otherwise the network shall reject the modification request with ESM cause #45 "syntactical errors in packet filter(s)".

The network may include a Back-off timer value IE in the BEARER RESOURCE MODIFICATION REJECT message.

The network shall include the ESM cause value #26 "insufficient resources" in the BEARER RESOURCE MODIFICATION REJECT message due to APN based congestion control being active except the bearer resource modification procedure is initiated to release of bearer resources for the respective APN or to indicate change of the 3GPP PS data off UE status.

If the Back-off timer value IE is included and the ESM cause value is not #26 "insufficient resources", the network may include the Re-attempt indicator IE to indicate:

- whether the UE is allowed to attempt a PDP context modification procedure in the PLMN for the same APN in A/Gb or Iu mode or a PDU session modification procedure in the PLMN for the same APN in N1 mode; and

- whether another attempt in A/Gb and Iu mode, in S1 mode or in N1 mode is allowed in an equivalent PLMN.

Upon receipt of a BEARER RESOURCE MODIFICATION REJECT message, the UE shall stop the timer T3481, release the traffic flow aggregate description associated to the PTI value, and enter the state PROCEDURE TRANSACTION INACTIVE. If the ESM cause included in the BEARER RESOURCE MODIFICATION REJECT message is #43 "invalid EPS bearer identity", the UE locally deactivates the EPS bearer context(s) without peer-to-peer ESM signalling.