**3GPP TSG-CT3 Meeting #122e C3-223119**

**E-Meeting, 12th – 20th May 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **29.513** | **CR** | **0353** | **rev** | **-** | **Current version:** | **17.6.0** |  |
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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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Correction to SM policy association modifiction initiated by the SMF | | | | | | | | | |
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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)* | |
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| ***Reason for change:*** | | As defined in 29.512, the TSC user plane node information is reported during the SM policy association modification. | | | | | | | | |
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| ***Summary of change:*** | | Make a correction that the TSC user plane node information is reported during the SM policy association modification. | | | | | | | | |
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| ***Consequences if not approved:*** | | Incompleted specification. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.2.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \* \* \* \*

#### 5.2.2.3 SM Policy Association Modification initiated by the SMF

This procedure is performed when the SMF observes some policy control trigger condition is met or a PCC rule error is reported.

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 5.2.2.3-1: SMF-initiated SM Policy Association Modification procedure

1. The SMF detects a policy control request trigger condition is met or an error is reported.

2. The SMF invokes the Npcf\_SMPolicyControl\_Update service operation to the PCF by sending the HTTP POST request to the "Individual SM Policy" resource with information on the conditions that have changed or a PCC rule error occurs.

If the feature "TimeSensitiveNetworking" or "TimeSensitiveCommunication" is supported and the "TSN\_BRIDGE\_INFO" policy control request trigger is provisioned in the SMF, the SMF may provide during SM policy association modification the new or updated TSC user plane node information, e.g. TSC user plan node information (DS-TT port number, DS-TT MAC address, if applicable, TSC user plane node Id and UE-DS-TT residence time, if available), a UMIC and/or one or more PMIC(s) to the PCF.

3. If the (H-)PCF requires subscription-related information and does not have it, the (H-)PCF invokes the Nudr\_DataRepository\_Query service operation to the UDR by sending the HTTP GET request to the "SessionManagementPolicyData" resource to fetch the information.

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.

4. The UDR sends an HTTP "200 OK" response to the PCF with the subscription related information containing the information about the allowed service(s) and PCC Rules information.

NOTE 1: If the Npcf\_SMPolicyControl\_Update message of step 2 includes usage report(s), the (H-)PCF can also invoke the Nudr\_DataRepository\_Update service operation by sending an HTTP PATCH request to the "SessionManagementPolicyData" resource in order to update the usage monitoring information according to the received usage report(s).

NOTE 2: If the Npcf\_SMPolicyControl\_Update message of step 2 includes the outcome of the resource allocation and network slice data rate policy control is supported, the (H-)PCF can also 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.

5. The PCF invokes the Npcf\_PolicyAuthorization\_Notify service operation to indicate that an event for which the AF requested a notification has occurred by sending the HTTP POST request with "{notifUri}/notify" as the callback URI to the AF or to request to the AF the deletion of the active application session if all the service data flows for the AF session are deleted by sending the HTTP POST request with "{notifUri}/terminate" as the callback URI to the AF.

If the feature "TimeSensitiveNetworking" or "TimeSensitiveCommunication" is supported:

- When the PCF detects that there is no Individual Application Session Context resource bound to the Individual SM Policy resource the PCF shall provide the new TSC user plan node information received in step 2 to the TSN AF or TSCTSF by sending an HTTP POST request to the "{notifUri}/new-bridge" request URI, where the "{notifUri}" value is pre-configured in the PCF or, if not pre-configured, discovered by invoking the Nnrf\_NFDiscovery service as defined in 3GPP TS 29.510 [51].

- When the PCF detects that there is an Individual Application Session Context resource bound to the Individual SM Policy resource, the PCF shall provide the received UMIC and/or PMICs to the AF by sending an HTTP POST request to the "{notifUri}/notify" callback URI.

5a. If the AF requested a notification of the corresponding event, the PCF sends a Diameter RAR with the Specific-Action AVP set to indicate the event that caused the request. If all service data flows for an AF session are deleted, the PCF sends a Diameter ASR to request to the AF the termination of the active session.

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

If the feature "TimeSensitiveNetworking" or "TimeSensitiveCommunication" is supported and the TSN AF or TSCTSF received the notification of new TSC user plan node information over the "{notifUri}/new-bridge" request URI, the TSN AF or TSCTSF shall trigger the Npcf\_PolicyAuthorization\_Create service operation as described in subclause 5.2.2.2.2.1, to request the creation of a new Individual Application Session Context resource specific to the PDU session identified by, for Ethernet type of PDU sessions, the received MAC address of the DS-TT port and for IP type of PDU sessions, the received UE IP address.

NOTE: For the time synchronization service, the AF subscription to UE availability for time-synchronization service can occur after the PDU Session establishment has been completed in 5GS. Similarly, for the AF session with required QoS, the indication of the required QoS and TSC Assistance Container information can occur after the completion of the PDU session establishment. In such cases, the PCF sends the notification to the TSCTSF about the detection of a TSC user plane node information during SM policy association modification, but the TSCTSF doesn’t have the time synchronization or required QoS available for the PDU session. In this case, the TSCTSF defers the invocation of the Npcf\_PolicyAuthorization\_Create service operation till the reception of the subscription to UE availability for time synchronization or the AF session with required QoS occurs.

6a. If the AF receives an event notification, the AF replies with a Diameter RAA and may provide within it updated service information. If the AF receives an indication that all service data flows for an AF session are deleted, the AF replies with a Diameter ASA.

7. If the PCF indicates in step 5 that an event for the active application session has occurred, the AF may invoke 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.

11a. If the PCF indicates in step 5a that an event for the active application session has occurred, the AF may send a Diameter AAR to the PCF including the modified service information.

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

8a, The AF responds by sending a Diameter AAA to the PCF.

9. If the PCF indicates in step 5 that there are no transmission resources for the service, the AF may terminate the AF session by invoking the Npcf\_PolicyAuthorization\_Delete service operation by sending the HTTP POST request to the "Individual Application Session Context" resource to terminate the AF session. The request may include the events to subscribe to.

9a. The AF sends a Diameter STR message to the PCF to indicate that the AF session is terminated.

10. The PCF removes the AF application session context and sends an HTTP "204 No Content". If the PCF need to include the notification of event, it sends an HTTP "200 OK" response.

10a. The PCF responds by sending a Diameter STA message to the AF and the AF session is terminated.

11. 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.

12. The PCF makes a policy decision. The PCF may determine that updated or new policy information needs to be sent to the SMF in step 21.

13-14. 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.

If the BindingUpdate feature defined in 3GPP TS 29.521 [22] is supported, the steps 15 to 16 will be performed, otherwise the steps 17 to 20 will be performed.

15. If the UE address changes and the binding information has been previously registered in the BSF, or if the "ExtendedSamePcf" feature is supported, and the PCF registered binding information without including the UE address and UE address is received in step 2 and required for the retrieval of binding information by any NF (e.g. for PDU session binding), the PCF invokes the Nbsf\_Management\_Update service operation by sending an HTTP PATCH request to update the binding information in the BSF as detailed in subclause 8.5.7.

16. The PCF receives an HTTP "200 OK" response from the BSF.

17. If the IP address is released for the IP PDU session or the MAC address is not used anymore for the Ethernet PDU session and the binding information has been previously registered in the BSF, the PCF invokes the Nbsf\_Management\_Deregister service operation by sending an HTTP DELETE request to the BSF to delete binding information as detailed in subclause 8.5.3.

18. The PCF receives an HTTP "204 No Content" response from the BSF as detailed in subclause 8.5.3.

19. If a new IP address is allocated for the IP PDU session or a new MAC address is used for the Ethernet PDU session and the BSF is to be used, or if the "ExtendedSamePcf" feature is supported, and the PCF registered binding information without including the UE address and UE address is received in step 2 and required for the retrieval of binding information by any NF, the PCF invokes the Nbsf\_Management\_Register service operation by sending an HTTP POST request to create the binding information in the BSF as detailed in subclause 8.5.2.

20. The PCF receives an HTTP "201 Created" response from the BSF with the created binding information as detailed in subclause 8.5.2.

21. The PCF sends an HTTP "200 OK" response to the SMF with updated policy information about the PDU Session determined in step 12.

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