**3GPP TSG-CT WG1 Meeting #137-eC1-22xxxx**

**E-Meeting, 18th – 26th August 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.302** | **CR** | **0728** | **rev** | **1** | **Current version:** | **v17.5.0** |  |
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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 |  |

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| ***Title:*** | Clarification of handover between ePDGs | | | | | | | | | |
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| ***Source to WG:*** | Google, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI17 | | | | |  | ***Date:*** | | | 2022-08-19 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | C1-091336 (TS 24.302 CR#0024) introduced a note:  *NOTE 2: During handover between two untrusted non-3GPP access networks, the UE can initiate tunnel establishment to another ePDG while still being attached to the current ePDG.*  which reflected the stage 2 requirements in TS 23.402:  *In case of handover between ePDGs, the UE may be temporarily connected to two ePDGs.*  However, S2-153230 (TS 23.402 CR#2902) has deleted that stage 2 requirements in TS 23.402 since 3GPP didn’t define any procedures for handover between ePDGs. The corresponding stage 3 note in TS 24.302 shall also be deleted. | | | | | | | | |
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| ***Summary of change:*** | | Delete the note in TS 24.302 which has no stage 2 support. | | | | | | | | |
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| ***Consequences if not approved:*** | | Misleading and incorrect note exists in the specification. | | | | | | | | |
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| ***Clauses affected:*** | | 7.2.1.3 | | | | | | | | |
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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:*** | |  | | | | | | | | |

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\* \* \* First Change \* \* \* \*

#### 7.2.1.3 Handling of ePDG selection based on the country the UE is located in

The UE shall proceed as follows:

1) if the UE is located in its home country and

a) if the ePDG selection information is provisioned in the ePDG configuration information and if an entry for the HPLMN is available in the ePDG selection information, the UE shall construct an ePDG FQDN based on configured FQDN format of HPLMN as described in 3GPP TS 23.402 [6] and encoding in 3GPP TS 23.003 [3]:

b) if the ePDG selection information is not provisioned in the ePDG configuration information or if the ePDG selection information is provisioned and an entry for the HPLMN is not available in the ePDG selection information, the UE shall:

i) if Home ePDG identifier is provisioned in the ePDG configuration information, use the configured IP address to select the ePDG, or if configured IP address is not available, construct an ePDG FQDN using the configured FQDN; and

ii) if the Home ePDG identifier is not provisioned in the ePDG configuration information, construct an ePDG FQDN based on the Operator Identifier FQDN format using the PLMN ID of the HPLMN as described in 3GPP TS 23.003 [3];

c) if the ePDG configuration information is not configured on the UE, or the ePDG configuration information is configured but empty, the UE shall construct the ePDG FQDN based on the Operator Identifier FQDN format using the PLMN ID of the HPLMN stored on the USIM; and

d) If the ePDG selection is for establishing emergency bearer services and the UE is not equipped with a UICC, the UE may construct the Operator Identifier FQDN format based on a PLMN ID obtained via implementation specific means,

and for the cases a) through d), the UE shall use the DNS server function to resolve the contructed ePDG FQDN to the IP address(es) of the ePDG(s). The UE shall select an IP address of an ePDG with the same IP version as its local IP address;

2) if the UE is not located in its home country and

a) if the ePDG selection information is provisioned in the ePDG configuration information and if the UE is attached to a VPLMN via 3GPP access:

i) if an entry for the VPLMN is available in the ePDG selection information, the UE shall construct an ePDG FQDN based on configured FQDN format of the VPLMN as described in 3GPP TS 23.402 [6] and encoding in 3GPP TS 23.003 [3];

ii) if an entry for the VPLMN is not available in the ePDG selection information, and an 'Any\_PLMN' entry is available in the ePDG selection information, the UE shall construct an ePDG FQDN based on the configured FQDN format of the 'Any\_PLMN' entry as described in 3GPP TS 23.402 [6] and encoding in 3GPP TS 23.003 [3],

and for case i) and ii), the UE shall use the DNS server function to resolve the contructed ePDG FQDN to the IP address(es) of the ePDG(s). The UE shall select an IP address of an ePDG with the same IP version as its local IP address; and

b) if one of the following is true:

- the UE is not attached to a PLMN via 3GPP access and the UE uses WLAN;

- the ePDG configuration information is not configured;

- the ePDG selection information is not provisioned in the ePDG configuration information; or

- the UE is attached to a VPLMN via 3GPP access and an entry for the VPLMN is not available in the ePDG selection information and an 'Any\_PLMN' entry is not available in the ePDG selection information,

the UE shall perform a DNS query (see 3GPP TS 23.003 [3]) as specified in clause 7.2.1.4 to determine if the visited country mandates the selection of ePDG in this country:

i) if selection of ePDG in visited country is mandatory:

- if the UE is attached to a VPLMN via 3GPP access and the PLMN ID of VPLMN is included in one of the returned DNS records, the UE shall select an ePDG in this VPLMN by constructing an ePDG FQDN based on the Operator Identifier FQDN format using the PLMN ID of the VPLMN as described in 3GPP TS 23.003 [3]; and

- if the UE is not attached to a PLMN via 3GPP access or the UE is attached to a VPLMN via 3GPP access and the PLMN ID of VPLMN is not included in any of the DNS records:

- if the ePDG selection information is provisioned, the UE shall select an ePDG from a PLMN included in the DNS response that has highest PLMN priority (see 3GPP TS 24.312 [13]) in the ePDG selection information and construct an ePDG FQDN based on the configured FQDN format of the PLMN entry as described in 3GPP TS 23.402 [6] and encoding in 3GPP TS 23.003 [3]; and

- if the ePDG selection information is not provisioned or the ePDG selection information does not contain any of the PLMNs in the DNS response, selection of the PLMN is UE implementation specific. The UE shall select an ePDG from a PLMN included in the DNS response and construct an ePDG FQDN based on the Operator Identifier FQDN format using the PLMN ID of the PLMN as described in 3GPP TS 23.003 [3],

and for the above cases, the UE shall use the DNS server function to resolve the contructed ePDG FQDN to the IP address(es) of the ePDG(s). The UE shall select an IP address of an ePDG with the same IP version as its local IP address;

ii) if the DNS response contains no records, selection of ePDG in visited country is not mandatory:

- if the ePDG selection information is provisioned and contains one or more PLMNs in the visited country, the UE shall select an ePDG from a PLMNs that has highest PLMN priority (see 3GPP TS 24.312 [13]) in the ePDG selection information;

- if the ePDG selection information is not provisioned or if the ePDG selection information is provisioned and contains no PLMNs in the visited country, the UE shall select an ePDG in the HPLMN as follows:

- if the Home ePDG identifier is provisioned in the ePDG configuration information (see 3GPP TS 24.312 [13]), the UE shall use the configured IP address to select the ePDG, or if configured IP address is not available, use the configured FQDN and run DNS query to obtain the IP address(es) of the ePDG(s); and

- if the Home ePDG identifier is not provisioned in the ePDG configuration information, the UE shall construct an ePDG FQDN based on the Operator Identifier FQDN format using the PLMN ID of the HPLMN as described in 3GPP TS 23.003 [3], and

- if the ePDG selection is for establishing emergency bearer services and the UE is not equipped with a UICC, the UE may construct the Operator Identifier FQDN format based on a PLMN ID obtained via implementation specific means.

and for the above cases, the UE shall use the DNS server function to resolve the contructed ePDG FQDN to the IP address(es) of the ePDG(s). The UE shall select an IP address of an ePDG with the same IP version as its local IP address; and

iii) if no DNS response is received, the UE shall terminate the ePDG selection procedure.

If selecting an ePDG in the HPLMN fails, and the selection of ePDG in the HPLMN is performed using Home ePDG identifier configuration and there are more pre-configured ePDGs in the HPLMN, the UE shall repeat the tunnel establishment attempt using the next FQDN or IP address(es) of the ePDG in the HPLMN.

Upon reception of a DNS response containing one or more IP addresses of ePDGs, the UE shall select an IP address of ePDG with the same IP version as its local IP address. If the UE does not receive a response to an IKE\_SA\_INIT request message sent towards to any of the received IP addresses of the selected ePDG, then the UE shall repeat the ePDG selection as described in this clause, excluding the ePDG for which the UE did not receive a response to the IKE\_SA\_INIT request message.

NOTE 1: The time the UE waits before reattempting access to another ePDG or to an ePDG that it previously did not receive a response to an IKE\_SA\_INIT request message, is implementation specific.

The UE shall select only one ePDG also in case of multiple PDN connections.

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