**3GPP TSG CT WG3 Meeting #142 *C3-253521***

**Goteborg, Sweden, 25 – 29 August, 2025 (Revision of C3-253290)**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **29.525** | **CR** | **0403** | **rev** | **1** | **Current version:** | **19.3.0** |  |
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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:*** | Complete the partially unsuccessful ursp rule delivery outcome | | | | | | | | | |
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| ***Source to WG:*** | Ericsson, Nokia | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | UEP19 | | | | |  | ***Date:*** | | | 2025-6-23 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In CT3#141 meeting, it was agreed to reporting partially unsuccessful delivery of UE policies in both Npcf\_EventExposure and ServiceParameter APIs.  When AF interacts with the VNEF and VUDR with the VPLMN specific URSP rules, the VPCF will deliver these URSP rules to the UE. When VPCF receives the MANAGE UE POLICY COMMAND REJECT message, it forwards the message to the HPCF. When the HPCF receives the MANAGE UE POLICY COMMAND REJECT message, the HPCF detemines the delivery outcome, as 29.525 stated:  *When the (H-)PCF receives the "MANAGE UE POLICY COMPLETE" or the "MANAGE UE POLICY COMMAND REJECT" message and/or the PCF deducts that the UE is temporarily unreachable, and the PCF determines that the received message or the internal deduction indicates a UE Policy Delivery outcome event is matched:*  *- if an NF service consumer has subscribed via a request for service specific parameters to the HPLMN, the (H-)PCF shall invoke the Npcf\_EventExposure\_Notify service operation as defined in clause 4.2.4.2 of 3GPP TS 29.523 [30]; or*  *- if the "VPLMNSpecificURSP" is supported and the V-PCF has subscribed with the H-PCF as specified in clauses 4.2.2.1 and/or 4.2.3.1 because an AF has subscribed via a request for service parameters to the VPLMN, the H-PCF shall invoke the Npcf\_UEPolicyControl\_UpdateNotify as specified in this clause to notify about the result of the delivery of UE policies using the "delivReport" attribute. The "delivReport" attribute is a map of "eventNotifs" attributes, where:*  *a. the key of the map represents the related AF; and*  *b. each "eventNotifs" entry shall contain the reported event(s) ("SUCCESS\_UE\_POL\_DEL\_SP" or "UNSUCCESS\_UE\_POL\_DEL\_SP") within the "event" attribute and in case of delivery failure, the "delivFailure" attribute with the corresponding failure reason;*  so if the V-PCF subscribed with H-PCF regarding the events, the HPCF shall UpdateNotify the VPCF regarding the delivery report.  In this path, the AF through VPCF provided VPLMN specific URSPs, and some of the URSPs can failed but not others. Therefore, the partially unsuccess scenario can be applicable here as well. Currently, the spec only supports the complete success or failed scenario. The partially unsuccessful delivery outcome can be notified through VPCF to AF which is in contact with VNEF.  Further, when VNEF provision the service parameters to the VPCF and further to HPCF, the authorization is happened at the HPCF as specified in 23.502 and therefore, the HPCF can also notify the VPCF then VNEF about the PCF authorization failure. | | | | | | | | |
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| ***Summary of change:*** | | Add the partially unsuccessful delivery handling for the URSP rules delivery outcome in the VPLMN specific URSP guildence scenario. | | | | | | | | |
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| ***Consequences if not approved:*** | | When AF interact with VPCF through VNEF, the partial successful URSP rule delivery is not supported. | | | | | | | | |
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| ***Clauses affected:*** | | 4.2.2.1, 4.2.3.1, 4.2.4.7, 5.6.2.9, 5.6.2.12, 5.8 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 has no impact on the OpenAPI. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

#### 4.2.2.1 General

The procedure in the present clause is applicable in the following cases:

- UE performs initial registration to the network, as defined in clause 5.5.1.2.2 of 3GPP TS 24.501 [15];

- UE performs a mobility registration, if the UE operating in single-registration mode performs inter-system change from S1 mode to N1 mode, as defined in clause 5.5.1.3.2 of 3GPP TS 24.501 [15], and there is no existing UE Policy Association between AMF and PCF for this UE;

- the AMF is relocated (between the different AMF sets) and the new AMF selects a new PCF. The procedure for the case where the AMF is relocated and the new AMF selects the old PCF is defined in clause 4.2.3.1; and

- when the UE Policy Association establishment is controled by the UE Policy Association Indicator provided by the UDM, when the indicator is set to enabled.

To support the delivery of URSP in EPS, the procedure in the present clause is also applicable when:

- When the UE triggers a BEARER RESOURCE MODIFICATION REQUEST message with a UE policy container IE after the UE performs ePCO capability negotiation during PDN connection establishment procedure (during the Initial Attach with default PDN connection establishment or during the first PDN connection establishment or during PDN connection modification with or without QoS update or during new PDN connection establishment when no other existing PDN connection indicates support of URPS provisioning in EPS) as defined in 3GPP TS 24.301 [33], and both, the UE and the network support URSP provisioning in EPS PCO; and

- 5GS to EPS handover or 5GS to EPS Idle Mode mobility (both referred as 5GS to EPS mobility in the present document) as defined in 3GPP TS 24.501 [15] and if the UE and at least one of the PDN connection(s) supports URSP delivery in EPS as specified in 3GPP TS 29.512 [31].

The creation of a UE policy association only applies for normally registered UEs, i.e. it does not apply for emergency-registered UEs.

Figure 4.2.2.1-1 illustrates the procedure used for the creation of a policy association.



Figure 4.2.2.1-1: Creation of a UE policy association

NOTE 1: For the roaming scenario, the PCF represents the V-PCF, if the NF service consumer is an AMF, and the PCF represents the H-PCF, if the NF service consumer is a V-PCF.

During UE registration or AMF reallocation with a new selected PCF, the AMF triggers the establishment of the UE Policy Association as follows:

i. if the AMF received from the UDM the UE Policy Association Indicator set to enabled, the AMF shall establish a UE policy association with the (V-)PCF, in case there is no existing UE policy association for the UE;

ii. if the AMF received from the UDM the UE Policy Association Indicator set to disabled, the AMF shall not establish the UE policy association with the (V-)PCF;

iii. if the AMF does not receive from the UDM the UE Policy Association Indicator:

- if the AMF obtains from the UE a UE policy delivery protocol message as defined in Annex D of 3GPP TS 24.501 [15] and/or the authorized PC5 capability for 5G ProSe, and/or the authorized PC5 capability for V2X communications and/or A2X communications, and/or the authorized PC5 capability for Ranging/SL, the AMF shall establish the UE Policy Association with the (V-)PCF, in case there is no existing UE policy association for the UE; otherwise the AMF may establish a UE Policy Association with the (V-)PCF based on AMF local configuration.

NOTE 2: The indication of whether the UE Policy Association is allowed by UDM subscription is delivered by the UDM to the NF service consumer within the Access and Mobility Subscription Data Retrieval service operation as described in 3GPP TS 29.503 [43].

NOTE 3: In the roaming scenario, the visited AMF's local configuration can indicate whether UE Policy delivery is needed based on the roaming agreement with the home PLMN of the UE. The AMF’s local configuration takes precedence over the UE Policy Association Indicator, if received from the HPLMN.

If the AMF receives from the UDM the UE Policy Association Indicator, the AMF shall store the UE policy container received from the UE in the UE context, if received.

If the UE Policy Association Indicator changes from disabled to enabled and the PCF has not previously rejected or terminated the UE Policy Association, the AMF shall immediately establish the UE Policy Association and shall use the UE policy container stored in the UE context, if available. The (H-)(V-)PCF provides to the UE all the applicable UE Policies.

NOTE 4: The AMF can still decide to initiate the establishment of the UE Policy Association based on local policies, even if the PCF had previously rejected or terminated the UE Policy Association.

NOTE 5: The UE applies the received UE Policies for the PDU session(s) that were established before the enablement of the UE Policy Association as specified in 3GPP TS 24.526 [16].

During UE Initial Attach with default PDN connection or the establishment of the first PDN connection in EPS or a new PDN connection when no other existing PDN connection indicates the support of URSP provisioning in EPS, if the UE and the SMF+PGW support URSP provisioning in EPS PCO, the PCF for the PDU session supports the URSP provisioning in EPS as defined in 3GPP TS 29.512 [31], the PCF for a PDU session associated with the SMF+PGW-C serving the PDN connection obtains from the UE a UE policy container in a Npcf\_SMPolicyControl\_Update procedure triggered by a bearer resource modification procedure as described in 3GPP TS 29.512 [31]. Then, if the "EpsUrsp" feature described in clause 5.8 is supported, the PCF for a PDU session shall establish a UE policy association with the (V-)PCF for the UE for the delivery of URSP only.

During 5GS to EPS mobility with N26, and if the "EpsUrsp" feature described in clause 5.8 is supported, the PCF for the PDU session determines whether 5GS to EPS mobility applies based on the received RAT and/or Access-Type change event as described in 3GPP TS 29.512 [31]. Then, for non-roaming and Home Routed roaming scenarios, the PCF for a PDU session shall determine whether the UE supports URSP provisioning in EPS as described in 3GPP TS 29.512 [31], and if supported, shall establish a UE policy association with the PCF for the UE that is handling the UE policy association with the source AMF. For LBO roaming scenarios, the V-PCF for the PDU session determines based on local configuration whether to establish a UE Policy Association towards the V-PCF for the UE.

NOTE 6: The PCF for the PDU session discovers the address of the PCF for the UE handling the UE policy association with the source AMF by querying the BSF as described in 3GPP TS 29.521 [22].

NOTE 7: If during the 5GS to EPS mobility there are more than one PCF for the PDU session maintaining PDN connections for the UE, every PCF for the PDU session establishes a UE Policy Association towards the PCF for the UE. In LBO scenarios, the V-PCF for the UE will handle only one UE Policy Association towards the H-PCF for the UE.

To establish a UE policy association with the PCF, the NF service consumer (e.g. AMF) shall send an HTTP POST request with "{apiRoot}/npcf-ue-policy-control/v1/policies" as Resource URI and the PolicyAssociationRequest data structure as request body, which shall include:

- the Notification URI encoded as "notificationUri" attribute;

- the SUPI encoded as "supi" attribute; and

- the features supported by the NF service consumer encoded as "suppFeat" attribute,

shall also include, when available:

- the GPSI encoded as "gpsi" attribute;

- the Access type encoded as "accessType" attribute;

- the Permanent Equipment Identifier (PEI) encoded as "pei" attribute;

- the User Location Information encoded as "userLoc" attribute;

- the UE Time Zone encoded as "timeZone" attribute;

- the identifier of the serving network (the PLMN Identifier or the SNPN Identifier), encoded as "servingPlmn" attribute;

NOTE 8: The SNPN Identifier consists of the PLMN Identifier and the NID.

NOTE 9: For Indirect Network Sharing and the interaction between the hosting operator network and the participating operator network case, the identifier of the serving network is set to the selected PLMN ID during the UE Policy Association establishment procedure, as specified in clause 5.18.1 of 3GPP TS 23.501 [2].

- the RAT type encoded as "ratType" attribute;

- the received UE policy delivery protocol message defined in Annex D of 3GPP TS 24.501 [15] encoded as "uePolReq" attribute;

- for the roaming scenario, if the NF service consumer is an AMF, the H-PCF ID encoded as "hPcfId" attribute, and if the "EnhEstRoaming" feature is supported, the H-PCF URI encoded as the "hPcfUri" attribute and the H-PCF Set ID encoded as "hPcfSetId" attribute;

- the Internal Group Identifier(s) encoded as "groupIds" attribute;

- the PC5 capability for V2X encoded as "pc5Capab" attribute if the "V2X" feature defined in clause 5.8 is supported;

- the 5G ProSe capability within the "proSeCapab" attribute, if the "ProSe" feature defined in clause 5.8 is supported;

- the Ranging/SL capability within the "rangSlCapab" attribute, if the "Ranging\_SL" feature defined in clause 5.8 is supported;

- if the NF service consumer is an AMF, the GUAMI encoded as "guami" attribute;

- if the NF service consumer is an AMF, the serving AMF Id encoded as "servingNfId" attribute;

NOTE 10: If the PCF received the "servingNfId" attribute, the PCF can use the Nnrf\_NFDiscovery Service specified in 3GPP TS 29.510 [13] to retrieve the NF profile of the Namf\_Communication service available in the indicated AMF instance Id.

- if the NF service consumer is an AMF and the "SliceAwareANDSP" feature is supported:

- if the UE indicated the support of slice-based N3IWF and/or TNGF selection as specified in 3GPP TS 24.501 [15], the AMF may provide information about these UE indications within the "sliceN3gNodeSelCap" attribute;

- if the AMF has determined that the UE has selected a non-3gpp access node (i.e. TNGF or N3IWF) that is not compatible with the allowed S-NSSAI(s), and the UE indicated the support of slice-based N3IWF and/or TNGF selection as specified in 3GPP TS 24.501 [15], the wrongly selected type of non-3gpp access node encoded as "n3gNodeReSel" attribute, and, in the roaming case, also the Configured NSSAI for the serving PLMN encoded as "confSnssais" attribute;

- if the NF service consumer is an AMF, the Satellite Backhaul Category encoded as "satBackhaulCategory" attribute, if the "EnSatBackhaulCategoryChg" feature defined in clause 5.8 is supported;

- if the NF service consumer is the PCF for the PDU session, and the "EpsUrsp" feature defined in clause 5.8 is supported, the indication that the trigger for the UE Policy Association Establishment is the 5GS to EPS mobility scenario encoded as the "5gsToEpsMob" attribute;

- for the roaming scenario, if the NF service consumer is an AMF and the "NssaiChange" feature is supported, the Configured NSSAI for the serving PLMN encoded as "confSnssais" attribute and optionally the mapped each S-NSSAI value of home network corresponding to the configured S-NSSAI values in the serving PLMN encoded as "mappedHomeSnssai" attribute within the "confSnssais" attribute;

- the A2X capability encoded as "a2xCapab" attribute if the "A2X" feature defined in clause 5.8 is supported;

- if the feature "AccessChange" is supported, the NF service consumer shall include:

a) the "accessTypes" attribute indicating registration in the 3GPP access, in the non-3GPP access, or in both 3GPP and non-3GPP access, if available; and

b) the RAT type entry corresponding to the 3GPP access and/or the RAT type entry corresponding to the non-3GPP access encoded in the "ratTypes" attribute, if available.

NOTE 11: If the feature "AccessChange" is not supported or it is not known yet whether it is supported in the PCF, the NF service consumer can also provide the "accessType" attribute and the "ratType" attribute, if available, with one available access type and RAT type.

NOTE 12: When the UE is simultaneously connected to the 5G Core Network of a PLMN/SNPN over a 3GPP access and a non-3GPP access, the UE is served by the same AMF, as specified in 3GPP TS 23.501 [2]. In this case, the UE Policy Association contains both, 3GPP and non-3GPP accesses.  
When the UE is simultaneously connected to 5G Core Network over 3GPP access and non-3GPP access in different PLMN(s)/SNPN(s), the UE is served by different AMFs. In this case, there can be two UE Policy Associations, each with the corresponding access type.

- for the roaming scenario, if the NF service consumer is a V-PCF and the "VPLMNSpecificURSP" feature is supported, the AF guidance on VPLMN-specific URSP rules related information, if applicable, within the "vpsUePolGuidance" attribute, that shall contain for each related AF:

a. the AF guidance on VPLMN-Specific URSP rules within the "urspGuidance" attribute; and

b. if the AF requested to the VPLMN notifications about the delivery of UE Policies, the "deliveryEvents" attribute including the "SUCCESS\_UE\_POL\_DEL\_SP" and/or "UNSUCCESS\_UE\_POL\_DEL\_SP" and/or if feature "ExtDeliveryOutcome" is supported, "PARTLY\_UNSUCC\_UE\_POL\_DEL\_SP" and/or "UNSUCCESS\_PCF\_SERVICE\_AUTHORIZATION" events; and

- for the roaming scenario, if the NF service consumer is an AMF, and the "VPLMNSpecificURSP" feature is supported, LBO information within the "lboRoamInfo" attribute.

and may include:

- if the NF service consumer is an AMF, the name of a service produced by the AMF that expects to receive information via the Npcf\_UEPolicyControl\_UpdateNotify service operation encoded as "serviceName" attribute;

- if the NF service consumer is an AMF, the alternate or backup IPv4 Address(es) where to send Notifications encoded as "altNotifIpv4Addrs" attribute;

- if the NF service consumer is an AMF, the alternate or backup IPv6 Address(es) where to send Notifications encoded as "altNotifIpv6Addrs" attribute;

- if the NF service consumer is an AMF, the alternate or backup FQDN(s) where to send Notifications encoded as "altNotifFqdns" attribute;

- if the NF service consumer is an AMF, the alternate or backup FQDN(s) where to send Notifications encoded as "altNotifFqdns" attribute.

Upon the reception of the HTTP POST request,

- the (V-)(H-)PCF shall assign a UE policy association ID;

- for the roaming scenario and based on operator policy, the V-PCF (as the NF service consumer) should send to the H-PCF a request for the Creation of a UE policy association as described in the present clause;

- the (V-)(H-)PCF shall determine the applicable UE policy as detailed in clause 4.2.2.2. For the V-PCF, any policy received from the H-PCF in the reply to the possible request for the Creation of a policy association should be taken into consideration;

- if the (V-)PCF determines that UE policy needs to be provisioned, it shall use the Namf\_Communication service specified in 3GPP TS 29.518 [14] to provision the UE policy according to clause 4.2.2.2 and as follows:

(i) the (V-)PCF shall subscribe to the AMF to notifications on N1 messages for UE Policy Delivery Results using the Namf\_Communication\_N1N2MessageSubscribe service operation;

(ii) the (V-)PCF shall send the determined UE policy (e.g. ANDSP, URSP, V2XP, A2XP, ProSeP, RSLPP) using Namf\_Communication\_N1N2MessageTransfer service operation(s); and

(iii) the (V-)PCF shall be prepared to receive UE Policy Delivery Results from the AMF and/or subsequent UE policy requests (e.g. for V2XP and/or A2XP and/or ProSeP and/or RSLPP) within the Namf\_Communication\_N1MessageNotify service operation. For the V-PCF, if the received UE Policy Delivery results relate to UE policy sections provided by the H-PCF, the V-PCF shall use the Npcf\_UEPolicyControl\_Update Service Operation defined in clause 4.2.3 to send those UE Policy Delivery results to the H-PCF;

- if the UE indicates the support of V2X communications over PC5 reference point and the "V2X" feature is supported, the (H-)PCF shall determine the applicable V2XP, as detailed in clause 4.2.2.2.1.2, and V2X N2 PC5 policy, as detailed in clause 4.2.2.3 and based on the operator's policy;

- if the UE indicates the support of 5G ProSe and the "ProSe" feature is supported, the (H-)PCF shall determine the applicable ProSeP, as detailed in clause 4.2.2.2.1.3, and 5G ProSe N2 PC5 policy, as detailed in clause 4.2.2.4 and based on the operator's policy;

- if the UE indicates the support of Ranging/SL and the "Ranging\_SL" feature is supported, the (H-)PCF shall determine the applicable RSLPP, as detailed in clause 4.2.2.2.1.5, and Ranging/SL N2 PC5 policy, as detailed in clause 4.2.2.7, and based on the operator's policy;

- if the PCF determines that N2 PC5 policy (e.g., for V2X communications, for 5G ProSe, for Ranging/SL) needs to be provisioned, including the case of the V-PCF when receiving the N2 PC5 policy from the H-PCF, the PCF shall use the Namf\_Communication service specified in 3GPP TS 29.518 [14] to provision the N2 PC5 policy according to clause 4.2.2.3 and/or clause 4.2.2.4;

- if the UE indicates support for URSP provisionng in EPS, the "EpsUrsp" feature is supported, and the (V-)PCF determines that UE policy needs to be provisioned via a PCF for a PDU session, the (V-)PCF shall select a UE Policy Association and shall provision the UE policy according to clause 4.2.2.2 and as follows:

(i) the (V-)PCF shall send a UE policy container with the determined URSP using Npcf\_UEPolicyControl\_Create response service operation(s); and

(ii) the (V-)PCF shall be prepared to receive UE Policy Delivery Results from the PCF for a PDU session. The PCF for a PDU session shall use the Npcf\_UEPolicyControl\_Update service operation defined in clause 4.2.3 to send those UE Policy Delivery results to the (V-)PCF;

- if the UE indicates the support of A2X communications over PC5 reference point and the "A2X" feature is supported, the (H-)PCF shall determine the applicable A2XP, as detailed in clause 4.2.2.2.1.4, and A2X N2 PC5 policy, as detailed in clause 4.2.2.5 and based on the operator's policy;

for the successful case, the (V-)(H-)PCF shall send a HTTP "201 Created" response with the URI for the created resource in the "Location" header field.

NOTE 13: The assigned policy association ID is part of the URI for the created resource and is thus associated with the SUPI.

and the PolicyAssociation data type as response body, including:

- mandatorily, the negotiated supported features encoded as "suppFeat" attribute;

- optionally, the information provided by the NF service consumer when requesting the creation of this policy association encoded as "request" attribute;

- optionally, for the H-PCF as service producer communicating with the V-PCF, UE policy (see clause 4.2.2.2) encoded as "uePolicy" attribute;

- optionally, for the H-PCF as service producer communicating with the V-PCF, N2 PC5 policy (see clause 4.2.2.3 and/or clause 4.2.2.4 and/or clause 4.2.2.5 and/or clause 4.2.2.6) encoded as "n2Pc5Pol" attribute (for V2X communications) and/or "n2Pc5PolA2x" attribute (for A2X communications) and/or "n2Pc5ProSePol" attribute (for 5G ProSe) and/or "n2Pc5RsppPol" attribute (for Ranging/SL);

- optionally, for the H-PCF as service producer communicating with the V-PCF, and when the feature "UECapabilityIndication" is supported, if the H-PCF did not receive from the UE information about ANDSP support and the information is available and reliable in the UDR (see clause 4.2.2.2.1.1), the ANDSP support indication retrieved from UDR encoded as "andspInd" attribute;

- optionally, for the (V-)PCF communicating with the AMF, and if the "URSPEnforcement" feature is supported, the request to the AMF to be notified about the PDU session established/terminated events by providing the PCF for the UE callback information within the "pcfUeInfo" attribute, and the DNN and S-NSSAI combination of the concerned PDU session(s) within the "matchPdus" attribute.

- optionally, one or several of the following Policy Control Request Trigger(s) encoded as "triggers" attribute (see clause 4.2.3.2):

a) Location change (tracking area);

b) Change of UE presence in PRA;

c) Change of PLMN, if the "PlmnChange" feature is supported;

d) Change of UE connectivity state, if the "ConnectivityStateChange" feature is supported;

e) URSP rule enforcement information, if the "URSPEnforcement" feature is supported;

f) Change of Satellite Backhaul Category, if the "EnSatBackhaulCategoryChg" feature is supported;

g) Change of Access Type and RAT Type, if the "AccessChange" feature is supported;

h) LBO information change, applicable to roaming scenarios, if the "VPLMNSpecificURSP" feature is supported and the NF service consumer is an AMF; and

i) Change of Configured NSSAI, in roaming scenarios, if the "NssaiChange" feature is supported and the NF service consumer is the AMF;

- if the Policy Control Request Trigger "Change of UE presence in PRA" is provided, the presence reporting areas for which reporting is required encoded as "pras" attribute;

- if the Policy Control Request Trigger "LBO information change" is provided, optionally, the DNNs(s) and S-NSSAI(s) for which LBO information is required encoded as "pduSessions" attribute;

- if the NF service consumer is an AMF and the "SLAMUP" feature is supported, based on the operator policies the H-PCF indicates that the AMF should select the same CHF that is selected by the H-PCF for a UE, the charging address(es) information encoded in the "chfInfo" attribute.

- for the roaming scenario, if the NF service consumer is a V-PCF and the "SLAMUP" feature is supported, based on the operator policies the H-PCF interacts with V-PCF to indicate that the AMF should select the same H-CHF that is selected by the H-PCF for a UE, the charging address(es) information encoded in the "chfInfo" attribute.

NOTE 14:If the PCF uses a Presence Reporting Area identifier referring to a Set of Core Network predefined Presence Reporting Areas as defined in 3GPP TS 23.501 [2], the PCF includes the identifier of this Presence Reporting Area set within the "praId" attribute.

- if the "SliceAwareANDSP" feature is supported, the PCF received the "n3gNodeReSel" attribute and the PCF has successfully delivered to the UE the ANDSP/WLANSP with the slice selection information for the corresponding non-3gpp node, the indication of the successful UE configuration by providing the "andspDelInd" attribute with the value "CONFIGURED". The PCF may delay the indication of the configuration result to a subsequent Npcf\_UEPolicyControl\_UpdateNotify request, as described in clause 4.2.4.2.

- if errors occur when processing the HTTP POST request, the (V-)(H-)PCF shall apply error handling procedures as specified in clause 5.7 and according to the following provisions:

- if the user information received within the "supi" attribute is unknown, the (V-)(H-)PCF shall reject the request and include in an HTTP "400 Bad Request" response message the "cause" attribute of the ProblemDetails data structure set to "USER\_UNKNOWN"; and

- if the (V-)(H-)PCF is, due to incomplete, erroneous or missing information in the request, not able to provision a UE policy decision, the (V-)(H-)PCF may reject the request and include in an HTTP "400 Bad Request" response message the "cause" attribute of the ProblemDetails data structure set to "ERROR\_REQUEST\_PARAMETERS".

If the (V-)PCF received a GUAMI, the (V-)PCF may subscribe to GUAMI changes using the AMFStatusChange service operation of the Namf\_Communication service specified in 3GPP TS 29.518 [14], and it may use the Nnrf\_NFDiscovery Service specified in 3GPP TS 29.510 [13] (using the obtained GUAMI and possibly service name) to query the other AMFs within the AMF (service) set.

When the "SliceAwareANDSP" feature is supported, and the AMF receives the "andspDelInd" attribute, the AMF, based on operator's policies, may reject the UE Registration request, and may provide a valid target N3IWF/TNGF within the Registration Reject message as specified in clause 5.5.1.3.5 of 3GPP TS 24.501 [15]. In this case, the AMF terminates the UE Policy Association as described in clause 4.2.5 (if the UE is not registered over 3GPP access).

\*\*\* Next Changes \*\*\*

#### 4.2.3.1 General

The procedure in the present clause is applicable when the NF service consumer modifies an existing UE policy association (including the case where the AMF is relocated and the new AMF selects to maintain the policy association with the old PCF and to update the Notification URI).

Figure 4.2.3.1-1 illustrates the update of a policy association.



Figure 4.2.3.1-1: Update of a UE policy association

NOTE 1: For the roaming case, the PCF represents the V-PCF if the NF service consumer is an AMF and the PCF represents the H-PCF if the NF service consumer is a V-PCF.

The AMF, as NF service consumer, invokes this procedure when a subscribed policy control request trigger (see clause 4.2.3.2) occurs. When a policy control request trigger that requires the subscription as defined in table 5.6.3.3-1 (e.g. LOC\_CH trigger) occurs, the NF service consumer (AMF) shall only invoke this procedure if the PCF has explicitly subscribed to that event trigger. When a policy control request trigger that does not require the subscription as defined in table 5.6.3.3-1 (e.g. GROUP\_ID\_LIST\_CHG trigger) occurs, the NF service consumer (AMF) shall always invoke the procedure.

NOTE 2: The AMF uses the Namf\_Communication\_N1MessageNotify service operation specified in 3GPP TS 29.518 [14] to send to the V-PCF a "MANAGE UE POLICY COMPLETE" message or a "MANAGE UE POLICY COMMAND REJECT" message, as defined in Annex D.5 of 3GPP TS 24.501 [15] or a "UE POLICY PROVISIONING REQUEST" message as defined in clause 7.2.1.1 of 3GPP TS 24.587 [24].

If an AMF as NF service consumer knows by implementation specific means that the UE context has been transferred to an AMF with another GUAMI within the AMF set, it may also invoke this procedure to update the Notification URI.

NOTE 3: Either the old or the new AMF can invoke this procedure.

During the AMF relocation, if the new AMF received the resource URI of the individual UE Policy from the old AMF and selects the old PCF, the new AMF shall also invoke this procedure to update the Notification URI. The new AMF may also update the alternate or backup IP addresses, and if service discovery via NRF applies, the AMF Id. If the feature "FeatureRenegotiation" is supported, the new AMF may perform feature renegotiation, as described in clause 4.2.3.4.

NOTE 4: During inter-AMF mobility, the N1N2 Individual Subscription context is transferred from the source AMF to the target AMF as specified in 3GPP TS 29.518 [14]. When the target AMF determines to reuse the UE Policy Association indicated by the source AMF, the PCF can keep the N1N2 Individual Subscription context and, for subsequent interactions, replace in the request URI the {apiRoot} of the N1N2 Individual Subscription resource with the one of the target AMF.

The V-PCF, as NF service consumer, invokes this procedure when a policy control request trigger (see clause 4.2.3.2) occurs. When a policy control request trigger that does not require the subscription as defined in table 5.6.3.3-1 (e.g. UE\_POLICY trigger) occurs, the V-PCF shall always invoke the procedure. When a policy control request trigger that requires the subscription as defined in table 5.6.3.3-1 (e.g. LOC\_CH trigger) occurs, the V-PCF shall only invoke this procedure if the H‑PCF has subscribed to that event trigger.

To request policies (e.g. policy control request trigger(s) is/are met) from the PCF, to update the Notification URI, to renegotiate features, to update the trace control configuration or to request the termination of trace, the NF Service Consumer shall request the update of the associated UE Policy Association by providing the relevant parameters about the UE context in an HTTP POST request with "{apiRoot}/npcf-ue-policy-control/v1/policies/{polAssoId}/update" as Resource URI and the PolicyAssociationUpdateRequest data structure as request body that shall include:

- at least one of the following:

1. a new Notification URI encoded in the "notificationUri" attribute;

2. observed Policy Control Request Trigger(s) (see clause 4.2.3.2) encoded as "triggers" attribute;

3. if a UE location change occurred, the UE location encoded as "userLoc" attribute;

4. if a "MANAGE UE POLICY COMPLETE" message or a "MANAGE UE POLICY COMMAND REJECT" message of the UE policy delivery protocol defined in Annex D of 3GPP TS 24.501 [15] has been received by the V-PCF as NF service consumer, and at least parts of the contents relate to UPSIs of the HPLMN, the parts of that message that relate to UPSIs of the HPLMN encoded as "uePolDelResult" attribute;

5. if the Policy Control Request Trigger "Change of UE presence in PRA" is provided, the current presence status of the UE for the presence reporting areas for which reporting was requested, if not previously provided, or the presence reporting areas for which reporting was requested and the status has changed encoded as "praStatuses" attribute;

NOTE 5: If the PCF included the identifer of a Core Network predefined Presence Reporting Area Set within the "praId" attribute during the subscription to changes of UE presence in PRA, the AMF only provides the presence reporting area information corresponding to the concerned individual Presence Reporting Area Identifier(s) within the Set. The "praId" attribute within each returned "PresenceInfo" data type hence includes the identifier of the concerned individual Presence Reporting Area.

6. if the NF service consumer is an AMF, for AMF relocation scenarios, if available, alternate or backup IPv4 Address(es) where to send Notifications encoded as "altNotifIpv4Addrs" attribute;

7. if the NF service consumer is an AMF, for AMF relocation scenarios, if available, alternate or backup IPv6 Address(es) where to send Notifications encoded as "altNotifIpv6Addrs" attribute;

8. if the NF service consumer is an AMF, for AMF relocation scenarios, if available, alternate or backup FQDN(s) where to send Notifications encoded as "altNotifFqdns" attribute;

9. for AMF relocation scenarios, the GUAMI encoded as "guami" attribute;

NOTE 6: An alternate NF service consumer than the one that requested the generation of the subscription resource can send the request. For instance, an AMF as service consumer can change;

10. if the NF service consumer is an AMF, for AMF relocation scenarios, the new serving AMF Id encoded in the "servingNfId" attribute;

NOTE 7: If the PCF received the "servingNfId" attribute, the PCF can use the Nnrf\_NFDiscovery Service specified in 3GPP TS 29.510 [13] to retrieve the NF profile of the Namf\_Communication service available in the indicated AMF instance Id.

11. if a UE PLMN change occurred and the "PlmnChange" feature defined in clause 5.8 is supported, the PLMN Identifier or the SNPN Identifier of the new serving network encoded as "plmnId" attribute;

NOTE 8: The SNPN Identifier consists of the PLMN Identifier and the NID.

NOTE 9: When the UE moves between PLMNs, the trigger reports changes of equivalent PLMNs.

NOTE 10: Mobility between non-equivalent SNPNs, and between SNPN and PLMN is not supported. When the UE is operating in SNPN access mode, the trigger reports changes of equivalent SNPNs.

12. if a "UE POLICY PROVISIONING REQUEST" message defined in clause 7.2.1.1 of 3GPP TS 24.587 [24] has been received by the V-PCF as NF service consumer and respectively the "V2X" feature and/or the "A2X" feature and/or the "ProSe" feature and/or the "Ranging\_SL" feature defined in clause 5.8 is/are supported, the message encoded as "uePolReq" attribute;

13. if a UE Internal Group Identifier(s) change occurred and the "GroupIdListChange" feature defined in clause 5.8 is supported, the Internal Group Identifier(s) of the served UE encoded as "groupIds" attribute;

14. if a change of PC5 capablity for 5G ProSe occurred and the "ProSe" feature defined in clause 5.8 is supported, the PC5 capability for 5G ProSe encoded as "proSeCapab" attribute;

14a. if a change of the Ranging/SL Capability occurred and the "Ranging\_SL" feature defined in clause 5.8 is supported, the Ranging/SL Capability encoded as "rangSlCapab" attribute; and/or

15. if a change of the connectivity state of the UE occurred and the "ConnectivityStateChange" feature defined in clause 5.8 is supported, the connectivity state of the served UE encoded as "connectState" attribute;

16. when a response with HTTP status code 4xx or 5xx as defined in clause 5.2.2.3.1.2 of 3GPP TS 29.518 [14] or a N1N2 Transfer Failure Notification as defined in clause 5.2.2.3.2 of 3GPP TS 29.518 [14] is received by the V-PCF after provisioning the UE policy by invoking the Namf\_Communication\_N1N2MessageTransfer service operation to the AMF, this UE policy transfer failure notification encoded as "uePolTransFailNotif" attribute;

17. if the NF service consumer is an AMF, the "SliceAwareANDSP" feature is supported, and the "NON\_3GPP\_NODE\_RESELECTION" trigger is reported within the "triggers" attribute, the wrongly selected type of non-3gpp access node encoded as "n3gNodeReSel" attribute, and, in the roaming case, also the Configured NSSAI for the serving PLMN encoded as "confSnssais" attribute;

18. if satellite backhaul category change occurred and the "EnSatBackhaulCategoryChg" feature defined in clause 5.8 is supported, the satellite backhaul category or non-satellite backhaul encoded as "satBackhaulCategory" attribute;

19. for the roaming scenario, if the NF service consumer is an AMF, Configured NSSAI change occurred and the "NssaiChange" feature is supported, the Configured NSSAI for the serving PLMN encoded as "confSnssais" attribute and optionally the mapped each S-NSSAI value of home network corresponding to the configured S-NSSAI values in the serving PLMN encoded as "mappedHomeSnssai" attribute within the "confSnssais" attribute;

20 for the roaming scenario, if the NF service consumer is a V-PCF, the "URSPEnforcement" feature is supported, and the "URSP\_ENF\_INFO" policy control request trigger is met, the URSP rule enforcement information within the "urspEnfRep" attribute;

21. for the roaming scenario, if the NF service consumer is a V-PCF the "VPLMNSpecificURSP" feature is supported, the new/modified/deleted AF guidance on VPLMN-specific URSP rules related information within the "vpsUePolGuidance" attribute, that shall contain for each related AF:

a. the AF guidance on VPLMN-Specific URSP rules within the "urspGuidance" attribute, if the AF updated/provided this information; and/or

b. if the AF requested to the VPLMN notifications about the delivery of UE Policies or the update of the subscription to notification information previously provided, the "deliveryEvents" attribute including the"SUCCESS\_UE\_POL\_DEL\_SP" and/or "UNSUCCESS\_UE\_POL\_DEL\_SP" and/or if feature "ExtDeliveryOutcome" is supported, "PARTLY\_UNSUCC\_UE\_POL\_DEL\_SP" and/or "UNSUCCESS\_PCF\_SERVICE\_AUTHORIZATION" events;

22. for the roaming scenario, if the NF service consumer is an AMF, the "VPLMNSpecificURSP" feature is supported and the "LBO\_INFO\_CH" policy control request trigger is met, the LBO roaming information within the "lboRoamInfo" attribute; and/or

23. if an access type change occurred and the "AccessChange" feature defined in clause 5.8 is supported, the access type(s) where the UE is registered encoded within the "accessTypes" attribute and the corresponding RAT Type(s), if available, in the "ratTypes" attribute.

Upon the reception of the HTTP POST request:

- if the PCF is a V-PCF and the V-PCF has an established policy association with the H-PCF, the V-PCF shall determine based on the contents of a potentially received "uePolDelResult" attribute to be sent to the H-PCF (see above) and requested event triggers of the H-PCF whether to send as the NF service consumer towards the H-PCF a request for the update of the policy association as described in the present clause;

- the (V-)(H-)PCF shall determine the applicable UE policy based on the contents of the received HTTP POST request, the UE Policy Sections stored in UDR, local policy and, for the H-PCF, taking into consideration the information received within the UE policy delivery protocol encoded in the "uePolReq" attribute, if available, and for the V-PCF, taking into consideration any policy received from the H-PCF encoded in the "uePolicy" attribute in the reply to the possible request for the update of the associated policy association. When the "ProSe" feature is supported, the H-PCF shall determine the applicable ProSeP based on the received PC5 capability for 5G ProSe. When the UE disables a 5G ProSe capability the PCF may stop updating the corresponding ProSeP, and when the UE enables a 5G ProSe capability the PCF may update the corresponding ProSeP;

- if the UE indicated the support of A2X communications over PC5 reference point, "A2X" feature is supported, and for the H-PCF, if the UE POLICY PROVISIONING REQUEST message was included in the "uePolReq" attribute, the (H-)PCF shall determine the applicable A2XP and A2X N2 PC5 policy as detailed in clauses 4.2.2.2.1.4 and 4.2.2.5, based on the operator's policy;

- if the UE indicates the support of 5G ProSe communications over PC5 reference point, the "ProSe" feature is supported, and for the H-PCF, if the UE POLICY PROVISIONING REQUEST message with the requested 5G ProSe policies was included in the "uePolReq" attribute, the (H-)PCF shall determine the applicable ProSeP and 5G ProSe N2 PC5 policy, as detailed in clauses 4.2.2.2.1.3 and 4.2.2.4, based on the operator's policy;

- if the UE indicated the support of V2X communications over PC5 reference point, "V2X" feature is supported, and for the H-PCF, if the UE POLICY PROVISIONING REQUEST message was included in the "uePolReq" attribute, the (H-)PCF shall determine the applicable V2XP and V2X N2 PC5 policy as detailed in clauses 4.2.2.2.1.2 and 4.2.2.3, based on the operator's policy;

- if the UE indicated the support of Ranging/SL over the PC5 reference point, the "Ranging\_SL" feature is supported, and for the H-PCF, if the UE POLICY PROVISIONING REQUEST message was included in the "uePolReq" attribute, the (H-)PCF shall determine the applicable RSLPP and Ranging/SL N2 PC5 policy as detailed in clauses 4.2.2.2.1.5 and 4.2.2.6 based on the operator's policy;

- for the succesfull case, the (V-)(H-)PCF shall send a HTTP "200 OK" response with the PolicyUpdate data type as response body with the possibly updated of UE policy (for the H-PCF), and/or ProSe N2 PC5 policy (for the H-PCF) as specified in clause 4.2.2.4, N2 PC5 policy for V2X communications and/or A2X communications and/or 5G ProSe (for the H-PCF), as specified in clause 4.2.2.3, and/or the Ranging/SL N2 PC5 policy (for the H-PCF), as specified in clause 4.2.2.6, and/or Policy Control Request Trigger(s) encoded as described in clause 4.2.3.3;

- if the (V-)PCF determines that UE policy needs to be updated, it shall use the Namf\_Communication service specified in 3GPP TS 29.518 [14] to provision the UE policy according to clause 4.2.2.2 and as follows:

(i) the (V-)PCF shall send the determined UE policy using Namf\_Communication\_N1N2MessageTransfer service operation(s); and

(ii) the (V-)PCF shall be prepared to receive UE Policy Delivery Results from the AMF within the Namf\_Communication\_N1MessageNotify service operation, and for the V-PCF, if the received UE Policy Delivery results relate to UE policy sections provided by the H-PCF, the V-PCF shall use the Npcf\_UEPolicyControl\_Update Service Operation to send those UE Policy Delivery results to the H-PCF; and

NOTE 11: A PolicyUpdate data structure with only mandatory attribute(s) is included in the "200 OK" response when the PCF decides not to update the policies.

- if the PCF determines that the V2XP and N2 PC5 policy (e.g. for V2X communications, for 5G ProSe) for V2X communications need to be updated, and for the V-PCF when receiving the updated V2XP and N2 PC5 policy for V2X communications from the H-PCF, it shall use the Namf\_Communication service specified in 3GPP TS 29.518 [14] to provision the V2XP to the UE and the V2X N2 PC5 policy to NG-RAN according to clauses 4.2.2.2.1.2 and 4.2.2.3;

- if the PCF determines that the A2XP (e.g. for A2X communications) for A2X communications need to be updated, and for the V-PCF when receiving the updated A2XP and N2 PC5 policy for A2X communications from the H-PCF, it shall use the Namf\_Communication service specified in 3GPP TS 29.518 [14] to provision the A2XP to the UE and the A2X N2 PC5 policy to NG-RAN according to clauses 4.2.2.2.1.4 and 4.2.2.5;

- if the PCF determines that ProSeP and 5G ProSe N2 PC5 policy needs to be updated, and for the V-PCF when receiving the updated ProSeP and 5G ProSe N2 PC5 policy from the H-PCF, it shall use the Namf\_Communication service specified in 3GPP TS 29.518 [14] to provision the ProSeP to the UE and 5G ProSe N2 PC5 policy to NG-RAN according to clauses 4.2.2.2.1.3 and 4.2.2.4;

- if the PCF determines that RSLPP and Ranging/SL N2 PC5 policy needs to be updated, and for the V-PCF when receiving the updated RSLPP and Ranging/SL N2 PC5 policy from the H-PCF, it shall use the Namf\_Communication service specified in 3GPP TS 29.518 [14] to provision the RSLPP to the UE and Ranging/SL N2 PC5 policy to NG-RAN according to clauses 4.2.2.2.1.5 and 4.2.2.6;

- if the "SliceAwareANDSP" feature is supported, the PCF received the "NON\_3GPP\_NODE\_RESELECTION" trigger, and the PCF has successfully delivered to the UE the ANDSP/WLANSP with the slice selection information for the corresponding non-3gpp node, the indication of the successful UE configuration by providing the "andspDelInd" attribute with the value "CONFIGURED". The PCF may delay the indication of the configuration result to a subsequent Npcf\_UEPolicyControl\_UpdateNotify request as described in clause 4.2.4.2; and

- optionally, for the (V-)PCF communicating with the AMF, if the "URSPEnforcement" feature is supported, and if not previously provided, the request to the AMF to be notified about the PDU session established/terminated events by providing the PCF for the UE callback information within the "pcfUeInfo" attribute, and the DNN and S-NSSAI of the concerned PDU session(s) within the "matchPdus" attribute. If previously provided, the (V-)PCF may update the complete list of DNN and S-NSSAI combination(s) of the concerned PDU session(s) within the "matchPdus" attribute and/or update the PCF for the UE callback information within the "pcfUeInfo" attribute.

- if errors occur when processing the HTTP POST request, the (V-)(H-)PCF shall:

- send an HTTP error response as specified in clause 5.7; or

- if the feature "ES3XX" is supported, and the (V-)(H-)PCF determines the received HTTP POST request needs to be redirected, send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [5];

according to the following provisions:

- if the (V-)(H-)PCF is, due to incomplete, erroneous or missing information in the request not able to provision a UE policy decision, the PCF may reject the request and include in an HTTP "400 Bad Request" response message the "cause" attribute of the ProblemDetails data structure set to "ERROR\_REQUEST\_PARAMETERS".

If the PCF received a new GUAMI, the PCF may subscribe to GUAMI changes using the AMFStatusChange service operation of the Namf\_Communication service specified in 3GPP TS 29.518 [14], and it may use the Nnrf\_NFDiscovery Service specified in 3GPP TS 29.510 [13] (using the obtained GUAMI and possibly service name) to query the other AMFs within the AMF set.

When the "SliceAwareANDSP" feature is supported, and the AMF receives the "andspDelInd" attribute with the outcome of the UE configuration with slice aware ANDSP/WLANSP, the AMF proceeds as described in clause 4.2.2.1.

When the "URSPEnforcement" feature is supported and the AMF receives the "matchPdus" attribute, the AMF shall update the affected established PDU session(s), by forwarding the received PCF for the UE callback information for the PDU session(s) matching the new S-NSSAI and DNN combination(s) to the SMF, and removing the previously provided PCF for the UE information for the PDU session(s) matching the removed S-NSSAI and DNN combination(s) from the SMF as defined in 3GPP TS 29.502 [31]. When the AMF receives the "pcfUeInfo" attribute with updated SBA binding indication, the AMF shall apply the updated PCF for the UE callback information to the new PDU sessions only, i.e., already established PDU sessions are not affected.

\*\*\* Next Changes \*\*\*

#### 4.2.4.7 UE policy provisioning for AF-influenced URSP

If the "AfGuideURSP" feature is supported by the Nudr\_DataRepository service, after the UE policy association establishment, the (H-)PCF may be informed that service specific parameter information that contains data for AF guidance on the URSP determination has been created, modified or removed via a notification by the UDR for the change or removal of UE's Application Data as defined in clause 6.3.4 of 3GPP TS 29.519 [17]. In this case, the H-PCF may derive new URSP(s), modify existing URSP(s) or remove existing URSP(s) by using the information received from the UDR (see clause 4.2.2.2.1.1 and 4.2.2.2.3 for the description of how the (H-)PCF may use this information, stored UPSC(s), policy subscription information, analytics information received from NWDAF and local operator policy to determine the URSP that will be provisioned to the UE).

If the "VPLMNSpecificURSP" feature is supported by the Nudr\_DataRepository service, the (H-)PCF may be informed about changes on service parameter data in the HPLMN that contain AF guidance on VPLMN-specific URSP rule determination as defined in 3GPP TS 29.519 [17]. For the roaming case and when the feature "VPLMNSpecificURSP" is supported, the H-PCF may be informed about changes on VPLMN-specific URSP from the V-PCF as defined in clause 4.2.3.1. Based on the received information, the (H-)PCF determines the VPLMN-specific URSP rules as specified in clause 4.2.2.2.3.2 and the new UE Policy Sections and VPS Configuration as defined in clause 4.2.2.2.1.1. If the feature "ExtDeliveryOutcome" is supported, when the (H-)PCF does not authorize the VPLMN-specific URSP rule provided by the V-PCF and the V-PCF has subscribed with the H-PCF as specified in clauses 4.2.2.1 and/or 4.2.3.1 because an AF has subscribed via a request for service parameters to the VPLMN, the (H-)PCF shall invoke the Npcf\_EventExposure\_Notify service operation as defined in clause 4.2.4.2 of 3GPP TS 29.523 [30] with the key of the map represents the related AF; and the "eventNotifs" entry shall contain the reported event "UNSUCCESS\_PCF\_SERVICE\_AUTHORIZATION" within the "event" attribute and in case of delivery failure, the "delivFailure" attribute with the corresponding failure reason;

The (H-)PCF shall:

- for the roaming case, provision the derived new UE Policy Sections, and/or update and/or remove existing UE Policy Sections to the V-PCF as defined in clause 4.2.4.2 and then the V-PCF shall invoke the Namf\_Communication\_N1N2MessageTransfer service operation to provision the received UE Policy Sections to the UE; or

- for the non-roaming case, use the Namf\_Communication Service defined in 3GPP TS 29.518 [14] to convey the derived new UE Policy Sections and/or to update and/or remove existing UE Policy Sections to the UE via the AMF within "MANAGE UE POLICY COMMAND" message(s).

In the roaming case, when the AMF informs the V-PCF that the UE is temporarily unreachable (see 3GPP TS 29.518 [14]), the V-PCF notifies the H-PCF accordingly (including the "uePolTransFailNotif" attribute within the PolicyAssociationUpdateRequest data structure, as described in clause 4.2.2.2.1.0).

When the (H-)PCF receives the "MANAGE UE POLICY COMPLETE" or the "MANAGE UE POLICY COMMAND REJECT" message and/or the PCF deducts that the UE is temporarily unreachable, and the PCF determines that the received message or the internal deduction indicates a UE Policy Delivery outcome event is matched:

- if an NF service consumer has subscribed via a request for service specific parameters to the HPLMN, the (H-)PCF shall invoke the Npcf\_EventExposure\_Notify service operation as defined in clause 4.2.4.2 of 3GPP TS 29.523 [30]; or

- if the "VPLMNSpecificURSP" is supported and the V-PCF has subscribed with the H-PCF as specified in clauses 4.2.2.1 and/or 4.2.3.1 because an AF has subscribed via a request for service parameters to the VPLMN, the H-PCF shall invoke the Npcf\_UEPolicyControl\_UpdateNotify as specified in this clause to notify about the result of the delivery of UE policies using the "delivReport" attribute. The "delivReport" attribute is a map of "eventNotifs" attributes, where:

a. the key of the map represents the related AF; and

b. each "eventNotifs" entry shall contain the reported event(s) ("SUCCESS\_UE\_POL\_DEL\_SP", "UNSUCCESS\_UE\_POL\_DEL\_SP", or if feature "ExtDeliveryOutcome" is supported, "PARTLY\_UNSUCC\_UE\_POL\_DEL\_SP") within the "event" attribute and in case of delivery failure, the "delivFailure" attribute with the corresponding failure reason;

the V-PCF, based on the information received in the "delivReport" attribute and the notification information retrieved from the UDR in the VPLMN, shall invoke the Npcf\_EventExposure\_Notify service operation as defined in clause 4.2.4.2 of 3GPP TS 29.523 [30].

When the AMF (non roaming case) or the V-PCF (roaming case) informs the (H-)PCF that the UE is temporarily unreachable (see 3GPP TS 29.518 [14]), the (H-) PCF may subscribe to "CON\_STATE\_CH" trigger if not done before and reattempt the provisioning of URSP(s) when the UE becomes reachable.

\*\*\* Next Changes \*\*\*

#### 5.6.2.9 Type UePolicyParameters

Table 5.6.2.9-1: Definition of type UePolicyParameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| urspGuidance | array(UrspRuleRequest) | O | 1..N | Contains the service parameter used to guide the VPLMN-specific URSP. |  |
| deliveryEvents | array(Event) | O | 1..N | Identifies the AF subscribed event(s) related to AF provisioned guidance for VPLMN-specific URSP rules.  (NOTE) |  |
| NOTE: In this release of the specification, only the "SUCCESS\_UE\_POL\_DEL\_SP","UNSUCCESS\_UE\_POL\_DEL\_SP" and if feature "ExtDeliveryOutcome" is supported, "PARTLY\_UNSUCC\_UE\_POL\_DEL\_SP", "UNSUCCESS\_PCF\_SERVICE\_AUTHORIZATION" events apply. | | | | | |

\*\*\* Next Changes \*\*\*

#### 5.6.2.12 Type UePolicyNotification

Table 5.6.2.12-1: Definition of type UePolicyNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eventNotifs | array(PcEventNotification) | M | 1..N | Represents the events to be reported according to the subscription to delivery outcome events as described in clause 4.2.2.2.3.2.  (NOTE) |  |
| NOTE: In this release of the specification, only the "SUCCESS\_UE\_POL\_DEL\_SP", "UNSUCCESS\_UE\_POL\_DEL\_SP" and if feature "ExtDeliveryOutcome" is supported, "PARTLY\_UNSUCC\_UE\_POL\_DEL\_SP", "UNSUCCESS\_PCF\_SERVICE\_AUTHORIZATION" events apply for the "events" attribute within the PcEventNotification data type. | | | | | |

\*\*\* Next Changes \*\*\*

## 5.8 Feature negotiation

The optional features in table 5.8-1 are defined for the Npcf\_UEPolicyControl API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [5].

Table 5.8-1: Supported Features

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Feature number | | | Feature Name | | | Description | | |
| 1 | | | PendingTransaction | | | This feature indicates support for the race condition handling as defined in 3GPP TS 29.513 [7]. | | |
| 2 | | | PlmnChange | | | This feature indicates support for the change of PLMN trigger handling. | | |
| 3 | | | ConnectivityStateChange | | | This feature indicates support for the UE connectivity state change trigger handling. | | |
| 4 | | | V2X | | | This feature indicates support for the UE policy provisioning and N2 information provisioning for V2X communications. | | |
| 5 | | | GroupIdListChange | | | This feature indicates the support for the notification of changes in the list of internal group identifiers. | | |
| 6 | | | ImmediateReport | | | This feature indicates the support of the current applicable values report corresponding to the policy control request triggers for policy update notification. | | |
| 7 | | | ErrorResponse | | | This feature indicates support for "404 Not Found" error response code for policy update notification between AMF and (V-)PCF. | | |
| 8 | | | ES3XX | | | Extended Support for 3xx redirections. This feature indicates the support of redirection for any service operation, according to Stateless NF procedures as specified in clauses 6.5.3.2 and 6.5.3.3 of 3GPP TS 29.500 [5] and according to HTTP redirection principles for indirect communication, as specified in clause 6.10.9 of 3GPP TS 29.500 [5]. | | |
| 9 | | | ProSe | | | This feature indicates support of UE policy and N2 information provisioning for 5G ProSe. | | |
| 10 | | | FeatureRenegotiation | | | This feature indicates the support of feature renegotiation during the update of a policy association triggered by UE mobility with AMF change. | | |
| 11 | | | SliceAwareANDSP | | | This feature indicates the support of ANDSP/WLANSP policies that consider the slices supported by the UE. | | |
| 12 | | | EpsUrsp | | | This feature indicates support of URSP provisioning in EPS and is only applicable in the case of of 5GC and EPC interworking. | | |
| 13 | | | EnSatBackhaulCategoryChg | | | This feature indicates the support of notification of a change between different satellite backhaul categories, or dynamic satellite backhaul categories, or between satellite backhaul and non-satellite backhaul. | | |
| 14 | | | UECapabilityIndication | | | This feature indicates the support of the provisioning by the H-PCF to the V-PCF of the UE Capability for UE Policy, when the UE Capability is not received from the UE and the information is available and reliable in the UDR. | | |
| 15 | | | A2X | | | This feature indicates support of A2X communications. | | |
| 16 | | | NssaiChange | | | This feature indicates support for the change of Configured NSSAI trigger handling. | | |
| 17 | | | ProSe\_Ph2 | | | This feature indicates the support of UE policy and N2 information provisioning for 5G ProSe UE-to-UE Relay function.  This feature requires that the "ProSe" feature is also supported. | | |
| 18 | | | PresenceInfo | | | The feature indicates the support of policy update to remove the existing presence reporting areas entry. | | |
| 19 | | | URSPEnforcement | | | This feature indicates the support of the report of URSP rule enforcement information by the V-PCF to the H-PCF. | | |
| 20 | | | VPLMNSpecificURSP | | | This feature indicates the support of AF guidance on VPLMN-specific URSP rules. It requires the support of NssaiChange feature. | | |
| 21 | | | Ranging\_SL | | | This feature indicates the support of the ranging and sidelink positioning functionality.  The following functionalities are supported:  - Support for the UE policy provisioning and N2 information provisioning for Ranging and sidelink positioning. | | |
| 22 | | | AccessChange | | | This feature indicates the support of the reporting of an access type and RAT type changes, the addition of an access type and RAT type or the removal of an existing access type and RAT type. | | |
| 23 | | | EnErrorHandling | | | This feature indicates the support of the indication from the V-PCF to the H-PCF of the received AMF error response to the UE Policy Delivery transfer request. | | |
| 24 | | | SLAMUP | | | This feature indicates the support of the provisioning to the AMF of the CHF information of the CHF selected by the PCF for UE policy. | | |
| 25 | | | EnhEstRoaming | | | The feature enhanced UE Policy Establishment procedure in roaming scenarios indicates the provisioning of the AMF to the V-PCF of the H-PCF Set Id and H-PCF URI of the selected H-PCF ID. | | |
| 26 | | | ProSe\_Ph3 | | | This feature indicates the support of the second set of enhancements to the 5G ProSe functionality.  The following sub-functionalities are supported:  - Support UE policy and N2 information provisioning for Multi-hop UE-to-Network Relay.  - Support UE policy and N2 information provisioning for Layer-3 Multi-hop UE-to-UE Relay.  This feature requires that the "ProSe\_Ph2" feature is also supported. | | |
| 27 | | | CHFGroup | | | This feature indicates the support of the CHF Group ID handling for the discovery of the CHF. | | |
| 28 | | | ExtDeliveryOutcome | | | Indicates the support of notifications about the unsuccessfully executed UE policy outcome together with the partially unsuccessful UE policy delivery event related to the invocation of AF provisioned service parameters.  This feature requires the support of VPLMNSpecificURSP feature. | | |

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