**3GPP TSG-CT3 Meeting #122e C3-223118**

**E-Meeting, 12th – 20th May 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.513** | **CR** | **0352** | **rev** | **-** | **Current version:** | **17.6.0** |  |
|  | | | | | | | | |
| *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:*** | Correction to SM policy association modification by the PCF | | | | | | | | | |
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| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | IIoT | | | | |  | ***Date:*** | | | 2022-05-20 |
|  |  | | | |  | |  | | |  |
| ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 1. Terminalogy TSC Assistance Container is used in stage 2. 2. There is no AF in figure 5.2.2.2.1-1, so no need to clarify what the AF represents. 3. TSN AF or TSCTSF provide the MAC address of DS-TT instead of MAC address of the UE. 4. Clarify what the AF represents in figure 5.2.2.2.2.3-1. 5. TSC Assistance Container and PMIC/and UMIC can be both provided. 6. QoS related data also can be provided by other type of AF, so no need to indicate in TSC case. | | | | | | | | |
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| ***Summary of change:*** | | Make above corrections. | | | | | | | | |
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| ***Consequences if not approved:*** | | Incompleted specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.2.2.1, 5.2.2.2.2.1, 5.2.2.2.2.2, 5.2.2.2.2.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

\* \* \* \* Start of Changes \* \* \* \*

##### 5.2.2.2.1 Interactions between SMF, PCF and CHF

This procedure is performed when the PCF decides to modify policy decisions for a PDU session.



Figure 5.2.2.2.1-1: Interactions between SMF, PCF and CHF for PCF-initiated SM Policy Association Modification procedure

1. The PCF receives an internal or external trigger to re-evaluate PCC Rules and policy decision for a PDU Session. Possible external trigger events are described in subclause 5.2.2.2.2. In addition, this procedure is triggered by the following cases:

- The UDR notifies the PCF about a policy data change (e.g. change in MPS EPS Priority, MPS Priority Level, MCS Priority Level and/or IMS Signalling Priority, or change in user profile configuration indicating whether supporting application detection and control).

- The UDR notifies the PCF about application data change (e.g. change in AF influence data or IPTV configuration data).

- The CHF provides a Spending Limit Report to the PCF as described in subclause 5.3.5.

2. If the PCF determines that the policy decision depends on the status of the policy counters available at the CHF and such reporting is not established for the subscriber, the PCF initiates an Initial Spending Limit Report as defined in subclause 5.3.2. If policy counter status reporting is already established for the subscriber, and the PCF decides to modify the list of subscribed policy counters, the PCF sends an Intermediate Spending Limit Report as defined in subclause 5.3.3. If the PCF decides to unsubscribe any future status notification of policy counters, it sends a Final Spending Limit Report Request to cancel the request for reporting the change of the status of the policy counters available at the CHF as defined in subclause 5.3.4.

3. The PCF makes a policy decision. The PCF can determine that updated or new policy information need to be sent to the SMF.

4-5. If network slice data rate related policy control applies, the (H-)PCF may invoke the Nudr\_DataRepository\_Update service operation by sending an HTTP PATCH request targeting the "SlicePolicyControlData" resource in order to update the Remaining Maximum Slice Data Rate information.

6. The PCF invokes the Npcf\_SMPolicyControl\_UpdateNotify service operation by sending the HTTP POST request with "{notificationUri}/update" as the callback URI to the SMF that has previously subscribed. The request operation provides the PDU session ID and the updated policies, as described in subclause 4.2.3 of 3GPP TS 29.512 [9].

If the feature "TimeSensitiveNetworking" or "TimeSensitiveCommunication" is supported and the PCF receives the TSC Assistance Container and/or a UMIC and/or one or more PMIC(s) from the TSN AF or TSCTSF, the PCF provisions them to the SMF.

7. The SMF sends an HTTP "200 OK" or HTTP "204 No Content" to the PCF.

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

###### 5.2.2.2.2.1 AF Session Establishment

This procedure is performed when the AF/NEF requests to create an AF application session context for the requested service.

NOTE 1: The NEF acts as an AF to support the network exposure functionality.

For the integration with TSC networks the AF represented in the figures is either the TSN AF (integration with IEEE TSN networks) or the TSCTSF (integration with other TSC networks than IEEE TSN).



Figure 5.2.2.2.2.1-1: AF Session Establishment triggers PCF-initiated SM Policy Association Modification procedure

1. When the AF receives an internal or external trigger to set-up a new AF session, the AF invokes the Npcf\_PolicyAuthorization\_Create service operation to the PCF by sending the HTTP POST request to the "Application Sessions" resource. The request operation includes the IP address or the MAC address of the UE, the SUPI if available, the GPSI if available, the DNN if available, the S-NSSAI if available, service information, sponsored data connectivity if applicable, AF application identifier, Priority indicator, etc, as defined in subclause 4.2.2.2 of 3GPP TS 29.514 [10]. The request operation may also include the subscription to notifications on certain user plane events, e.g. subscription to QoS notification control. To invoke MPS for DTS, the AF includes the MPS Action indication as defined in 3GPP TS 29.514 [10].

If the "TimeSensitiveNetworking" or "TimeSensitiveCommunication" feature is supported the TSN AF or TSCTSF provides the MAC address of DS-TT instead of the MAC address of the UE for the Ethernet PDU session type. TSN AF or TSCTSF may subscribe to notification of DS-TT PMIC and/or NW-TT PMIC(s) and/or UMIC availability. The TSN AF or TSCTSF may also provide TSC Assistance Container and/or a UMIC and/or one or more PMIC(s).

1a. The AF provides the Service Information to the PCF by sending a Diameter AAR for a new Rx Diameter session.

2. The PCF stores the Service Information received in step 1.

3-4. If the PCF does not have the subscription data for the SUPI, DNN and S-NSSAI, it invokes the Nudr\_DataRepository\_Query service operation to the UDR by sending the HTTP GET request to the "SessionManagementPolicyData" resource. The UDR sends an HTTP "200 OK" response to the PCF with the subscription data.

Additionally, when network slice data rate related policy control is supported by the PCF, the PCF may invoke the Nudr\_DataRepository\_Query service operation towards the UDR by sending an HTTP GET request targeting the "SlicePolicyControlData" resource as specified in subclause 5.2.12 of 3GPP TS 29.519 [12]. The UDR sends an HTTP "200 OK" response to the PCF with the network slice policy control data.

Additionally, if the AF provided a Background Data Transfer Reference ID in step 1 or step 1a and the corresponding transfer policy is not locally stored in the PCF, the PCF sends the HTTP GET request to the "IndividualBdtData" resource. The UDR sends an HTTP "200 OK" response to the PCF with the Background Data Transfer policy.

If the AF session is for MPS for DTS invocation, the PCF performs MPS subscription checks if and only if requested by the AF as described in subclause 4.4.11 of 3GPP TS 29.214 [18] or as described in subclause 4.2.2.12.2 of 3GPP TS 29.514 [10].

5. The PCF identifies the affected established PDU Session (s) using the information previously received from the SMF and the Service Information received from the AF.

6. The PCF sends an HTTP "201 Created" response to the AF.

6a. The PCF sends a Diameter AAA to the AF.

7. The AF may invoke the Npcf\_PolicyAuthorization\_Subscribe service operation by sending the HTTP PUT request to the "Events Subscription" resource to subscribe to events in the PCF. The request includes the events that subscribes and a Notification URI to indicate to the PCF where to send the notification of the subscribed events, as described in subclause 4.2.6 of 3GPP TS 29.514 [10].

8. The PCF sends an HTTP "201 Created" response to the AF.

9. The PCF interacts with SMF according to Figure 5.2.2.2-1.

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

###### 5.2.2.2.2.2 AF Session Modification

This procedure is performed when the AF/NEF requests to update an AF application session context for the requested service.

NOTE 1: The NEF acts as an AF to support the network exposure functionality.

For the integration with TSC networks the AF represented in the figures is either the TSN AF (integration with IEEE TSN networks) or the TSCTSF (integration with other TSC networks than IEEE TSN).



Figure 5.2.2.2.2.2-1: AF Session Modification triggers PCF-initiated SM Policy Association Modification procedure

1. When the AF receives an internal or external trigger to modify an existing AF session, the AF invokes the Npcf\_PolicyAuthorization\_Update service operation to the PCF by sending the HTTP PATCH request to the "Individual Application Session Context" resource including the modified service information as defined in subclause 4.2.3.2 of 3GPP TS 29.514 [10]. The AF may also provide the updated subscription to notifications on user plane events. To invoke/revoke MPS for DTS, the AF includes the MPS Action indication as defined in 3GPP TS 29.514 [10].

If the "TimeSensitiveNetworking" or "TimeSensitiveCommunication" feature is supported the AF may also update the TSC Assistance Container and/or a UMIC and/or one or more PMIC(s).

1a. The AF provides the Service Information to the PCF by sending a Diameter AAR for the existing Rx Diameter session corresponding to the modified AF session.

2. The PCF stores the received Service Information.

3-4. These steps are the same as steps 3-4 in subclause 5.2.2.2.2.1.

5. The PCF identifies the affected existing PDU Session(s) using the information previously received from the SMF and the Service Information received from the AF.

6. The PCF sends an HTTP "200 OK" or HTTP "204 No Content" response to the AF.

6a. The H-PCF sends a Diameter AAA to the AF.

7. The AF may decide to (un)subscribe to events for the active AF application session context in relation to the corresponding PDU session.

- If the AF decides to create a subscription to events or modify the events subscription, it invokes the Npcf\_PolicyAuthorization\_Subscribe service operation by sending the HTTP PUT request to the "Events Subscription" resource. The HTTP request includes the events that subscribes and may also include a Notification URI to indicate to the PCF where to send the notification of the subscribed events.

- If the AF decides to remove subscription to all subscribed events for the existing application session context, it invokes the Npcf\_PolicyAuthorization\_Unsubscribe service operation by sending the HTTP DELETE request to the "Events Subscription" resource.

8. The PCF responses to the AF.

- If the PCF accept the HTTP PUT request to create a subscription to events, it sends an HTTP "201 Created" response.

- If the PCF accept the HTTP PUT request to modify the events subscription, it sends an HTTP "200 OK" or HTTP "204 No Content" response.

- Upon receipt of the HTTP DELETE request to remove subscription to all subscribed events, the PCF sends an HTTP "204 No Content" response.

9. The PCF interacts with SMF according to Figure 5.2.2.2-1.

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

###### 5.2.2.2.2.3 AF Session Termination

This procedure is performed when the PCF requests the AF/NEF to delete the AF application session context.

NOTE: The NEF acts as an AF to support the network exposure functionality for policy/charging capability.

For the integration with TSC networks the AF represented in the figures is either the TSN AF (integration with IEEE TSN networks) or the TSCTSF (integration with other TSC networks than IEEE TSN).



Figure 5.2.2.2.2.3-1: AF Session Termination triggers PCF-initiated SM Policy Association Modification procedure

1. The AF sends the Npcf\_PolicyAuthorization\_Delete service operation by sending the HTTP POST request to the "Individual Application Session Context" resource to request the removal of the AF application session as defined in subclause 4.2.3.2 of 3GPP TS 29.514 [10]. The request may include the events to subscribe to.

1a. The AF sends a session termination request, Diameter STR, to the PCF to request the removal of the session. The request may include the events to subscribe to

2. The PCF identifies the affected PDU Session where PCC rules related with this AF session are installed. These PCC rules need to be removed.

If the request in step 1 or step 1a does not include the event(s) or it includes the event(s) but the corresponding information is available at the PCF, step 3 or step3a is performed respectively; otherwise, the step 3\* or step3a\* is performed respectively.

3. The PCF removes the AF application session context and sends an HTTP "204 No Content" or HTTP "200 OK" response to the AF.

3a. The PCF sends a Diameter STA, session termination answer, to the AF.

3\*. The PCF removes the AF application session context and sends an HTTP "200 OK" response with the information corresponding to the requested event(s) to the AF.

3a\*. The PCF sends a Diameter STA, session termination answer with the information corresponding to the requested event(s), to the AF.

4. The PCF interacts with SMF according to Figure 5.2.2.2-1.

\* \* \* \* End of change \* \* \* \*