**3GPP TSG-CT WG3 Meeting #108-eC3-201118**

[**E-Meeting**](https://www.3gpp.org/ftp/tsg_ct/WG3_interworking_ex-CN3/TSGC3_108_Sophia_Antipolis/)**, 19th -28th February 2020 (Revision of C3-201xyz)**

|  |
| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **29.525** | **CR** | **0074** | **rev** | **-** | **Current version:** | **16.2.0** |  |
|  |
| *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:***  | N2 PC5 Policy for V2XARC |
|  |  |
| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | eV2XARC |  | ***Date:*** | 2020-02-28 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-16 |
|  | *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 canbe 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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | Stage 2 has agreed that the PCF may provision the N2 PC5 policy to the NG-RAN for V2X communication over PC5. |
|  |  |
| ***Summary of change:*** | Defines the N2 PC5 Policy provisioning for V2X communication over PC5 reference points. |
|  |  |
| ***Consequences if not approved:*** | Not aligned with stage 2 |
|  |  |
| ***Clauses affected:*** | 4.2.2.1, 4.2.2.x3, 4.2.4.2, 5.6.1, 5.6.2.2, 5.6.2.5, 5.8, A.2 |
|  |  |
|  | **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 introduces a backwards compatible feature to the OpenAPI file. |
|  |  |
| ***This CR's revision history:*** |  |

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

#### 4.2.2.1 General

The procedure in the present subclause is applicable when the NF service consumer creates a UE policy association in the following cases:

- UE initial registers to the network as defined in subclause 5.5.1.2.2 of 3GPP TS 24.501 [15];

- UE performs the mobility registration if the UE operating in the single-registration mode performs inter-system change from S1 mode to N1 mode as defined in subclause 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 subclause 4.2.3.1.

The creation of an 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 creation of a policy association.



Figure 4.2.2.1-1: Creation 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.

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 that shall include:

- Notification URI encoded as "notificationUri" attribute; and

- SUPI encoded as "supi" attribute,

and that shall include when available:

- GPSI encoded as "gpsi" attribute;

- Access type encoded as "accessType" attribute;

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

- User Location Information encoded as "userLoc" attribute;

- UE Time Zone encoded as "timeZone" attribute;

- Serving PLMN Identifier and for SNPN the NID encoded as "servingPlmn" attribute;

- 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;

- if the NF service consumer is an AMF, H-PCF ID (if the consumer is V-PCF, when receiving the H-PCF ID from AMF) encoded as "hPcfId" attribute;

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

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

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

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

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

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

Upon the reception of the HTTP POST request,

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

- based on operator policy the V-PCF should send as the NF service consumer towards 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 subclause 4.2.2.2, for the V-PCF taking into consideration any policy received from the H-PCF in the reply to the possible request for the Creation of a policy association;

- 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 subclause 4.2.2.2 and as follows:

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

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

(iii) 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 shall use the Npcf\_UEPolicyControl\_Update Service Operation 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 "V2X" feature is supported, the (H-)PCF shall determine the applicable N2 PC5 policy as detailed in subclause 4.2.2.x3 based on the subscirption data and operator’s policy;

- if the (V-)PCF determines that N2 PC5 policy needs to be provisioned, it shall use the Namf\_Communication service specified in 3GPP TS 29.518 [14] to provision the N2 PC5 according to subclause 4.2.2.x3.

- for the succesfull 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 2: The assigned policy association ID is part of the URI for the created resource and is thus associated with the SUPI.

and the the PolicyAssociation data type as body including:

- optionally for the H-PCF as service producer communicating with the V-PCF, UE policy (see subclause 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 subclause 4.2.2.x3) encoded as "n2Pc5Pol" attribute;

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

a) Location change (tracking area); and

b) Change of UE presence in PRA; and

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

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

- 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; and

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

- if the user information received within the "supi" attribute is unknown, the 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 PCF is, due to incomplete, erroneous or missing information in the request not able to provision an 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 (V-)PCF received an 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 set.

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

#### 4.2.2.x3 N2 PC5 Policy

The N2 PC5 policy consists of PC5 QoS parameters used by the NG-RAN.

When the (H-)PCF derives the UE policy for V2X communications over PC5 reference as defined in subclause 4.2.2.2.x1, the (H-)PCF shall derive the corresponding PC5 QoS parameters used by the NG-RAN.

In the roaming case, the H-PCF shall include the N2 PC5 Policy within the "n2Pc5Policy" attribute in the reponse of create of the policy association to the V-PCF or in the request of the policy asociation update initiated by the HPCF.

In the roaming or non-roaming case, the (V-)PCF shall use the Namf\_Communication\_N1N2MessageTransfer service operation defined in subclause 5.2.2.3.1 of 3GPP TS 29.518 [14] to send N2 PC5 policy to the NG-RAN.

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

#### 4.2.4.2 Policy update notification

Figure 4.2.4.2-1 illustrates the policy update notification.



Figure 4.2.4.2-1: policy update notification

NOTE: 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 (V-)(H)-PCF may decide to update policy control request trigger(s) and in the roaming case, the H-PCF may also decide to update the UE Policy, N2 PC5 policy if the "V2X" feature is supported and the (V-)(H-)PCF shall then send an HTTP POST request with "{Notification URI}/update" as URI (where the Notification URI was previously supplied by the NF service consumer) to the NF service consumer and the PolicyUpdate data structure as request body encoded as described in subclause 4.2.3.3.

Upon the reception of the HTTP POST request, the NF service consumer:

- if the V-PCF is the NF service consumer, shall use the Namf\_Communication Service defined in 3GPP TS 29.518 [14] to send "MANAGE UE POLICY COMMAND" message(s) with the received policy to the UE via the AMF;

- if the V-PCF is the NF service consumer, shall provision the received policy control requested trigger(s) to the AMF using the Npcf\_UEPolicyControl\_UpdateNotify service operation according to the present clause;

- if the AMF is the NF service consumer, shall enforce the received policy control request trigger(s);

- shall either send a HTTP "204 No Content" response indicating the success of the enforcement or an appropriate failure response, for the V-PCF as the NF service consumer taking into consideration a reply received from the possible Namf\_Communication Service service operation and from the possible Npcf\_UEPolicyControl\_UpdateNotify service operation according to the previous bullets; and

- if errors occur when processing the HTTP POST request, shall apply error handling procedures as specified in subclause 5.7.

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

### 5.6.1 General

This subclause specifies the application data model supported by the API.

Table 5.6.1-1 specifies the data types defined for the Npcf\_UEPolicyControl service based interface protocol.

Table 5.6.1-1: Npcf\_UEPolicyControl specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| PolicyAssociation | 5.6.2.2 | Description of a policy association that is returned by the PCF when a policy Association is created, updated, or read. |  |
| PolicyAssociationReleaseCause | 5.6.3.4 | The cause why the PCF requests the termination of the policy association. |  |
| PolicyAssociationRequest | 5.6.2.3 | Information that NF service consumer provides when requesting the creation of a policy association. |  |
| PolicyAssociationUpdateRequest | 5.6.2.4 | Information that NF service consumer provides when requesting the update of a policy association. |  |
| PolicyUpdate | 5.6.2.5 | Updated policies that the PCF provides in a notification or in the reply to an Update Request. |  |
| RequestTrigger | 5.6.3.3 | Enumeration of possible Request Triggers. |  |
| TerminationNotification | 5.6.2.6 | Request to terminate a policy Association that the PCF provides in a notification. |  |
| UePolicy | 5.6.3.2 | UE Policies |  |
| UePolicyDeliveryResult | 5.6.3.2 | UE Policy delivery Result |  |
| UePolicyRequest | 5.6.3.2 | Request for UE Policies |  |
| UePolicyTransferFailureNotification | 5.6.2.7 | Information that the UE policy is failure to be transferred to the UE because the UE is not reachable.  |  |

Table 5.6.1-2 specifies data types re-used by the Npcf\_UEPolicyControl service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Npcf\_UEPolicyControl service based interface.

Table 5.6.1-2: Npcf\_UEPolicyControl re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| AccessType | 3GPP TS 29.571 [11] |  |  |
| CmState | 3GPP TS 29.518 [14] | Connectivity state of UE | ConnectivityStateChange |
| Gpsi | 3GPP TS 29.571 [11] | Generic Public Subscription Identifier |  |
| GroupId | 3GPP TS 29.571 [11] |  |  |
| Guami | 3GPP TS 29.571 [11] | Globally Unique AMF Identifier |  |
| Ipv4Addr | 3GPP TS 29.571 [11] |  |  |
| Ipv6Addr | 3GPP TS 29.571 [11] |  |  |
| N1N2MessageTransferCause | 3GPP TS 29.518 [14] |  |  |
| N2InfoContent | 3GPP TS 29.518 [14] | Represents a transparent N2 information content to be relayed by AMF. | V2X |
| NfInstanceId | 3GPP TS 29.571 [11] |  |  |
| Pei | 3GPP TS 29.571 [11] | Permanent Equipment Identifier |  |
| PlmnId | 3GPP TS 29.571 [11] |  |  |
| PlmnIdNid | 3GPP TS 29.571 [11] | PLMN Identifier, and for SNPN NID |  |
| PresenceInfo | 3GPP TS 29.571 [11] | Presence reporting area information |  |
| ProblemDetails | 3GPP TS 29.571 [11] |  |  |
| Uri | 3GPP TS 29.571 [11] |  |  |
| UserLocation | 3GPP TS 29.571 [11] |  |  |
| RatType | 3GPP TS 29.571 [11] |  |  |
| ServiceName | 3GPP TS 29.510 [13] | Name of the service instance. |  |
| Supi | 3GPP TS 29.571 [11] | Subscription Permanent Identifier |  |
| SupportedFeatures | 3GPP TS 29.571 [11] | Used to negotiate the applicability of the optional features defined in table 5.8-1. |  |
| TimeZone | 3GPP TS 29.571 [11] |  |  |
| Uinteger | 3GPP TS 29.571 [11] |  |  |

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

#### 5.6.2.2 Type PolicyAssociation

Table 5.6.2.2-1: Definition of type PolicyAssociation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| request | PolicyAssociationRequest | O | 0..1 | The information provided by the NF service consumer when requesting the creation of a policy association |  |
| uePolicy | UePolicy | O | 0..1 | The UE policy as determined by the PCF. |  |
| n2Pc5Pol | N2InfoContent | O | 0..1 | The N2 PC5 policy as determined by the PCF. | V2X |
| triggers | array(RequestTrigger) | O | 1..N | Request Triggers that the PCF subscribes. Only values "LOC\_CH" and "PRA\_CH" are permitted. |  |
| pras | map(PresenceInfo) | C | 1..N | If the Trigger "PRA\_CH" is provided, the presence reporting area(s) for which reporting is requested shall be provided. The "praId" attribute within the PresenceInfo data type shall also be the key of the map. The "presenceState" attribute within the PresenceInfo data type shall not be supplied. |  |
| suppFeat | SupportedFeatures | M | 1 | Indicates the negotiated supported features. |  |

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

#### 5.6.2.5 Type PolicyUpdate

Table 5.6.2.5-1: Definition of type PolicyUpdate

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| resourceUri | Uri | M | 1 | The resource URI of the individual UE policy association related to the notification.  |  |
| uePolicy | UePolicy | O | 0..1 | The UE policy as determined by the PCF. |  |
| n2Pc5Pol | N2InfoContent | O | 0..1 | The N2 PC5 policy as determined by the PCF. | V2X |
| triggers | array(RequestTrigger) | O | 1..N | Request Triggers that the PCF subscribes. Only values "LOC\_CH" and "PRA\_CH" are permitted. |  |
| pras | map(PresenceInfo) | C | 1..N | If the Trigger "PRA\_CH" is provided or if that trigger was already set but the requested presence reporting areas need to be changed, the presence reporting area(s) for which reporting is requested shall be provided. The praId attribute within the PresenceInfo data type shall also be the key of the map. The presenceStatus attribute within the PresenceInfo data type shall not be supplied. |  |

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

# A.2 Npcf\_UEPolicyControl API

openapi: 3.0.0

info:

 version: 1.1.0.alpha-3

 title: Npcf\_UEPolicyControl

 description: |

 UE Policy Control Service.

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externalDocs:

 description: 3GPP TS 29.525 V16.2.0; 5G System; UE Policy Control Service.

 url: 'http://www.3gpp.org/ftp/Specs/archive/29\_series/29.525/'

servers:

 - url: '{apiRoot}/npcf-ue-policy-control/v1'

 variables:

 apiRoot:

 default: https://example.com

 description: apiRoot as defined in subclause subclause 4.4 of 3GPP TS 29.501

security:

 - {}

 - oAuth2ClientCredentials:

 - npcf-ue-policy-control

paths:

 /policies:

 post:

 operationId: CreateIndividualUEPolicyAssociation

 summary: Create individual UE policy association.

 tags:

 - UE Policy Associations (Collection)

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/PolicyAssociationRequest'

 responses:

 '201':

 description: Created

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/PolicyAssociation'

 headers:

 Location:

 description: 'Contains the URI of the newly created resource, according to the structure: {apiRoot}/npcf-ue-policy-control/v1/policies/{polAssoId}'

 required: true

 schema:

 type: string

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

 callbacks:

 policyUpdateNotification:

 '{$request.body#/notificationUri}/update':

 post:

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/PolicyUpdate'

 responses:

 '204':

 description: No Content, Notification was succesfull

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

 policyAssocitionTerminationRequestNotification:

 '{$request.body#/notificationUri}/terminate':

 post:

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/TerminationNotification'

 responses:

 '204':

 description: No Content, Notification was succesfull

 '307':

 description: temporary redirect

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

 /policies/{polAssoId}:

 get:

 operationId: ReadIndividualUEPolicyAssociation

 summary: Read individual UE policy association.

 tags:

 - Individual UE Policy Association (Document)

 parameters:

 - name: polAssoId

 in: path

 description: Identifier of a policy association

 required: true

 schema:

 type: string

 responses:

 '200':

 description: OK. Resource representation is returned

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/PolicyAssociation'

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '406':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/406'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

 delete:

 operationId: DeleteIndividualUEPolicyAssociation

 summary: Delete individual UE policy association.

 tags:

 - Individual UE Policy Association (Document)

 parameters:

 - name: polAssoId

 in: path

 description: Identifier of a policy association

 required: true

 schema:

 type: string

 responses:

 '204':

 description: No Content. Resource was succesfully deleted

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

 /policies/{polAssoId}/update:

 post:

 operationId: ReportObservedEventTriggersForIndividualUEPolicyAssociation

 summary: Report obeserved event triggers and possibly obtain updated policies for an individual UE policy association.

 tags:

 - Individual UE Policy Association (Document)

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/PolicyAssociationUpdateRequest'

 parameters:

 - name: polAssoId

 in: path

 description: Identifier of a policy association

 required: true

 schema:

 type: string

 responses:

 '200':

 description: OK. Updated policies are returned

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/PolicyUpdate'

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

components:

 securitySchemes:

 oAuth2ClientCredentials:

 type: oauth2

 flows:

 clientCredentials:

 tokenUrl: '{nrfApiRoot}/oauth2/token'

 scopes:

 npcf-ue-policy-control: Access to the Npcf\_AMPolicyControl API

 schemas:

 PolicyAssociation:

 type: object

 properties:

 request:

 $ref: '#/components/schemas/PolicyAssociationRequest'

 uePolicy:

 $ref: '#/components/schemas/UePolicy'

 n2Pc5Pol:

 $ref: 'TS29518\_Namf\_EventExposure.yaml#/components/schemas/N2InfoContent'

 triggers:

 type: array

 items:

 $ref: '#/components/schemas/RequestTrigger'

 minItems: 1

 description: Request Triggers that the PCF subscribes. Only values "LOC\_CH" and "PRA\_CH" are permitted.

 pras:

 type: object

 additionalProperties:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/PresenceInfo'

 minProperties: 1

 suppFeat:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

 required:

 - suppFeat

 PolicyAssociationRequest:

 type: object

 properties:

 notificationUri:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

 altNotifIpv4Addrs:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

 minItems: 1

 description: Alternate or backup IPv4 Address(es) where to send Notifications.

 altNotifIpv6Addrs:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

 minItems: 1

 description: Alternate or backup IPv6 Address(es) where to send Notifications.

 supi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Supi'

 gpsi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Gpsi'

 accessType:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/AccessType'

 pei:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Pei'

 userLoc:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

 timeZone:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

 servingPlmn:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/PlmnIdNid'

 ratType:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/RatType'

 groupIds:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/GroupId'

 minItems: 1

 hPcfId:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'

 uePolReq:

 $ref: '#/components/schemas/UePolicyRequest'

 guami:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Guami'

 serviceName:

 $ref: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/ServiceName'

 servingNfId:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'

 suppFeat:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

 required:

 - notificationUri

 - suppFeat

 - supi

 PolicyAssociationUpdateRequest:

 type: object

 properties:

 notificationUri:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

 altNotifIpv4Addrs:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

 minItems: 1

 description: Alternate or backup IPv4 Address(es) where to send Notifications.

 altNotifIpv6Addrs:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

 minItems: 1

 description: Alternate or backup IPv6 Address(es) where to send Notifications.

 triggers:

 type: array

 items:

 $ref: '#/components/schemas/RequestTrigger'

 minItems: 1

 description: Request Triggers that the NF service consumer observes.

 praStatuses:

 type: object

 additionalProperties:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/PresenceInfo'

 description: Map of PRA status information.

 minProperties: 1

 userLoc:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'

 uePolDelResult:

 $ref: '#/components/schemas/UePolicyDeliveryResult'

 uePolTransFailNotif:

 $ref: '#/components/schemas/UePolicyTransferFailureNotification'

 guami:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Guami'

 servingNfId:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'

 plmnId:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/PlmnId'

 connectState:

 $ref: 'TS29518\_Namf\_EventExposure.yaml#/components/schemas/CmState'

 PolicyUpdate:

 type: object

 properties:

 resourceUri:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

 uePolicy:

 $ref: '#/components/schemas/UePolicy'

 n2Pc5Pol:

 $ref: 'TS29518\_Namf\_EventExposure.yaml#/components/schemas/N2InfoContent'

 triggers:

 type: array

 items:

 $ref: '#/components/schemas/RequestTrigger'

 minItems: 1

 nullable: true

 description: Request Triggers that the PCF subscribes. Only values "LOC\_CH" and "PRA\_CH" are permitted.

 pras:

 type: object

 additionalProperties:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/PresenceInfo'

 description: Map of PRA information.

 minProperties: 1

 nullable: true

 required:

 - resourceUri

 TerminationNotification:

 type: object

 properties:

 resourceUri:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'

 cause:

 $ref: '#/components/schemas/PolicyAssociationReleaseCause'

 required:

 - resourceUri

 - cause

 UePolicyTransferFailureNotification:

 type: object

 properties:

 cause:

 $ref: 'TS29518\_Namf\_Communication.yaml#/components/schemas/N1N2MessageTransferCause'

 ptis:

 type: array

 items:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

 minItems: 1

 required:

 - cause

 - ptis

 UePolicy:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Bytes'

 UePolicyDeliveryResult:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Bytes'

 UePolicyRequest:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Bytes'

 RequestTrigger:

 anyOf:

 - type: string

 enum:

 - LOC\_CH

 - PRA\_CH

 - UE\_POLICY

 - PLMN\_CH

 - CON\_STATE\_CH

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - LOC\_CH: Location change (tracking area). The tracking area of the UE has changed.

 - PRA\_CH: Change of UE presence in PRA. The UE is entering/leaving a Presence Reporting Area.

 - UE\_POLICY: 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, has been received by the AMF and is being forwarded.

 - PLMN\_CH: PLMN change. the serving PLMN of UE has changed.

 - CON\_STATE\_CH: Connectivity state change: the connectivity state of UE has changed.

 PolicyAssociationReleaseCause:

 anyOf:

 - type: string

 enum:

 - UNSPECIFIED

 - UE\_SUBSCRIPTION

 - INSUFFICIENT\_RES

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - UNSPECIFIED: This value is used for unspecified reasons.

 - UE\_SUBSCRIPTION: This value is used to indicate that the policy association needs to be terminated because the subscription of UE has changed (e.g. was removed).

 - INSUFFICIENT\_RES: This value is used to indicate that the server is overloaded and needs to abort the policy association.

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