**3GPP TSG-CT WG1 Meeting #134-eC1-22xxxy**

**E-Meeting, 17th – 25th February 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.301** | **CR** | 3713 | **rev** | **1** | **Current version:** | **17.5.0** |  |
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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:***  | Remove resolved ENs |
|  |  |
| ***Source to WG:*** | Qualcomm Incorporated |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | ID\_UAS |  | ***Date:*** | 2022-02-10 |
|  |  |  |  |  |
| ***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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | Following ENs remain in the spec:in 6.3.13.2 Authentication and authorization of UAVEditor's Note: It is FFS whether other ESM procedures can be used for UUAA-SM.🡪 Necessary ESM procedure has been specified for UUAA-SM. The EN is resolved.In 6.3.13.3 Authorization of C2 communicationEditor's Note: It is FFS how the network disables C2 communication for the PDN connection.🡪 TS 23.256 has clarified as following: "When the C2 authorization is revoked by the USS, the SMF or SMF+PGW-C shall release the PDU Session/PDN connection for C2 communication (in case separate PDU Sessions/PDN Connections are used), or disable C2 communication for the PDU Session/PDN connection (in case common PDU Session/PDN Connection is used), e.g. by removing the traffic filters for C2 communications and the QoS flow for C2 communication, and informs the UE with a PDU session modification/bearer modification request."Removing packet filter or EPS bearer is existing behavior for EPS baerer modification procedure, so clarifying in the subclause 6.3.13.3 is enough to resolve the EN.In 6.1.5.4.1 GeneralEditor's Note: It is FFS whether the protocol configuration options IE or the extended protocol configuration options IE is used in the PDN CONNECTIVITY REQUEST or ESM INFORMATION RESPONSE message to carry the UE's CAA-level UAV ID.🡪 It was agreed to use ePCO (C1-220834) so EN was resolved. |
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| ***Summary of change:*** | Remove ENs and clarifying C2 communication disabling. |
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| ***Consequences if not approved:*** | Obsolete editor’s notes remain in the spec |
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| ***Clauses affected:*** | 6.3.13.2, 6.3.13.3, 6.5.1.4.1 |
|  |  |
|  | **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:*** | In rev1, proposed text becomes informative text |

\*\*\* First change \*\*\*

6.3.13.2 Authentication and authorization of UAV

The UE supporting UAS services may request a PDN connection for USS communication during attach and UE-requested PDN connectivity procedures (see clause 5.5.1 and 6.5.1). In the request of the PDN connection for USS communication, the UE provides CAA-level UAV ID to the network via the protocol configuration options and the network may decide to perform UUAA-SM procedure. A UE supporting UAS services may provide to the network the USS address or USS FQDN via the protocol configuration options during attach and UE-requested PDN connectivity procedures so that the network may use the information to discover the USS.

After successful UUAA-SM procedure, the network may initiate the re-authentication or re-authorization procedure for the UE supporting UAS services as a part of network-initiated EPS bearer context modification procedure. If UUAA-SM fails during the re-authentication or a re-authorization procedure, or if the revocation of UUAA is initiated by the network, then the associated PDN connection for USS communication is released.

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

6.3.13.3 Authorization of C2 communication

The network supports C2 communication authorization for pairing of UAV and UAV-C. The pairing of UAV and UAV-C needs to be authorized by USS successfully before the user plane connectivity for C2 communication is enabled. The UE supporting UAS services may provide the network with an identification information of UAV-C to pair with, if available, via the protocol configuration options as follows:

- If the UE uses a common PDN connectivity for both USS communication and C2 communication with a UAV-C, the C2 comunication with the UAV-C can be authorized using UUAA-SM procedure during the PDN connectivity procedure or during the bearer resource modification procedure. If the pairing of UAV and UAV-C is revoked, the network shall disable C2 communication for the PDN connection.

NOTE: The network can disable C2 communication for the PDN connection e.g., by removing the packet filter(s) allocated for C2 communication during EPS bearer context modification procedure as specified in clause 6.4.3 or by deactivating the EPS bearer context for C2 communication during EPS bearer context deactivation procedure as specified in clause 6.4.4.

- If the UE uses separate PDN connectivity for, respectively, USS communication and C2 communication with a UAV-C, the C2 communication with the UAV-C is authorized using UUAA-SM during the PDN connectivity procedure. If the pairing of UAV and UAV-C is revoked, the PDN connectivity or C2 communication shall be released by the network.

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

6.5.1.4.1 General

If connectivity with the requested PDN cannot be accepted by the network, the MME shall send a PDN CONNECTIVITY REJECT message to the UE. The message shall contain the PTI and an ESM cause value indicating the reason for rejecting the UE requested PDN connectivity.

The ESM cause IE typically indicates one of the following ESM cause values:

#8: operator determined barring;

#26: insufficient resources;

#27: missing or unknown APN;

#28: unknown PDN type;

#29: user authentication or authorization failed;

#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;

#38: network failure;

#50: PDN type IPv4 only allowed;

#51: PDN type IPv6 only allowed;

#53: ESM information not received;

#54: PDN connection does not exist;

#55: multiple PDN connections for a given APN not allowed;

#57: PDN type IPv4v6 only allowed;

#58: PDN type non IP only allowed;

#61: PDN type Ethernet only allowed;

#65: maximum number of EPS bearers reached;

#66: requested APN not supported in current RAT and PLMN combination;

#95 – 111: protocol errors;

#112: APN restriction value incompatible with active EPS bearer context;

#113: Multiple accesses to a PDN connection not allowed.

The network may include a Back-off timer value IE in the PDN CONNECTIVITY REJECT message. If the ESM cause value is #26 "insufficient resources" and the PDN CONNECTIVITY REQUEST message was received via a NAS signalling connection established with RRC establishment cause "High priority access AC 11 – 15" or the request type in the PDN CONNECTIVITY REQUEST message was set to "emergency" or "handover of emergency bearer services", the network shall not include a Back-off timer value IE.

If the Back-off timer value IE is included and the ESM cause value is different from #26 "insufficient resources", #50 "PDN type IPv4 only allowed", #51 "PDN type IPv6 only allowed", #57 "PDN type IPv4v6 only allowed", #58 "PDN type non IP only allowed", #61 "PDN type Ethernet only allowed", and #65 "maximum number of EPS bearers reached", the network may include the Re-attempt indicator IE to indicate:

- whether the UE is allowed to attempt a PDP context activation procedure in the PLMN for the same APN in A/Gb or Iu mode or a PDU session establishment 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.

If the ESM cause value is #50 "PDN type IPv4 only allowed", #51 "PDN type IPv6 only allowed", #57 "PDN type IPv4v6 only allowed", #58 "PDN type non IP only allowed" or #61 "PDN type Ethernet only allowed", the network may include the Re-attempt indicator IE without Back-off timer value IE to indicate whether the UE is allowed to attempt a PDN connectivity procedure in an equivalent PLMN for the same APN in S1 mode using the same PDN type.

If the ESM cause value is #66 "requested APN not supported in current RAT and PLMN combination", the network may include the Re-attempt indicator IE without Back-off timer value IE to indicate whether the UE is allowed to attempt a PDN connectivity procedure in an equivalent PLMN for the same APN in S1 mode.

Upon receipt of the PDN CONNECTIVITY REJECT message, the UE shall stop timer T3482 and enter the state PROCEDURE TRANSACTION INACTIVE.

If the PDN CONNECTIVITY REJECT message is due to an ESM failure notified by EMM layer (i.e., EMM cause #19 "ESM failure" included in an ATTACH REJECT message), the UE may include a different APN in the PDN CONNECTIVITY REQUEST message.

NOTE 1: When receiving EMM cause #19 "ESM failure", coordination is required between the EMM and ESM sublayers in the UE to notify the ESM failure.

If the PDN CONNECTIVITY REQUEST message was sent with request type set to "emergency" or "handover of emergency bearer services" in a stand-alone PDN connectivity procedure and the UE receives a PDN CONNECTIVITY REJECT message, then the UE may:

a) inform the upper layers of the failure to establish the emergency bearer; or

NOTE 2: This can result in the upper layers requesting establishment of a CS emergency call (if not already attempted in the CS domain) or other implementation specific mechanisms, e.g. procedures specified in 3GPP TS 24.229 [13D] can result in the emergency call being attempted to another IP-CAN.

b) detach locally, if not detached already, attempt EPS attach for emergency bearer services.

If the PDN CONNECTIVITY REQUEST message was sent with PDN type set to "Ethernet" and the UE receives a PDN CONNECTIVITY REJECT message with ESM cause #58 "PDN type non IP only allowed", then the UE may attempt a PDN connectivity procedure with the non-IP PDN type.

If the PDN CONNECTIVITY REJECT message contains the UAS services not allowed indication parameter in the extended protocol configuration options IE and the UE has not provided its CAA-level UAV ID to the network, the UE shall not send another PDN CONNECTIVITY REQUEST message for UAS services without providing its CAA-level UAV ID to the network.