**3GPP TSG CT WG3 Meeting #134 *C3-242195r2***

**Changsha, China, 15-19 April 2024**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **29.513** | **CR** | **0538** | **rev** | **1** | **Current version:** | **18.5.0** |  |
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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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Correction of the procedure for AF requests to influence AM policies | | | | | | | | | |
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| ***Source to WG:*** | ZTE | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI18, TEI17\_DCAMP | | | | |  | ***Date:*** | | | 2024-04-08 |
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| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | As described in 23.503, 6.1.2.1:   1. If the PCF for the UE determines that the access and mobility related policy information can change at the start and stop of an application traffic detection  * The PCF for a UE may subscribe with the BSF to the notification of the binding information registration/deregistration of the PCF for a PDU session * An alternative mechanism for the PCF for the UE to be notified of the PCF for the PDU Session of this UE is to request the AMF to send to the PCF for the PDU Session of the DNN, S-NSSAI, via SMF, the request for notification of SM Policy Association establishment.  1. If the PCF for the UE determines that the access and mobility related policy information can change at the establishment and termination of a SM Policy Association to a DNN and S-NSSAI base on the notification sent by the BSF, the PCF may indicate to the BSF to report the registration of a PCF for the PDU Session when the first SM Policy Association is established and the deregistration of the PCF for the PDU Session when the last SM Policy Association is terminated for a DNN, S-NSSAI.   For case 1), in order to subscribe to the PCF for the PDU session for the "start/stop of application traffic detection" event notification, the PCF for a UE needs to discover the PCF for the PDU session. Therefore, clause 8.4A of 29.513 has been introduced to define PCF for a PDU session discovery and selection by the PCF for a UE, and Clause 8.4A is referred by step 9 of 5.5.10.3.  However the case 2) is not reflected in 5.5.10.3. | | | | | | | | |
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| ***Summary of change:*** | | Correct 5.5.10.3 to reflect the case 2) above.  Editorial correction: change 8.4a to 8.4A. | | | | | | | | |
|  | | on | | | | | | | | |
| ***Consequences if not approved:*** | | The case that the PCF for the UE determines that the access and mobility related policy information can change at the establishment and termination of a SM Policy Association to a DNN and S-NSSAI base on the notification sent by the BSF is missing in 5.5.10.3. | | | | | | | | |
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| ***Clauses affected:*** | | 5.5.10.3, 5.8.2, 8.4A | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

#### 5.5.10.3 AF requests to influence AM policies

This procedure concerns non-roaming and LBO roaming scenarios, i.e. to cases where the involved entities serving the UE (i.e. NEF, UDR, PCF, BSF, AMF) belong to the Serving PLMN. The AF may belong to the Serving PLMN (trusted AF) or to a third party with which the Serving PLMN has an agreement (untrusted AF). In LBO roaming, the AF requests target "any inbound roaming UEs identified by their home PLMN ID(s)" combined with DNN/S-NSSAI or Application Identifier(s).

This procedure is used by the AF to provide its AM policy related request for one or multiple UEs at any time.



Figure 5.5.10.3-1: Processing AF requests to influence Access and Mobility related policy

1. An AM Policy Association is established as described in clause 5.1.1 (including the retrieval of and subscription to AM Influence data in steps 2 and 4). This step may occur at any time before step 7.

2. To create a new AF request, the AF invokes the Nnef\_AMInfluence\_Create service operation to the NEF by sending an HTTP POST request to the "AM Influence Subscription" resource. The AF may subscribe to Access and Mobility management related events (e.g. about service area coverage change outcome) as part of this operation.

To update an existing AF request, the AF invokes the Nnef\_AMInfluence\_Update service operation by sending an HTTP PUT or PATCH request to the "Individual AM Influence Subscription" resource. The AF may subscribe to or unsubscribe from Access and Mobility management related events (e.g. about service area coverage change outcome) as part of this operation.

To remove an existing AF request, the AF invokes the Nnef\_AMInfluence\_Delete service operation by sending an HTTP DELETE request to the "Individual AM Influence Subscription" resource. The AF may unsubscribe from Access and Mobility management related events (e.g. about service area coverage change outcome) as part of this operation.

3. Upon receipt of the AF request, the NEF authorizes it and then performs the mapping from the information provided by the AF into information needed by the 5GC (e.g. translate a GPSI into a SUPI) as described in clause 4.4.27 of 3GPP TS 29.522 [24].

4-5. When receiving the Nnef\_AMInfluence\_Create request, the NEF invokes the Nudr\_DataRepository\_Create service operation to store the AF request information in the UDR by sending an HTTP PUT request to the "Individual AM Influence Data" resource, and the UDR sends a "201 Created" response.

When receiving the Nnef\_AMInfluence\_Update request, the NEF invokes the Nudr\_DataRepository\_Update service operation to modify the AF request information in the UDR by sending an HTTP PATCH or PUT request to the resource "Individual AM Influence Data", and the UDR sends a "200 OK" or "204 No Content" response accordingly.

When receiving the Nnef\_AMInfluence\_Delete request, the NEF invokes the Nudr\_DataRepository\_Delete service operation to delete the AF request information from the UDR by sending an HTTP DELETE request to the "Individual AM Influence Data" resource, and the UDR sends a "204 No Content" response.

6. The NEF sends an HTTP response message to the AF correspondingly.

7-8. The UDR notifies the PCF(s) that have subscriptions (from step 1) which match the received AF request using the Nudr\_DataRepository\_Notify service operation by sending an HTTP POST request to the callback URI of the PCF that was included in the subscription, and the PCF(s) send a "204 No Content" response.

9. If the received AM Influence data indicated that the AM policy depends on PDU session traffic events (e.g. the application start and application stop for an application Id or PDU session establishment and termination for a DNN and S-NSSAI combination), the PCF for the UE may discover the PCF(s) for a PDU Session that handle(s) the respective UE traffic as described in clause 8.4A.

10-11. If the received AM Influence data indicated that the request is dependent (or does not depend anymore) on the existence of UE traffic that matches one or more application identifiers and the feature "ApplicationDetectionEvents" defined in 3GPP TS 29.514 [10] is supported, the PCF for the UE may subscribe (or unsubscribe) to the PCF(s) for the PDU Session for notifications about application traffic detection (e.g. start, stop) of the application(s) indicated in the AM Influence data using the Npcf\_PolicyAuthorization\_Subscribe service operation as described in 3GPP TS 29.514 [10] clause 4.2.6.9. Otherwise, steps 10-14 are skipped

12. The PCF for the PDU Session creates PCC rule(s) including the application ID(s) in the service data flow description, if they do not already exist, and installs the PCC rule(s) and the Policy Control request trigger(s), also if they do not already exist, to detect the start/stop of application traffic in the SMF as described in 3GPP TS 29.512 [9]. When the SMF detects that the Policy Control Request Trigger is met, the SMF reports to the PCF for the PDU session the start or stop of concerned the application traffic.

13-14. The PCF for the PDU Session may notify the PCF for the UE about the detected event using the Npcf\_PolicyAuthorization\_Notify service operation by sending an HTTP POST request to the notification URI received in the subscription, and the PCF for the UE responds with "204 No Content", as described in 3GPP TS 29.514 [10] clause 4.2.5.19.

15. AM Policy Association modification initiated by the PCF may be performed as described in clause 5.1.2.2.

16-19. If the AF had subscribed to an Access and Mobility management related event (e.g. about service area coverage change outcome), the PCF may send respective notification(s) to the NEF using the Npcf\_EventExposure\_Notify service operation by sending an HTTP POST message as described in clause 4.2.4.2 of 3GPP TS 29.523 [49] to the notification URI that was included in the AM Influence data retrieved from the UDR. The NEF forwards such received notifications to the AF using the Nnef\_AMInfluence\_Notify service operation by sending an HTTP POST message to the notification URI previously received from the AF. The AF sends a "204 No Content" response to the NEF and the NEF sends a "204 No Content" response to the PCF.

\*\*\* 2nd Change \*\*\*

### 5.8.2 Forwarding of URSP Rule Enforcement Information



Figure 5.8.2-1: Forwarding of URSP Rule Enforcement Information

This procedure concerns both non-roaming and Home Routed roaming scenarios. In the Home Routed roaming case, the H-PCF for the UE interacts with the PCF for a PDU session in the HPLMN.

1. An UE Policy Association is established as described in clause 5.1.1.

2. If the UE indicated the support of URSP rule enforcement, the PCF for the UE may indicate in one or more URSP rule(s) sent to the UE to send reporting of URSP rule enforcement as described in clause 4.2.2.2.3.1 of 3GPP TS 29.525 [31]. For the PDU sessions related to the URSP rule(s) whose enforcement has been requested, the PCF for the UE triggers the discovery of the PCF(s) for the PDU session as described in step 4.

3. The SMF establishes a SM Policy Association as described in clause 5.2.1. If the "URSPEnforcement" feature is supported, the SMF may include the URSP rule enforcement information provided by the UE and additional PDU session information as specified in clause 4.2.2.2 of 3GPP TS 29.512 [9]. The PCF, in the response, may subscribe with the SMF to the report of URSP rule enforcement by providing the Policy Control Request Trigger "UE reporting of URSP rule enforcement information" as specified in clause 5.6.3.6 of 3GPP TS 29.512 [9].

4. The PCF for the UE discovers the PCF(s) for a PDU Session that handle(s) the respective UE traffic as described in clause 8.4A.

5-6. When the PCF for the UE receives the notification about a PDU session that may be handling the traffic of a URSP rule, if the "URSPEnforcement" feature is supported, the PCF for the UE subscribes to the PCF for the PDU Session for notifications about UE reporting of URSP rule enforcement information using the Npcf\_PolicyAuthorization\_Subscribe service operation as described in 3GPP TS 29.514 [10] clause 4.2.6.9.

7-8. If not already provisioned, the PCF for a PDU session provisions the Policy Control Request Trigger to request the SMF to detect "UE reporting of URSP rule enforcement information" as defined in clause 4.2.6.4 of 3GPP TS 29.512 [9].

If the PCF for the PDU session contains URSP rule enforcement information (e.g., it was received during SM Policy Association establishment), the PCF for the PDU session notifies the PCF for the UE as described in steps 13-14.

9. When the SMF receives a UE report of URSP rule enforcement via PDU session modification, the Policy Control Request Trigger "UE reporting of URSP rule enforcement information" is met.

10-11. The SMF notifies the PCF for a PDU session using the Npcf\_SMPolicyControl\_Update service operation as described in clause 4.2.4.2 of 3GPP TS 29.512 [9].

12-13. The PCF for the PDU Session notifies the PCF for the UE about the detected URSP rule enforcement event using the Npcf\_PolicyAuthorization\_Notify service operation by sending an HTTP POST request to the notification URI received in the subscription in step 5, and the PCF for the UE responds with "204 No Content", as described in 3GPP TS 29.514 [10] clause 4.2.5.25.

14. The PCF for the UE checks opeartor policies and then may make policy control decisions, e.g. may adjust the URSP rules when needed, based on the notified URSP rule enforcement information.

\*\*\* 3rd Change \*\*\*

## 8.4A PCF for a PDU session discovery and selection by the PCF for a UE

When the PCF for a UE determines that the AM policy, e.g. service area restriction, depends on PDU session traffic events, e.g. the application start and application stop for an application Id, or makes policy control decisions based on awareness of URSP rule enforcement for an application, the PCF for a UE needs to discover the PCF for a PDU session handling the concerned PDU session(s) to subscribe to the notification of the PDU session traffic related event(s) using the Npcf\_PolicyAuthorization service. The following alternatives are specified for the discovery and selection of the PCF for a PDU session by the PCF for a UE:

1) The PCF for a UE may subscribe with the BSF to the notification of the binding information registration/deregistration of the PCF for a PDU session as defined in 3GPP TS 29.521 [22]; or

2) The PCF for a UE may subscribe with the PCF for the PDU session to the notification of PDU session established/terminated events for certain DNN and S-NSSAI combination(s) as follows:

1. The PCF for a UE provides to the AMF the PCF for a UE callback information (e.g. callback URI information where it listens to notifications of PDU session established/terminated events) and the matching S-NSSAI and DNN combination(s), as specified in 3GPP TS 29.507 [7].

2. The AMF forwards to the SMF, for the PDU session(s) matching the received S-NSSAI and DNN combination(s), the PCF for a UE callback information, as specified in 3GPP TS 29.502 [52].

3. The SMF notifies the PCF for a PDU session of the received PCF for a UE callback information, as specified in 3GPP TS 29.512 [9].

4. When the PCF for a PDU session becomes aware that a SM Policy Association is receiving the callback URI for the PCF for a UE, the PCF for a PDU session sends the Npcf\_PolicyAuthorization\_Notify service operation to the received PCF for a UE callbck URI to notify the PCF for a UE of the PCF for a PDU session address(es) and SBA binding information as specified in clause 4.2.5.22 of 3GPP TS 29.514 [10].

NOTE 1: When the scenario does not require the discovery of the PCF for a PDU session, alternative 1) is more efficient than alternative 2). E.g. when the AM policy depends on whether there is a PDU session ongoing for a UE and a DNN and S-NSSAI combination, the PCF for the UE can subscribe to the BSF about the binding of the first PDU session and the deregistration of the last PDU session as described in clause 4.2.6 of 3GPP TS 29.521 [22].

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