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

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

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.301** | **CR** | **3372** | **rev** | **1** | **Current version:** | **16.4.0** |  |
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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 |  |

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| ***Title:*** | Error handling of precedence value conflict | | | | | | | | | |
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| ***Source to WG:*** | MediaTek Inc. | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | SAES16 | | | | |  | ***Date:*** | | | 2020-04-17 |
|  |  | | | |  | |  | | |  |
| ***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)* | |
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| ***Reason for change:*** | | In the EPS bearer context modification procedure, if there’s two or more packet filters among all TFTs associated with this PDN connection have identical packet filter precedence values (assume the old PF belongs to a dedicated EPS bearer context), the UE shall:   1. delete the old packet filters which have identical filter precedence values; and 2. perform a UE requested bearer resource modification request procedure to deactivate the corresponding dedicated EPS bearer context.   However, if the corresponding dedicated EPS bearer still has a valid PF applicable for UL direction, it makes no sense to deactivate an EPS bearer context which is currently in use. The network may also reject the request for deactivating an dedicated EPS bearer context which is current in use. | | | | | | | | |
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| ***Summary of change:*** | | When there’s precedence value conflict error and the old PF belongs to a dedicated EPS bearer, the UE shall delete the old PF with the same precedence value, and then perform a UE requested bearer resource modification procedure to delete the corresponding old packet filters. | | | | | | | | |
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| ***Consequences if not approved:*** | | A dedicated EPS bearer context currently in use is enforced to be deactivated.  Singling overhead is incurred when the UE requested to deactivate the dedicated EPS bearer but rejected by the network. | | | | | | | | |
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| ***Clauses affected:*** | | 6.4.3.4 | | | | | | | | |
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|  | | **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 \*\*\*\*\*

#### 6.4.3.4 EPS bearer context modification not accepted by the UE

Upon receipt of the MODIFY EPS BEARER CONTEXT REQUEST message, the UE may reject the request from the MME by sending a MODIFY EPS BEARER CONTEXT REJECT message to the MME. The message shall include the EPS bearer identity and an ESM cause value indicating the reason for rejecting the EPS bearer context modification request.

The MODIFY EPS BEARER CONTEXT REJECT message contains an ESM cause that typically indicates one of the following ESM cause values:

#26: insufficient resources;

#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); or

#95 – 111: protocol errors.

The UE shall check the TFT in the request message for different types of TFT IE errors as follows:

a) Semantic errors in TFT operations:

1) *TFT operation* = "Create a new TFT" when there is already an existing TFT for the EPS bearer context.

2) When the *TFT operation* is an operation other than "Create a new 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.

4) *TFT operation* = "Delete existing TFT" for a dedicated EPS bearer context.

In case 4 the UE shall reject the modification request with ESM cause #41 "semantic error in the TFT operation".

In the other cases the UE shall not diagnose an error and perform the following actions to resolve the inconsistency:

In case 1 the UE shall further process the new activation request to create a new TFT and, if it was processed successfully, delete the old TFT.

In case 2 the UE shall:

- process the new request and if the TFT operation is "Delete existing TFT" or "Delete packet filters from existing TFT", and if no error according to items b, c, and d was detected, consider the TFT as successfully deleted;

- process the new request as an activation request, if the TFT operation is "Add packet filters in existing TFT" or "Replace packet filters in existing TFT".

In case 3, if the packet filters belong to a dedicated EPS bearer context, the UE shall process the new deletion request and, if no error according to items b, c, and d was detected, the UE shall reject the modification request with ESM cause #41 "semantic error in the TFT operation".

In case 3, if the packet filters belong to the default EPS bearer context, the UE shall process the new deletion request and if no error according to items b, c, and d was detected then delete the existing TFT, 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* = "Create a new TFT", "Add packet filters in existing TFT", "Replace packet filters in existing TFT" or "Delete packet filters from existing TFT" and the packet filter list in the TFT IE is empty.

2) *TFT operation* = "Delete existing TFT" or "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) *TFT operation* = "Delete packet filters from existing TFT" with a packet filter list also including packet filters in addition to the packet filter identifiers.

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.

In case 3 the UE shall not diagnose an error, further process the replace request and, if no error according to items c and d was detected, include the packet filters received to the existing TFT.

In case 4 the UE shall not diagnose an error, further process the deletion request and, if no error according to items c and d was detected, consider the respective packet filter as successfully deleted.

Otherwise the UE 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 UE 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 among the packet filters created on request from the network.

The UE 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* = "Create a new TFT", "Add packet filters to existing TFT", or "Replace packet filters in existing TFT" and two or more packet filters in the resultant TFT would have identical packet filter identifiers.

2) When the *TFT operation* = "Create a new TFT", "Add packet filters to existing TFT" or "Replace packet filters in existing TFT", and two or more packet filters among all TFTs associated with this 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 1, if two or more packet filters with identical packet filter identifiers are contained in the new request, the UE shall reject the modification request with ESM cause #45 "syntactical errors in packet filter(s)". Otherwise, the UE shall not diagnose an error, further process the new request and, if it was processed successfully, delete the old packet filters which have the identical packet filter identifiers.

In case 2, if the old packet filters do not belong to the default EPS bearer context, the UE 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 UE shall perform a UE requested bearer resource modification request procedure to delete the corresponding packet filters for which it has deleted.

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

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

Upon receipt of the MODIFY EPS BEARER CONTEXT REJECT message with ESM cause value other than #43 "invalid EPS bearer identity" in state BEARER CONTEXT MODIFY PENDING, the MME shall stop the timer T3486, enter the state BEARER CONTEXT ACTIVE and abort the EPS bearer context modification procedure. If the network receives the MODIFY EPS BEARER CONTEXT REJECT message with ESM cause #43 "invalid EPS bearer identity", the MME locally deactivates the EPS bearer context(s) without peer-to-peer ESM signalling.When the MME detects that after the failed EPS bearer context modification there is a misalignment between the EPS bearer configuration and the EPS bearer context configuration or between the QoS on NAS and AS level, the MME should initiate the necessary procedures to achieve a re-alignment.