**3GPP TSG-CT WG4 Meeting #96C4-200619**

**E-Meeting, 24th – 28th February 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.244** | **CR** | **0366** | **rev** | **-** | **Current version:** | **16.2.0** |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | The Recovery Time Stamp in PFCP Session Establishment Request message | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI16 | | | | |  | ***Date:*** | | | 2020-02-04 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | It needs to add the Recovery Time Stamp in the PFCP Session Establishment Request message to enable UP function to detect the CP function restart earlier, e.g. at the first PFCP Session Establishment procedure. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add the Recovery Time Stamp in the PFCP Session Establishment Request message. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Some PFCP Sessions may be wrongly deleted in the UP function during a CP function restart. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.3.2.2, 7.5.2.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 23.007 CR 0370 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

#### 6.3.2.2 CP Function Behaviour

The CP function initiates the PFCP Session Establishment procedure to create a PFCP session for a PDN connection, or IP-CAN session or TDF session or for applying a certain IP packets treatment which is not associated with any PDN connection or TDF session.

The CP function:

- shall send the PFCP Session Establishment Request message with a new PFCP F-SEID together with Rules to be created;

- may assign a local F-TEID for the access side and/or core side and provide it in the PDI, if F-TEID allocation is performed in the CP function.

- may include its current Recovery Time Stamp as specified in clause 19A of TS 3GPP TS 23.007 [24].

When the CP function receives an PFCP Session Establishment Response with cause success, the CP function shall continue with the procedure which triggered the PFCP Session Establishment procedure.

\* \* \* Next Change \* \* \* \*

#### 7.5.2.1 General

The PFCP Session Establishment Request shall be sent over the Sxa, Sxb, Sxc and N4 interface by the CP function to establish a new PFCP session context in the UP function.

Table 7.5.2.1-1: Information Elements in an PFCP Session Establishment Request

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Information elements | | P | | Condition / Comment | | Appl. | | | | | | | | IE Type | |
| Sxa | | Sxb | | Sxc | | N4 | |
| Node ID | | M | | This IE shall contain the unique identifier of the sending Node. | | X | | X | | X | | X | | Node ID | |
| CP F-SEID | | M | | This IE shall contain the unique identifier allocated by the CP function identifying the session. | | X | | X | | X | | X | | F-SEID | |
| Create PDR | | M | | This IE shall be present for at least one PDR to be associated to the PFCP session.  Several IEs with the same IE type may be present to represent multiple PDRs.  See Table 7.5.2.2-1. | | X | | X | | X | | X | | Create PDR | |
| Create FAR | | M | | This IE shall be present for at least one FAR to be associated to the PFCP session.  Several IEs with the same IE type may be present to represent multiple FARs.  See Table 7.5.2.3-1. | | X | | X | | X | | X | | Create FAR | |
| Create URR | | C | | This IE shall be present if a measurement action shall be applied to packets matching one or more PDR(s) of this PFCP session.  Several IEs within the same IE type may be present to represent multiple URRs.  See Table 7.5.2.4-1. | | X | | X | | X | | X | | Create URR | |
| Create QER | | C | | This IE shall be present if a QoS enforcement or QoS marking action shall be applied to packets matching one or more PDR(s) of this PFCP session.  Several IEs within the same IE type may be present to represent multiple QERs.  See Table 7.5.2.5-1. | | - | | X | | X | | X | | Create QER | |
| Create BAR | | O | | When present, this IE shall contain the buffering instructions to be applied by the UP function to any FAR of this PFCP session set with the Apply Action requesting the packets to be buffered and with a BAR ID IE referring to this BAR. See table 7.5.2.6-1. | | X | | - | | - | | X | | Create BAR | |
| Create Traffic Endpoint | | C | | This IE may be present if the UP function has indicated support of PDI optimization.  Several IEs within the same IE type may be present to represent multiple Traffic Endpoints.  See Table 7.5.2.7-1. | | X | | X | | X | | X | | Create Traffic Endpoint | |
| PDN Type | | C | | This IE shall be present if the PFCP session is setup for an individual PDN connection or PDU session (see clause 5.2.1).  When present, this IE shall indicate whether this is an IP or non-IP PDN connection/PDU session or, for 5GC, an Ethernet PDU session. See NOTE 3. | | X | | X | | - | | X | | PDN Type | |
| SGW-C FQ-CSID | | C | | This IE shall be included according to the requirements in clause 23 of 3GPP TS 23.007 [24]. | | X | | X | | - | | - | | FQ-CSID | |
| MME FQ-CSID | | C | | This IE shall be included when received on the S11 interface or on S5/S8 interface according to the requirements in clause 23 of 3GPP TS 23.007 [24]. | | X | | X | | - | | - | | FQ-CSID | |
| PGW-C FQ-CSID | | C | | This IE shall be included according to the requirements in clause 23 of 3GPP TS 23.007 [24]. | | X | | X | | - | | - | | FQ-CSID | |
| ePDG FQ-CSID | | C | | This IE shall be included according to the requirements in clause 23 of 3GPP TS 23.007 [24]. | | - | | X | | - | | - | | FQ-CSID | |
| TWAN FQ-CSID | | C | | This IE shall be included according to the requirements in clause 23 of 3GPP TS 23.007 [24]. | | - | | X | | - | | - | | FQ-CSID | |
| User Plane Inactivity Timer | | O | | This IE may be present to request the UP function to send a User Plane Inactivity Report when no user plane packets are received for this PFCP session for a duration exceeding the User Plane Inactivity Timer.  When present, it shall contain the duration of the inactivity period after which a User Plane Inactivity Report shall be generated. | | - | | X | | X | | X | | User Plane Inactivity Timer | |
| User ID | | O | | This IE may be present, based on operator policy. It shall only be sent if the UP function is in a trusted environment.  See NOTE. | | X | | X | | X | | X | | User ID | |
| Trace Information | | O | | When present, this IE shall contain the trace instructions to be applied by the UP function for this PFCP session. | | X | | X | | X | | X | | Trace Information | |
| APN/DNN | | O | | This IE may be present, if related functionalities in the UP function require the APN/DNN information. See NOTE 2. | | X | | X | | - | | X | | APN/DNN | |
| Create MAR | | C | | This IE shall be present for a N4 session established for a MA PDU session.  Several IEs with the same IE type may be present to represent multiple MARs.  See Table 7.5.2.8-1. | | - | | - | | - | | X | | Create MAR | |
| PFCPSEReq-Flags | | C | | This IE shall be included if at least one of the flags is set to "1".  - RESTI (Restoration Indication): this bit shall be set to "1" if the CP function re-establishes an existing PFCP session and the allocation of GTP-U F-TEID and/or UE IP address is performed by the UP function. (NOTE 4) | | X | | X | | - | | X | | PFCPSEReq-Flags | |
| Create Bridge Info for TSC | | C | | This IE shall be present for a PFCP session established for TSC to request the UPF to provide Bridge information for TSC. | | - | | - | | - | | X | | Create Bridge Info for TSC | |
| Create SRR | | O | | This IE may be present to request the UPF to detect and report events not related to specific PDRs.  Several IEs within the same IE type may be present to represent multiple SRRs.  See Table 7.5.2.9-1. | | - | | - | | - | | X | | Create SRR | |
| Provide ATSSS Control Information | | C | | This IE shall be present for N4 session establishment for a MA PDU session.  When present, this IE shall contain the required ATSSS functionalities for this MA PDU session.  See Table 7.5.2.10-1. | | - | | - | | - | | X | | Provide ATSSS Control Information | |
| Recovery Time Stamp | | O | | This IE may be included to contain the time stamp when the CP function was started. (See clause 19A of 3GPP TS 23.007 [24].) | | X | | X | | X | | X | | Recovery Time Stamp | |
| NOTE 1: This can be used for troubleshooting problems in the UP function affecting a subscriber.  NOTE 2: The CP function may provide additional information (e.g. APN/DNN) to the UP function, e.g. used by the forwarding rules pre-defined in UP function (some forwarding rules are APN specific), used by the UP function for performance measurement, etc.  NOTE 3: The SGW-C may set PDN type as Non-IP for an Ethernet PDN to allow interworking with a legacy SGW-U.  NOTE 4: The UP function shall accept the CP function allocated GTP-U F-TEID and/or UE IP address in the PFCP Session Establishment Request message with the RESTI flag set to "1", if the requested GTP-U F-TEID and/or UE IP address is available. | | | | | | | | | | | | | | | |

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