**3GPP TSG-CT WG3 Meeting #130C3-234303**

**Xiamen, China, 9 - 13 October, 2023**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | **0290** | **rev** |  | **Current version:** | **18.3.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Enhancement to Npcf\_UEPolicyControl service for URSP rule enforcement in EPS | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Intel | | | | | | | | | |
| ***Source to TSG:*** | C3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eUEPO | | | | |  | ***Date:*** | | | 2023-09-14 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | CT3#128 agreed in CR 0270 to 29.525 clause 4.2.2.2.1.1 (see C3-233510) to store in the UDR the indication of “UE's support for reporting URSP rule enforcement” when received in 5GS. This indication is used together with other information by the PCF to determine, whether any new UE policy section(s) need to be installed and whether any existing UE policy section(s) need to be updated or deleted.  Meanhwhile, CT1 agreed in CR 0206 to TS 24.526 (see C1-236460) that the URSP rules provided by the PCF to the UE shall include a new “URSP rule enforcement report” indication to indicate to the UE whether to report the URSP rule enforcement for the associated URSP rule.  However, as the URSP rules are applicable in 5GS and EPS the PCF needs to be aware of the UE’s capability to support reporting URSP rule enforcement also when in EPS. Otherwise, the PCF may not include the new “URSP rule enforcement report indication” when installing/updating URSP rules in EPS. When the UE moves then to 5GS the UE will not provide URSP rule enforcement reports for the URSP rules previously installed/updated in EPS.  Accordingly, this CR proposes to update the Npcf\_UEPolicyControl service to support the handling of UE capability indication of reporting URSP rule enforcement to network when in EPS. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Update the Npcf\_UEPolicyControl service to support the handling of UE capability infication of reporting URSP rule enforcement to network when in EPS. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | URSP enforcement feature incomplete. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.2.2.2.1.1, 4.2.2.2.1.1a | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 does not introduce any changes to the OpenAPI description. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

###### 4.2.2.2.1.1 Provisioning of the UE Access Network discovery and selection policies and UE Route Selection Policy

During Initial Registration and 5GS Registration during UE mobility from EPS to 5GS, and when:

a) the UE has one or more stored UE policy sections corresponding to the serving PLMN/SNPN or HPLMN;or

b) the UE does not have any stored UE policy section corresponding to the serving PLMN/SNPN or HPLMN and the UE needs to send a UE policy container to the network;

then the UE includes the "UE STATE INDICATION" message as defined in clause D.5.4.1 of 3GPP TS 24.501 [15], which is transferred transparently by the AMF within the "uePolReq" attribute during the creation of a policy association, as described in clause 4.2.2.1.

The (H-)PCF, or the PCF of the SNPN for the UEs subscribed to the SNPN, may store in the UDR, as specified in 3GPP TS 29.519 [17]:

a) UPSCs and related UE policy sections of the own PLMN or SNPN it provided to a UE;

b) the PEI received from the NF service consumer (e.g. AMF), if available;

c) the OSId(s) received from the UE within the "UE STATE INDICATION" message as described in the Annex D of 3GPP TS 24.501 [15], if available;

d) the indication of UE's support for ANDSP included in the "UE STATE INDICATION" message as described in the Annex D of 3GPP TS 24.501 [15], if available;

e) if the "EpsUrsp" feature defined in 3GPP TS 29.519 [17] is supported, the indication of UE's support for URSP provisioning in EPS included in the "UE STATE INDICATION" message as described in the Annex D of 3GPP TS 24.501 [15], if available;

f) if the "URSPEnforcement" feature defined in 3GPP TS 29.519 [17] is supported, the indication of UE's support for reporting URSP rule enforcement included in the "UE STATE INDICATION" message as described in the Annex D of 3GPP TS 24.501 [15], if available; and

g) if the "VPLMNSpecificURSP" feature defined 3GPP TS 29.519 [17] is supported, the indication of UE's support for VPLM-Specific URSP included in the "UE STATE INDICATION" message as described in the Annex D of 3GPP TS 24.501 [15], if available.

The PCF shall retrieve from UDR the information previously stored in UDR, if not locally available, for URSP/ANDSP rule determination as specified in 3GPP TS 29.519 [17].

The V-PCF may retrieve UPSCs and related UE policy sections applicable for all UEs from a HPLMN from the V-UDR, using the HPLMN ID as key as specified in 3GPP TS 29.519 [17]. The PCF of the serving SNPN has locally configured the UPSCs and related UE policy sections applicable for all UEs other than the UEs subscribed to the SNPN.

When receiving the "UE STATE INDICATION" message, the (V-)(H-)PCF or the PCF of the serving SNPN, shall determine, based on the UPSIs indicated in that message, if available, the ANDSP support indication and the OSId(s) indicated in that message, if available, the reporting URSP rule enforcement support in that message, if available, the UE Policy Sections and UPSCs stored in the UDR, if available, the policy subscription data, if available, application data, if available, inputs received from the NF service consumer,and local policy, as specified in clauses 4.2.2.2.2 and 4.2.2.2.3, whether any new UE policy section(s) need to be installed and whether any existing UE policy section(s) need to be updated or deleted. Based on local configuration, the (H-)PCF or the PCF of the serving SNPN (for the SNPN-subscribed UEs), may indicate to the UE to accept/not accept URSP rules signalled by non-subscribed SNPNs within the UE policy network classmark IE in a MANAGE UE POLICY COMMAND message as described in Annex D of 3GPP TS 24.501 [15].

NOTE 1: When an SNPN-enabled UE registers in a SNPN using credentials from a Credentials Holder (CH) but the UE is not subscribed in that SNPN, the PCF of the non-subscribed SNPN, based on local policies, can provision the UE with URSP rules for the SNPN.

When the received "UE STATE INDICATION" message indicated that the UE supports VPLMN-specific URSP rules as specified in Annex D of 3GPP TS 24.501 [15], the (H-)PCF may determine URSP rules specific per VPLMN as specified in clauses 4.2.2.2.3.2. In this case, the (H-)PCF shall provide to the UE within the "MANAGE UE POLICY COMMAND" the UE policy sections containing the VPLMN-specific URSP rules within the VPS URSP configuration IE as specified in subclause D.6.8 of 3GPP TS 24.501 [15].

NOTE 2: The VPS URSP configuration IE includes zero or more tuples, each tuple containing a tuple Id, VPLMN ID(s) and a list of UPSC(s) (of HPLMN's UE policy sections) with UE policies with URSP rules applicable to the VPLMN(s) and its equivalent PLMN(s).

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

###### 4.2.2.2.1.1a Provisioning of URSP in EPS

When the UE initially attaches in EPS and establishes the default PDN connection or establishes the first PDN connection in EPS, the "EpsUrsp" feature is supported as described in 3GPP TS 29.512 [31], both the UE and the network support URSP provisioning in EPS PCO,, the UE includes the UE policy container IE with the "UE STATE INDICATION" message as defined in clause D.5.4.1 of 3GPP TS 24.501 [15] in the BEARER RESOURCE MODIFICATION REQUEST message as defined in 3GPP TS 24.301 [36]. The UE policy container is then transferred transparently by the PCF for the PDU session within the "uePolReq" attribute during the creation of a UE policy association, as described in clause 4.2.2.1.

The (H-)PCF, may store in the UDR, as specified in 3GPP TS 29.519 [17]:

a) UPSCs and related URSP sections of the own PLMN it provided to a UE;

b) the PEI received from the NF service consumer, if available;

c) the OSId(s) received from the UE within the "UE STATE INDICATION" message as described in the Annex D of 3GPP TS 24.501 [15], if available;

d) if the "EpsUrsp" feature defined in 3GPP TS 29.519 [17] is supported, the indication of UE's support for URSP provisioning in EPS included in the "UE STATE INDICATION" message as described in the Annex D of 3GPP TS 24.501 [15], if available; and

f) if the "URSPEnforcement" feature defined in 3GPP TS 29.519 [17] is supported, the indication of UE's support for reporting URSP rule enforcement included in the "UE STATE INDICATION" message as described in the Annex D of 3GPP TS 24.501 [15], if available.

The PCF shall retrieve from UDR the information previously stored in UDR, if not locally available, for URSP rule determination as specified in 3GPP TS 29.519 [17].

Editor's Note: It is FFS how URSP provisionng in EPS is supported in Home Routed roaming scenarios.

When receiving the "UE STATE INDICATION" message, the (H-)PCF, shall determine, based on the UPSIs indicated in that message, if available, the OSId(s) indicated in that message, if available, the reporting URSP rule enforcement support in that message, if available, the UE Policy Sections and UPSCs stored in the UDR, if available, the policy subscription data, if available, application data, if available, and local policy, as specified in clauses 4.2.2.2.2 and 4.2.2.2.3, whether any new URSP section(s) need to be installed and whether any existing URSP section(s) need to be updated or deleted.

NOTE 1: Reporting of URSP enforcement information is only supported in 5GS. However, in EPS the PCF uses the indication of the UE's support for reporting URSP rule enforcement when URSP section(s) need to be installed or updated to support the reuse of the URSP section(s) when the UE is in 5GS.

During 5GS to EPS mobility with N26, when the "EpsUrsp" feature is supported and PCF for the PDU session establishes a UE Policy Association with the PCF for the UE as described in clause 4.2.2.1, the PCF for the UE shall determine whether the 5GS to EPS mobility with N26 scenario applies based on the "5gsToEpsMob" attribute. If it applies, the PCF for the UE shall recover from the UE Policy Association previously established with the AMF:

- UE Policy Section related information, i.e.:

a) UPSCs and related URSP sections of the own PLMN it provided to the UE;

b) if the "URSPEnforcement" feature defined in 3GPP TS 29.519 [17] is supported, the indication of UE's support for reporting URSP rule enforcement received from the UE within the "UE STATE INDICATION" message as described in the Annex D of 3GPP TS 24.501 [15], if available; and

c) the OSId(s) received from the UE within the "UE STATE INDICATION" message as described in the Annex D of 3GPP TS 24.501 [15], if available; and

- the subscribed Policy Control Triggers with the AMF, if available.

NOTE 2: At 5GS to EPS mobility with N26, the guard timer in the AMF (as specified in clause 4.11.1.2.1 and clause 4.11.1.3.2 of TS 23.502 [3]) ensures that the UE Policy Association remains until the PCF for the UE detects that a UE Policy Association establishment is received from a PCF for the PDU Session indicating 5GS to EPS mobility.

When receiving the 5GS to EPS mobility indication, the PCF for the UE, shall determine, based on the UE Policy Sections and the OSId(s) recovered from the former UE Policy Association in 5GS, if available, the policy subscription data, if available, application data, if available, and local policy, as specified in clauses 4.2.2.2.2 and 4.2.2.2.3, whether any new UE Policy section(s) with URSP need to be installed and whether any existing UE Policy section(s) with URSP need to be updated or deleted.

In both scenarios above, initial attach and/or first PDN connection establishmet in EPS scenario and 5GS to EPS mobility scenario, the determined URSP is transferred to the UE as specified in 4.2.2.2.1.0 with the following differences:

- the messages of the UE policy delivery protocol defined in Annex D of 3GPP TS 24.501 [15] are transparently forwarded to the UE by a PCF for a PDU session; and

- the (V-)(H-)PCF shall use the Npcf\_UEPolicyControl\_Create/Update response and the Npcf\_UEPolicyControl\_UpdateNotify request to send "MANAGE UE POLICY COMMAND" messages to the UE in a "uePolicy" attribute and use the Npcf\_UEPolicyControl\_Update service operation to receive "MANAGE UE POLICY COMPLETE" and "MANAGE UE POLICY COMMAND REJECT" messages from the UE via a PCF for a PDU session in a "uePolDelResult" attribute.

\* \* \* End Change \* \* \* \*