**3GPP TSG-CT WG3 Meeting #128 *C3-232041***

**Bratislava, Eslovakia, 22nd - 26th May, 2023 (Revision of C3-23xxxx)**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **29.507** | **CR** | **0251** | **rev** | **-** | **Current version:** | **18.1.0** |  |
|  |
| *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)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Support of provisioning of alternative S-NSSAI handling upon AMF request |
|  |  |
| ***Source to WG:*** | Ericsson, ZTE |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | eNS\_Ph3 |  | ***Date:*** | 2023-05-05 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-18 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories 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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | SA2 has agreed to support of network slice replacement feature as part of the updates initiated by the AMF (see S2-2306043). That is, when the AMF becomes aware that one or more S-NSSAIs become unavailable, but it does not get information of the alternative S-NSSAIs, if the PCF subscribed to the slice replacement management trigger, the AMF would request the alternative slice information to the PCF. |
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| ***Summary of change:*** | TS 29.507 is updated in order to:* Introduce a alternative S-NSSAI as an AM policy
* Introduce a new policy control trigger request.
* Introduce the impacts in the AM Policy Association Update procedure.
* Introduce the impacted S-NSSAI(s) in the request to the PCF.
* Update OpenAPI specification accordingly.
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|  | Missing functionality. Misalignment with stage 2. |
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| ***Clauses affected:*** | 3.1; 4.2.2.1; 4.2.2.3.7(new); 4.2.3.1; 4.2.3.2; 4.2.3.3; 5.6.2.4; 5.6.3.3; A.2. |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS 23.503 CR #0991 |
| ***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 in the Npcf\_AMPolicyControl OpenAPI specification. |
|  |  |
| ***This CR's revision history:*** |  |

**Additional discussion(if needed):**

**Proposed changes:**

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

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.501 [2], clause 3.1 apply:

**Allowed NSSAI**

**Alternative S-NSSAI**

**Target NSSAI**

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

#### 4.2.2.1 General

The procedure in the present clause is applicable when the NF service consumer (e.g. AMF) creates an AM policy association when the UE registers to the network, and when 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.

The creation of an AM 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 policy association

When a UE registers and a UE context is being established, the AMF can obtain Service Area Restrictions, RFSP index, subscribed UE-AMBR, subscribed UE-Slice-MBR(s) and GPSI(s) from the UDM during the Access and Mobility Subscription Data retrieval procedure, the list of NWDAF instance IDs used for the UE and their associated Analytic ID(s) consumed by the AMF and the allowed NSSAI and the Target NSSAI from local configuration or from the NSSF during the slice selection procedure and shall decide based on local policies whether to request policies from the PCF.

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

- Notification URI encoded as "notificationUri" attribute;

- SUPI encoded as "supi" attribute; and

- if the feature "SliceSupport" or the feature "DNNReplacementControl" is supported in the NF service consumer and the UE is registered via a 3GPP access, the allowed NSSAI in the 3GPP access encoded in the "allowedSnssais" attribute;

and that shall include when available:

- GPSI encoded as "gpsi" attribute;

- if the feature "MultipleAccessTypes" is not supported, the access type encoded as "accessType" attribute;

NOTE 1: In this Release, for SNPN-enabled UE registered in the SNPN, direct access to the SNPN is specified for 3GPP access only.

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

- User Location Information encoded as "userLoc" attribute;

- 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 2: The SNPN Identifier consists of the PLMN Identifier and the NID.

- if the feature "MultipleAccessTypes" is not supported, the RAT type encoded as "ratType" attribute;

- Service Area Restrictions (see clause 4.2.2.3.1) derived from the Service Area Restrictions obtained from the UDM by mapping any service areas denoted by geographical information into Tracking Area Identities (TAIs) and encoded as "servAreaRes" attribute;

- RFSP index (see clause 4.2.2.3.2) as obtained from the UDM encoded as "rfsp" attribute;

- a list of Internal Group Identifiers 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\_AMPolicyControl\_UpdateNotify service operation encoded as "serviceName" attribute;

- Alternate or backup IPv4 Address(es) where to send Notifications encoded as "altNotifIpv4Addrs" attribute;

- Alternate or backup IPv6 Address(es) where to send Notifications encoded as "altNotifIpv6Addrs" attribute;

- Alternate or backup FQDN(s) where to send Notifications encoded as "altNotifFqdns" attribute;

- trace control and configuration parameters information encoded as "traceReq" attribute;

- if the feature "UE-AMBR\_Authorization" is supported in the NF service consumer, the subscribed UE-AMBR (see clause 4.2.2.3.3) in the "ueAmbr" attribute;

- if the feature "DNNReplacementControl" is supported, the mapping of each S-NSSAI of the Allowed NSSAI to the corresponding S-NSSAI of the HPLMN encoded in the "mappingSnssais" attribute;

- if the feature "UE-Slice-MBR\_Authorization" is supported in the NF service consumer, the subscribed UE-Slice-MBR for each subscribed S-NSSAI of the home PLMN mapping to a S-NSSAI of the serving PLMN if available (see clause 4.2.2.3.5) encoded in the "ueSliceMbrs" attribute; and.

- when the "EneNA" feature is supported, the list of NWDAF instance IDs used for the UE within the "nwdafInstanceIds" and their associated Analytic ID(s) within "nwdafEvents" consumed by the NF service consumer, included within the "nwdafDatas" attribute; and

- if the feature "TargetNSSAI" is supported in the NF service consumer, the Target NSSAI generated by the NF service consumer or received from the NSSF encoded in the "targetSnssais" attribute.

Upon the reception of this HTTP POST request, the PCF shall:

- assign a policy association ID;

- determine the applicable policy (taking into consideration and optionally modifying the possibly received UE-AMBR, UE-Slice-MBR(s) for the allowed NSSAI, Service Area Restrictions and/or RFSP index);

- for the successful case, send a HTTP "201 Created" response with the URI for the created resource in the "Location" header field

NOTE 3: 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:

- conditionally AMF Access and Mobility Policy (see clause 4.2.2.3), i.e.:

a) if the PCF received the "servAreaRes" attribute in the request, Service Area Restrictions encoded as "servAreaRes" attribute; and/or

b) if the PCF received the "rfsp" attribute in the request, RAT Frequency Selection Priority (RFSP) Index encoded as "rfsp" attribute; and/or

c) if the feature "UE-AMBR\_Authorization" is supported and the PCF received the "ueAmbr" attribute in the request, the authorized UE-AMBR encoded as "ueAmbr" attribute;

d) if the feature "UE-Slice-MBR\_Authorization" is supported and the PCF received the "ueSliceMbrs" attribute in the request, the corresponding authorized UE-Slice-MBR(s) encoded as "ueSliceMbrs" attribute; and/or

e) if the feature "AMInfluence" is supported, the PCF for the UE determines that the access and mobility policies may be influenced by the traffic of PDU session(s) and local operator policies indicate that the PCF for the UE shall subscribe with the PCF for the PDU session for established/terminated PDU session(s) event notifications via the AMF and the SMF, the PCF for the UE information within the "pcfUeInfo" attribute, and the DNN and S-NSSAI of the concerned PDU session(s) within the "matchPdus" attribute. The "pcfUeInfo" attribute shall include the PCF for the UE callback URI via which the PCF(s) for the PDU session shall send notifications about the related PDU session(s) established/terminated events within the "callbackUri" attribute, and if available, the associated PCF for the UE instance ID, PCF set ID, and the level of SBA binding within the "bindingInfo" attribute;

f) if the feature "5GAccessStratumTime" is supported and the PCF receives the access stratum time distribution parameters from the TSCTSF as defined in 3GPP TS 29.534 [26], the 5G access stratum time distribution parameters encoded as "asTimeDisParam" attribute as defined in clause 4.2.2.3.6;

- 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) if the "SliceSupport" feature or the "DNNReplacementControl" feature is supported, change of allowed NSSAI;

d) if the "DNNReplacementControl" feature is supported, change of SMF selection information; and

e) if the "EneNA" feature is supported, change of NWDAF data;

f) if the "TargetNSSAI" feature is supported, Generation of Target NSSAI;

g) if the "FFS" feature is supported, S-NSSAI Replacement; 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;

NOTE 4: 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 Policy Control Request Trigger "Change of SMF selection information" is provided, the SMF selection information representing the conditions upon which the AMF shall request a DNN replacement (see clause 4.2.2.3.4) encoded as "smfSelInfo" attribute;

- if the Policy Control Request Trigger "Generation of Target NSSAI" is provided, the RFSP Index associated with the Target NSSAI encoded as "targetRfsp" attribute;

- if errors occur when processing the HTTP POST request, 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 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";

- if the PCF is, due to incomplete, erroneous or missing information in the request, not able to provision an AM 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 rejects the AM policy association establishment, the NF service consumer shall apply the policy retrieved from the UDM if available; otherwise, the NF service consumer shall apply the operator configured policy.

If the PCF received a 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.

If the PCF received a "traceReq" attribute, it shall perform trace procedures as defined in 3GPP TS 32.422 [18].

If the PCF received the list of NWDAF instance IDs used for the UE in "nwdafInstanceIds" attribute and their associated Analytic IDs in "nwdafEvents" attribute included within the "nwdafDatas" attribute the PCF may select those NWDAF instances as described in 3GPP TS 29.513 [7].

The PCF may retrieve AF requirements on Access and Mobility policies from the UDR as specified in 3GPP TS 29.519 [17] and consider them for determining the Access and Mobility policies to be provisioned.

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

##### 4.2.2.3.7 Alternative S-NSSAI

When the feature FFS is supported, the alternative S-NSSAI indicates a compatible S-NSSAI for an S-NSSAI in the Allowed NSSAI that the AMF uses as a replacement when the S-NSSAI is not available or congested. It shall be encoded using the SnssaiReplaceInfo data type as defined in 3GPP TS 29.571 [11].

\*\*\* 4th Change \*\*\*

#### 4.2.3.1 General

The procedure in the present clause is applicable when the NF service consumer modifies an existing AM policy association (including the case where the AMF is relocated and the new AMF selects the old PCF to maintain the policy association 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 policy association

The AMF 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. Service Area Restriction change trigger) occurs, the NF service consumer (e.g. AMF) shall always invoke the procedure. When a policy control request trigger requires the subscription as defined in table 5.6.3.3-1 (e.g. location change trigger) occurs, the NF service consumer shall only invoke the procedure if the PCF has subscribed to that event trigger.

If an AMF 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 and the GUAMI.

NOTE 1: 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 AM Policy from the old AMF and selects the old PCF, the new AMF shall also invoke this procedure to update the Notification URI and the GUAMI. The new AMF may also update the alternate or backup IP addresses. If the feature "FeatureRenegotation" is supported, the new AMF may perform feature renegotiation, as described in clause 4.2.3.4.

To request policies from the PCF, to update the Notification URI, to renegotiate features, to update the trace control configuration and/or to request the termination of trace, the NF service consumer (e.g. AMF) shall request the update of the AM Policy Association by providing the relevant parameters about the UE context by sending an HTTP POST request with "{apiRoot}/npcf-am-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 Service Area restriction change occurred, the Service Area Restrictions (see clause 4.2.2.3.1) as obtained from the UDM encoded as "servAreaRes" attribute;

4. if a RFSP index change occurred, the RFSP index (see clause 4.2.2.3.2) as obtained from the UDM encoded as "rfsp" attribute;

5. if a UE location change occurred and the Policy Control Request Trigger "Location change" was provided, the UE location encoded as "userLoc" attribute;

6. if the Policy Control Request Trigger "Change of UE presence in PRA" was 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 2: 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.

7. if the trace control configuration needs to be updated, trace control and configuration parameters information encoded as "traceReq" attribute;

8. if trace needs to be terminated, the "traceReq" attribute set to the Null value;

9. if the "SliceSupport" feature or the "DNNReplacementControl" feature is supported, the UE is registered via 3GPP access, the allowed NSSAI changed, and the Policy Control Request Trigger "Change of allowed NSSAI" was provided, then the allowed NSSAI encoded in the "allowedSnssais" attribute;

10. for AMF relocation scenarios, if available, alternate or backup IPv4 Address(es) where to send Notifications encoded as "altNotifIpv4Addrs" attribute;

11. for AMF relocation scenarios, if available, alternate or backup IPv6 Address(es) where to send Notifications encoded as "altNotifIpv6Addrs" attribute;

12. for AMF relocation scenarios, if available, alternate or backup FQDN(s) where to send Notifications encoded as "altNotifFqdns" attribute;

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

NOTE 3: 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.

14. if the feature "UE-AMBR\_Authorization" is supported, and a subscribed UE-AMBR change occurred, the UE-AMBR (see clause 4.2.2.3.3) as obtained from the UDM encoded as "ueAmbr" attribute;

15. if the feature "DNNReplacementControl" is supported, DNN replacement applies and the Policy Control Request Trigger "Change of SMF selection information" was provided, the "smfSelInfo" attribute including:

- the UE requested DNN in the "dnn" attribute; and

- the UE requested S-NSSAI in the "snssai" attribute and, if available, the corresponding mapped home S-NSSAI in the "mappingSnssai" attribute;

when:

- the UE requested an unsupported DNN and the "unsuppDnn" attribute is set to "true"; or

- the UE requested DNN and S-NSSAI matched one of the S-NSSAI and DNN provided in the "candidates" attribute; and

16. if feature "DNNReplacementControl" is supported, the UE is registered via 3GPP access, the Allowed NSSAI changed and/or the mapping of a S-NSSAI of the Allowed NSSAI to the corresponding S-NSSAI of the HPLMN changed, and the Policy Control Request Trigger" Change of allowed NSSAI" was provided, then the mapping of each S-NSSAI of the Allowed NSSAI to the corresponding S-NSSAI of the HPLMN encoded in the "mappingSnssais" attribute;

NOTE 4: When the feature "DNNReplacementControl" is supported, the AMF applies DNN replacement for non-roaming scenarios and LBO. For a PDU session with home routed roaming, whether to perform DNN replacement is based on operator agreement.

17. if feature "UE-Slice-MBR\_Authorization" is supported, and a subscribed UE-Slice-MBR change occurred, the subscribed UE-Slice-MBR for each subscribed S-NSSAI of the home PLMN mapping to a S-NSSAI of the serving PLMN (see clause 4.2.2.3.5) encoded in the "ueSliceMbrs" attribute;

18. if the feature "EneNA" is supported and an NWDAF information change occurred, the list of NWDAF instance IDs used for the UE within the "nwdafInstanceIds" and their associated Analytic ID(s) within "nwdafEvents" with the updated values included within the "nwdafDatas" attribute.

NOTE 5: The NF service consumer provides the complete updated list of NWDAF instance IDs and associated Analytic ID(s) used for the UE. If all NWDAF data is deleted an empty list is included.

19. if the feature "TargetNSSAI" is supported, a new Target NSSAI is generated and the Policy Control Request Trigger "Generation of Target NSSAI" is provided, the new generated Target NSSAI encoded in the "targetSnssais" attribute.

20. if the "FFS" feature is supported and if the AMF is aware that one or more S-NSSAI(s) become unavailable and the Policy Control Request Trigger "SLICE\_REPLACE\_MGMT"was provided, the unavailable S-NSSAI(s) encoded within the "unavailSnssais" attribute.Upon the reception of the HTTP POST request, the PCF shall:

- update the corresponding individual AM Policy resource based on the information provided by the NF service consumer;

- determine the applicable policy based on local policy;

- for the successful case, send a HTTP "200 OK" response with the PolicyUpdate data type as body with possible updates for that applicable policy and Policy Control Request Trigger(s) encoded as described in clause 4.2.3.3 and according to the following provisions:

a) if the PCF received the "servAreaRes" attribute in the request, Service Area Restrictions encoded as "servAreaRes" attribute;

b) if the PCF received the "rfsp" attribute in the request, RAT Frequency Selection Priority (RFSP) Index encoded as "rfsp" attribute;

c) if the feature "UE-AMBR\_Authorization" is supported and the PCF received the "ueAmbr" attribute in the request, UE-AMBR encoded as "ueAmbr" attribute;

d) if the PCF received the "smfSelInfo" attribute in the request, the "smfSelInfo" attribute encoding the PCF selected DNN in the "dnn" attribute corresponding to the S-NSSAI received in the "snssai" attribute;

NOTE 6: 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.

e) if the feature "UE-Slice-MBR\_Authorization" is supported and the PCF received the "ueSliceMbrs" attribute in the request, the corresponding authorized UE-Slice-MBR(s) encoded as "ueSliceMbrs" attribute;

f) if the feature "TargetNSSAI" is supported and the PCF received the "targetSnssais" attribute in the request, the RFSP Index associated with the Target NSSAI encoded as "targetRfsp" attribute; and/or

g) if the feature "FFS" is supported and the PCF received the "unavailSnsssais" attribute in the request, the alternative S-NSSAI(s) associated with the received S-NSSAI(s) encoded as "snssaiReplInfos" attribute;

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

a) if the PCF is, due to incomplete, erroneous or missing information in the request, not able to provision an AM 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".

b) if the "ES3XX" feature is supported and the PCF (service) instance has changed, the PCF may respond with an HTTP 3xx redirect response pointing to a new PCF (service) instance as defined in clause 6.5.3.3 of 3GPP TS 29.500 [5].

If the PCF received a "traceReq" attribute, it shall perform trace procedures as defined in 3GPP TS 32.422 [18].

If the AMF received the request of removal of Service Area Restrictions and/or RFSP Index and/or UE-AMBR and/or UE-Slice-MBR(s) from the UDM, the AMF shall remove the authorized Service Area Restrictions and/or RFSP Index and/or UE-AMBR and/or UE-Slice-MBR(s) provisioned by the PCF and apply the configured Service Area Restrictions and/or RFSP Index and/or UE-AMBR and/or UE-Slice-MBR(s) at the AMF without interacting with the PCF.

If feature "DNNReplacementControl" is supported and the AMF received the update of the SMF selection information within the "smfSelInfo" attribute in the response, the AMF shall apply the updated SMF selection information to the new PDU Sessions only, i.e. already established PDU Sessions are not affected.

If the feature "AMInfluence" is supported, the PCF determines that the access and mobility policies may be influenced by the traffic of a PDU session(s), e.g. based on the received policy control request trigger(s), and local operator policies indicate the PCF for the UE shall subscribe with the PCF for the PDU session for established/terminated PDU session(s) event notifications, the PCF shall provision/update the AMF with the PCF for the UE information within the "pcfUeInfo" attribute and the complete list of S-NSSAI and DNN combinations within the "matchPdus" attribute. The AMF shall then update the affected established PDU sesssion(s), by forwarding the received PCF for the UE information for the PDU session(s) matching the new S-NSSAI and DNN combination(s) and removing the previously provided PCF for the UE information for the PDU session(s) matching the removed S-NSSAI and DNN combination(s) as defined in 3GPP TS 29.502 [31].

When the feature "AMInfluence" is supported, and the SBA binding indication information for the PCF instance changes, the PCF may update the previously provided information in the AMF. The AMF shall apply the updated PCF callback information to the new PDU Sessions only, i.e., already established PDU sessions are not affected.

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.

If the PCF received a "servAreaRes" attribute which resulted to a change of the Service Area Restrictions, it shall send notifications to any NF Service Consumer(s) (e.g. AF) that have subscribed to the related event by using the Npcf\_AMPolicyAuthorization service (see TS 29.534 [26]) and/or the Npcf\_EventExposure service ((see TS 29.523 [28]).

If the PCF received a new list of NWDAF instance IDs used for the UE in "nwdafInstanceIds" attribute and their associated Analytic IDs in "nwdafEvents" attribute included within the "nwdafDatas" attribute the PCF may select those NWDAF instances based on this new list as described in 3GPP TS 29.513 [7].

\*\*\* 5th Change \*\*\*

#### 4.2.3.2 Policy Control Request Triggers

The following Policy Control Request Triggers are defined (see clause 6.1.2.5 of 3GPP TS 23.503 [4]):

- "LOC\_CH", i.e. location change (tracking area): the tracking area of the UE has changed;

- "PRA\_CH", i.e. change of UE presence in PRA: the UE is entering/leaving a Presence Reporting Area, this includes reporting the initial status at the time the request for reports is initiated;

- "SERV\_AREA \_CH", i.e. Service Area Restriction change: the UDM notifies the AMF that the subscribed service area restriction information has changed;

- "RFSP\_CH", i.e. RFSP index change: the UDM notifies the AMF that the subscribed RFSP index has changed;

- "ALLOWED\_NSSAI\_CH", i.e. change of allowed NSSAI of the served UE;

NOTE 1: The "ALLOWED\_NSSAI\_CH" trigger only applies if the "SliceSupport" feature or the "DNNReplacementControl" feature is supported.

- "UE\_AMBR\_CH", i.e. UE-AMBR change: the UDM notifies the AMF that the subscribed UE-AMBR has changed;

NOTE 2: The "UE\_AMBR\_CH" trigger only applies if the "UE-AMBR\_Authorization" feature is supported.

- "SMF\_SELECT\_CH", i.e. SMF selection information change: UE request for an unsupported DNN or UE request for a DNN within the list of DNN candidates for replacement per S-NSSAI;

NOTE 3: The "SMF\_SELECT\_CH" trigger only applies if the "DNNReplacementControl" feature is supported and "ALLOWED\_NSSAI\_CH" trigger is also subscribed.

- "ACCESS\_TYPE\_CH", i.e. the access type change: the AMF notifies that the access type and the RAT type combinations available in the AMF for a UE with simultaneous 3GPP and non-3GPP connectivity has changed;

NOTE 4: The "ACCESS\_TYPE\_CH" trigger only applies if the "MultipleAccessTypes" feature is supported as specified in Annex B.

- "UE\_SLICE\_MBR\_CH", i.e. UE-Slice-MBR change: the AMF notifies for any changes in the subscribed UE-Slice-MBR for each subscribed S-NSSAI of the home PLMN mapping to a S-NSSAI of the serving PLMN;

NOTE 5: The "UE\_SLICE\_MBR\_CH" trigger only applies if the "UE-Slice-MBR\_Authorization" feature is supported.

- "NWDAF\_DATA\_CH", i.e. NWDAF Data change:the list of NWDAF Instance IDs and/or their associated Analytics IDs consumed by the AMF have changed; and

NOTE 6: The "NWDAF\_DATA\_CH" trigger only applies if the "EneNA" feature is supported.

- "TARGET\_NSSAI", i.e. Generation of Target NSSAI: the NF service consumer notifies that the Target NSSAI was generated.

NOTE 7: The "TARGET\_NSSAI" trigger only applies if the "TargetNSSAI" feature is supported.

- "SLICE\_REPLACE\_MGMT", i.e. the AMF notifies that slice replacement is needed and it cannot determine the Alternative S-NSSAI for an S-NSSAI.

NOTE 8: The "SLICE\_REPLACE\_MGMT" trigger only applies if the "FFS" feature is supported.

Editor’s Note: Name of the feature for the support of network slice replacement is FFS.

\*\*\* 6th Change \*\*\*

#### 4.2.3.3 Encoding of updated policy

Updated policies shall be encoded within the PolicyUpdate data type that may include:

- AMF Access and Mobility Policy (see clause 4.2.2.3) Service Area Restriction encoded as "servAreaRes" attribute;

- AMF Access and Mobility Policy (see clause 4.2.2.3) RFSP Index encoded as "rfsp" attribute and RFSP Index associated with the Target NSSAI encoded as "targetRfsp" attribute;

- if the "UE-AMBR\_Authorization" feature is supported, AMF Access and Mobility Policy (see clause 4.2.2.3) UE-AMBR encoded as "ueAmbr" attribute;

- if the "UE-Slice-MBR\_Authorization" feature is supported, AMF Access and Mobility Policy (see clause 4.2.2.3) UE-Slice-MBR(s) encoded as "ueSliceMbrs" attribute;

NOTE: PCF can stop applying policies to already provided attributes under PolicyUpdate data type. In that case, PCF will modify those attributes by e.g. providing configured values. How the PCF gets those values is out of specification.

- if the "DNNReplacementControl" feature is supported, AMF Access and Mobility Policy (see clause 4.2.2.3) SMF selection information encoded as "smfSelInfo" attribute;

- if the "FFS" feature is supported, network slice replacement information encoded as "snssaiRepInfos" attribute;

Editor’s Note: Name of the feature for the support of network slice replacement is FFS.

- updated Policy Control Request Trigger(s) (see clause 4.2.3.2) encoded as "triggers" attribute i.e.:

1) either a new complete list of applicable Policy Control Request Trigger(s) including one or several of the following:

a) Location change (tracking area); and/or

b) Change of UE presence in PRA; and/or

c) if the "SliceSupport" feature or the "DNNReplacementControl" feature is supported, change of allowed NSSAI; and/or

d) if the "DNNReplacementControl" feature is supported, SMF selection information change; or

2) a "NULL" value to request the removal of all previously installed Policy Control Request Trigger(s); and

- if the Policy Control Request Trigger "Change of UE presence in PRA" is provided or if that trigger was already set but the requested presence reporting areas need to be changed, the presence reporting areas for which reporting is required encoded as "pras" attribute encoded as follows:

a) A new entry shall be added by supplying a new identifier as key and the corresponding PresenceInfo data type instance with complete contents as value as an entry within the map.

b) An existing entry shall be modified by supplying the existing identifier as key and the PresenceInfo data type instance with complete contents as value as an entry within the map.

c) An existing entry shall be deleted by supplying the existing identifier as key and "NULL" as value as an entry within the map.

d) For an unmodified entry, no entry needs to be provided within the map; and

- if the Policy Control Request Trigger "Change of UE presence in PRA" is removed, the presence reporting areas for which reporting was required shall be removed by providing the "pras" attribute with "NULL" as value.

- if the Policy Control Request Trigger "SMF selection information change" is provided or if that trigger was already set and the indication of DNN replacement when the requested DNN is unknown needs to be set or changed, the "unsuppDnn" attribute within "smfSelInfo" attribute shall be provided including the appropriate value.

- if the Policy Control Request Trigger "SMF selection information change" is provided or if that trigger was already set and the list of candidate DNNs for replacement needs to be set or changed, the "candidates" attribute within the "smfSelInfo" attribute is encoded as follows:

a) A new entry shall be added by supplying a new S-NSSAI as key and the corresponding CandidateForReplacement data type instance with complete contents as value as an entry within the map.

b) An existing entry shall be modified by supplying the existing S-NSSAI as key and the CandidateForReplacement data type instance with complete contents as value as an entry within the map.

c) An existing entry shall be deleted by supplying the existing S-NSSAI as key and "NULL" as value as an entry within the map.

d) For an unmodified entry, no entry needs to be provided within the map;

e) The complete list of candidate DNNs for which reporting is required shall be removed by providing the "candidates" attribute with "NULL" as value.

- if the Policy Control Request Trigger "SMF selection information change" is removed, the candidate DNNs for which reporting was required shall be removed by providing the "smfSelInfo" attribute with "NULL" as value.

\*\*\* 7th 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 |  |
| triggers | array(RequestTrigger) | O | 1..N | Request Triggers that the PCF subscribes. Only values "LOC\_CH", "ALLOWED\_NSSAI\_CH", "TARGET\_NSSAI", "SMF\_SELECT\_CH", "PRA\_CH" "ACCESS\_TYPE\_CH" and "SLICE\_REPLACE\_MGMT" are permitted. | (NOTE 1) |
| servAreaRes | ServiceAreaRestriction | O | 0..1 | Service Area Restriction as part of the AMF Access and Mobility Policy as determined by the PCF |  |
| wlServAreaRes | WirelineServiceAreaRestriction | O | 0..1 | Wireline Service Area Restriction as part of the AMF Access and Mobility Policy as determined by the PCF | WirelineWirelessConvergence |
| rfsp | RfspIndex | O | 0..1 | RFSP Index as part of the AMF Access and Mobility Policy as determined by the PCF. |  |
| targetRfsp | RfspIndex | C | 0..1 | RFSP Index associated with the Target NSSAI. It shall be present if the Target NSSAI was received in the request and the trigger "TARGET\_NSSAI" is provided. | TargetNSSAI |
| 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" and the "additionalPraId" attributes within the PresenceInfo data type shall not be supplied. The "praId" attribute within the PresenceInfo data type shall include the identifier of either a presence reporting area or a presence reporting area set. |  |
| smfSelInfo | SmfSelectionData | O | 0..1 | If the trigger "SMF\_SELECT\_CH" is provided, the conditions for SMF selection information replacement, as determined by the PCF shall be provided. | DNNReplacementControl |
| ueAmbr | Ambr | O | 0..1 | UE-AMBR as part of the AMF Access and Mobility Policy as determined by the PCF. | UE-AMBR\_Authorization |
| ueSliceMbrs | array(UeSliceMbr) | O | 1..N | One or more UE-Slice-MBR(s) for S-NSSAI(s) of serving PLMN as part of the AMF Access and Mobility Policy as determined by the PCF. | UE-Slice-MBR\_Authorization |
| pcfUeInfo | PcfUeCallbackInfo | O | 0..1 | Contains the PCF for the UE information necessary for the PCF for the PDU session to send established/terminated events notifications to the PCF for the UE. | AMInfluence |
| matchPdus | array(PduSessionInfo) | C | 1..N | Indicates the matched PDU session(s) for which the PCF for the UE information in the "pcfUeInfo" attribute shall be forwarded to the SMF. It shall be present when the "pcfUeInfo" attribute is present.(NOTE 2) | AMInfluence |
| asTimeDisParam | AsTimeDistributionParam | O | 0..1 | Contains the 5G acess stratum time distribution parameters. | 5GAccessStratumTime |
| suppFeat | SupportedFeatures | M | 1 | Indicates the negotiated supported features. |  |
| NOTE 1: The "ALLOWED\_NSSAI\_CH", "TARGET\_NSSAI", "SMF\_SELECT\_CH", "ACCESS\_TYPE\_CH" and "SLICE\_REPLACE\_MGMT" values in the "triggers" attribute apply under feature control as described in clause 4.2.3.2.NOTE 2: The DNN encoded within the PduSessionInfo element(s) of the "matchPdus" array contains a full DNN or only the DNN Network Identifier based on the DNN provided by the AF to the PCF in the AmInfluence API, as specified in 3GPP TS 29.522 [32]. When the DNN contains the Network Identifier only, the AMF shall match a PDU session for the received Network Identifier and for any value of the Operator Identifier. |

\*\*\* 8th Change \*\*\*

#### 5.6.2.4 Type PolicyAssociationUpdateRequest

Table 5.6.2.4-1: Definition of type PolicyAssociationUpdateRequest

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| notificationUri | Uri | O | 0..1 | Identifies the recipient of Notifications sent by the PCF. |  |
| altNotifIpv4Addrs | array(Ipv4Addr) | O | 1..N | Alternate or backup IPv4 Address(es) where to send Notifications. |  |
| altNotifIpv6Addrs | array(Ipv6Addr) | O | 1..N | Alternate or backup IPv6 Address(es) where to send Notifications. |  |
| altNotifFqdns | array(Fqdn) | O | 1..N | Alternate or backup FQDN(s) where to send Notifications. |  |
| triggers | array(RequestTrigger) | C | 1..N | Request Triggers that the NF service consumer observes. |  |
| servAreaRes | ServiceAreaRestriction | C | 0..1 | Service Area Restriction as part of the AMF Access and Mobility Policy. Shall be provided for trigger "SERV\_AREA\_CH". |  |
| wlServAreaRes | WirelineServiceAreaRestriction | C | 0..1 | Wireline Service Area Restriction as part of the AMF Access and Mobility Policy. Shall be provided for trigger "SERV\_AREA\_CH". | WirelineWirelessConvergence |
| rfsp | RfspIndex | C | 0..1 | RFSP Index as part of the AMF Access and Mobility Policy. Shall be provided for trigger "RFSP\_CH". |  |
| smfSelInfo | SmfSelectionData | C | 0..1 | The UE requested S-NSSAI and UE requested DNN. Shall be provided for trigger "SMF\_SELECT\_CH". | DNNReplacementControl |
| ueAmbr | Ambr | C | 0..1 | UE-AMBR as part of the AMF Access and Mobility Policy. Shall be provided for trigger "UE\_AMBR\_CH". | UE-AMBR\_Authorization |
| ueSliceMbrs | array(UeSliceMbr) | C | 1..N | The subscribed UE-Slice-MBR for each subscribed S-NSSAI of the home PLMN mapping to a S-NSSAI of the serving PLMN. Shall be provided for the "UE\_SLICE\_MBR\_CH" policy control request trigger. (NOTE) | UE-Slice-MBR\_Authorization |
| praStatuses | map(PresenceInfo) | C | 1..N | If the Trigger "PRA\_CH" is reported, the UE presence status for tracking area for which changes of the UE presence occurred 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 be supplied. The "additionalPraId" attribute within the PresenceInfo data type shall not be supplied. The "praId" attribute within the PresenceInfo data type shall include the identifier of an individual presence reporting area. |  |
| userLoc | UserLocation | C | 0..1 | The location of the served UE shall be provided for trigger "LOC\_CH". |  |
| allowedSnssais | array(Snssai) | C | 1..N | Represents the Allowed NSSAI in the 3GPP access and includes the S-NSSAIs values the UE can use in the serving PLMN. It shall be provided for trigger "ALLOWED\_NSSAI\_CH". | SliceSupport, DNNReplacementControl |
| targetSnssais | array(Snssai) | C | 1..N | Represents the Target NSSAI. It shall be provided for the trigger "TARGET\_NSSAI". | TargetNSSAI |
| mappingSnssais | array(MappingOfSnssai) | O | 1..N | The mapping of each S-NSSAI of the Allowed NSSAI to the corresponding S-NSSAI of the HPLMN. It shall be provided for trigger "ALLOWED\_NSSAI\_CH" if available.If the feature "MultipleAccessTypes" is supported, this attribute contains also the mapping of the Allowed NSSAI in the non-3GPP access to the corresponding S-NSSAI of the HPLMN. | DNNReplacementControl |
| n3gAllowedSnssais | array(Snssai) | C | 1..N | Represents the Allowed NSSAI in the non-3GPP access and includes the S-NSSAIs values the UE can use in the serving PLMN. It shall be provided for trigger "ALLOWED\_NSSAI\_CH" when the feature "MultipleAccessTypes" is supported. | SliceSupport, MultipleAccessTypes, DNNReplacementControl |
| unavailSnssais | array(Snssai) | C | 1..N | Represents the unavailable S-NSSAIs that require slice replacement. It shall be provided for trigger "SLICE\_REPLACE\_MGMT" when the feature "FFS" is supported | FFS |
| accessTypes | array(AccessType) | C | 1..N | The Access Types where the served UE is camping. Shall be provided for trigger "ACCESS\_TYPE\_CH".  | MultipleAccessTypes |
| ratTypes | array(RatType) | C | 1..N | The 3GPP RAT Type and non-3GPP RAT Type where the served UE is camping. Shall be provided for trigger "ACCESS\_TYPE\_CH". | MultipleAccessTypes |
| traceReq | TraceData | C | 0..1 | Trace control and configuration parameters information defined in 3GPP TS 32.422 [18] shall be included if trace is required to be activated, modified or deactivated. For trace modification, it shall contain a complete replacement of trace data. For trace deactivation, it shall contain the Null value. |  |
| guami | Guami | C | 0..1 | The Globally Unique AMF Identifier (GUAMI) shall be provided by an AMF as service consumer during the AMF relocation. |  |
| nwdafDatas | array(NwdafData) | O | 1..N | List of NWDAF Instance IDs and their associated Analytics IDs consumed by the NF service consumer. | EneNA |
| suppFeat | SupportedFeatures | C | 0..1 | Indicates the features supported by the NF service consumer.It shall be included by the target AMF in inter-AMF mobility scenarios. | FeatureRenegotiation |
| NOTE: If the serving PLMN is not the HPLMN, then within the "ueSliceMbrs" attribute, there shall not be more than one array item with the same "servingSnssai" attribute's value in this release of the specification. |

Editor's Note: It is FFS whether other new attributes need to be added when the PolicyAssociationUpdateRequest data type is used to report the target AMF supported features.

Editor’s Note: Name of the feature for the support of network slice replacement is FFS.

\*\*\* 9th 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 AM policy related to the notification.(NOTE 3) |  |
| triggers | array(RequestTrigger) | O | 1..N | Request Triggers that the PCF subscribes. Only values "LOC\_CH", "ALLOWED\_NSSAI\_CH", "TARGET\_NSSAI", "SMF\_SELECT\_CH", "PRA\_CH" "ACCESS\_TYPE\_CH" and "SLICE\_REPLACE\_MGMT" are permitted. | (NOTE 1)(NOTE 2) |
| servAreaRes | ServiceAreaRestriction | O | 0..1 | Service Area Restriction as part of the AMF Access and Mobility Policy as determined by the PCF. |  |
| wlServAreaRes | WirelineServiceAreaRestriction | O | 0..1 | Wireline Service Area Restriction as part of the AMF Access and Mobility Policy as determined by the PCF | WirelineWirelessConvergence |
| rfsp | RfspIndex | O | 0..1 | RFSP Index as part of the AMF Access and Mobility Policy as determined by the PCF. |  |
| targetRfsp | RfspIndex | C | 0..1 | RFSP Index associated with the Target NSSAI. It shall be present when the Target NSSAI was received in the request. | TargetNSSAI |
| smfSelInfo | SmfSelectionData | C | 0..1 | It may include updated conditions for SMF Selection information replacement. It shall include the PCF decision of the selected DNN when the "smfSelInfo" attribute containing the UE requested S-NSSAI and DNN was sent in the request. | DNNReplacementControl |
| ueAmbr | Ambr | C | 0..1 | UE-AMBR as part of the AMF Access and Mobility Policy. | UE-AMBR\_Authorization |
| ueSliceMbrs | array(UeSliceMbr) | O | 0..1 | One or more UE-Slice-MBR(s) for S-NSSAI(s) of serving PLMN as part of the AMF Access and Mobility Policy as determined by the PCF. | UE-Slice-MBR\_Authorization |
| pras | map(PresenceInfoRm) | 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 "presenceState" attribute within the PresenceInfo data type shall not be supplied. The "praId" attribute within the PresenceInfo data type shall include the identifier of either a presence reporting area or a presence reporting area set. |  |
| pcfUeInfo | PcfUeCallbackInfo | O | 0..1 | Contains the PCF for the UE information necessary for the PCF for the PDU session to send established/terminated event notifications to the PCF for the UE.  | AMInfluence |
| matchPdus | array(PduSessionInfo) | C | 1..N | Indicates the matched PDU session(s) for which the PCF for the UE information in the "pcfUeInfo" attribute shall be forwarded to the SMF.It shall be present when the "pcfUeInfo" attribute is present and was not previously provisioned by the PCF for the UE.(NOTE 4) | AMInfluence |
| asTimeDisParam | AsTimeDistributionParam | O | 0..1 | Contains the 5G acess stratum time distribution parameters. | 5GAccessStratumTime |
| suppFeat | SupportedFeatures | C | 0..1 | Indicates the negotiated supported features.It shall be included in the HTTP POST response when the NF service consumer provided the supported features in the HTTP POST request. | FeatureRenegotiation |
| snssaiReplInfos | array(SnssaiReplaceInfo) | O | 0..1 | Contains the alternative S-NSSAI(s). | FFS |
| NOTE 1: The "ALLOWED\_NSSAI\_CH", "TARGET\_NSSAI", "SMF\_SELECT\_CH", "ACCESS\_TYPE\_CH" and "SLICE\_REPLACE\_MGMT" values in the "triggers" attribute apply under feature control as described in clause 4.2.3.2.NOTE 2: The "SMF\_SELECT\_CH" trigger may be met only for new PDU sessions, i.e. it shall not apply to ongoing PDU sessions.NOTE 3: When the PolicyUpdate data type is used in a policy update notify service operation, either the complete resource URI included in the "resourceUri" attribute or the "apiSpecificResourceUriPart" component (see clause 5.1) of the resource URI included in the "resourceUri" attribute may be used by the NF service consumer (e.g. AMF) for the identification of the Individual AM Policy Association resource related to the notification.NOTE 4: The DNN encoded within the PduSessionInfo element(s) of the "matchPdus" array contains a full DNN or only the DNN Network Identifier based on the DNN provided by the AF to the PCF in the AmInfluence API, as specified in 3GPP TS 29.522 [32]. When the DNN contains the Network Identifier only, the AMF shall match a PDU session for the received Network Identifier and for any value of the Operator Identifier. |

Editor's Note: It is FFS whether other new attributes need to be added when the PolicyUpdate data type is used to report the negotiated supported features.

\*\*\* 10th Change \*\*\*

#### 5.6.3.3 Enumeration: RequestTrigger

The enumeration RequestTrigger represents the possible Policy Control Request Triggers. It shall comply with the provisions defined in table 5.6.3.3-1.

Table 5.6.3.3-1: Enumeration RequestTrigger

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| LOC\_CH | Location change (tracking area): the tracking area of the UE has changed. (NOTE 1) |  |
| PRA\_CH | Change of UE presence in PRA: the NF service consumer reports the current presence status of the UE in a Presence Reporting Area, and notifies that the UE enters/leaves the Presence Reporting Area. |  |
| SERV\_AREA\_CH(NOTE 2) | Service Area Restriction change: the UDM notifies the NF service consumer that the subscribed service area restriction information has changed. |  |
| RFSP\_CH(NOTE 2) | RFSP index change: the UDM notifies the NF service consumer that the subscribed RFSP index has changed. |  |
| ALLOWED\_NSSAI\_CH | Allowed NSSAI change: the NF service consumer notifies that the set of UE allowed S-NSSAIs has changed. (NOTE 1)  | SliceSupport, DNNReplacementControl |
| UE\_AMBR\_CH(NOTE 2) | UE-AMBR change: the UDM notifies the NF service consumer that the subscribed UE-AMBR has changed. | UE-AMBR\_Authorization |
| SMF\_SELECT\_CH | SMF selection information change: UE request for an unsupported DNN or UE request for a DNN within the list of DNN candidates for replacement per S-NSSAI. | DNNReplacementControl |
| ACCESS\_TYPE\_CH | Access Type change: the NF service consumer notifies that the access type and the RAT type combinations available in the NF service consumer for a UE with simultaneous 3GPP and non-3GPP connectivity have changed. (NOTE 1) | MultipleAccessTypes |
| UE\_SLICE\_MBR\_CH | UE-Slice-MBR change: the NF service consumer notifies any changes in the subscribed UE-Slice-MBR for each subscribed S-NSSAI of the home PLMN mapping to a S-NSSAI of the serving PLMN. | UE-Slice-MBR\_Authorization |
| NWDAF\_DATA\_CH(NOTE 2) | Indicates that the NWDAF instance IDs used for the UE and/or associated Analytics IDs have changed. | EneNA |
| TARGET\_NSSAI | Generation of Target NSSAI: the NF service consumer notifies that the Target NSSAI was generated. | TargetNSSAI |
| SLICE\_REPLACE\_MGMT | Indicates that slice replacement is needed, when AMF cannot determine the Alternative S-NSSAI for the S-NSSAI(s). | FFS |
| NOTE 1: This includes reporting the current value at the time the trigger is provisioned during the update or update notification of the policy association.NOTE 2: The NF service consumer always reports to the PCF. |

Editor’s Note: Name of the feature for the support of network slice replacement is FFS.

\*\*\* 9th Change \*\*\*

# A.2 Npcf\_AMPolicyControl API

openapi: 3.0.0

info:

 version: 1.3.0-alpha.2

 title: Npcf\_AMPolicyControl

 description: |

 Access and Mobility Policy Control Service.

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externalDocs:

 description: 3GPP TS 29.507 V18.1.0; 5G System; Access and Mobility Policy Control Service.

 url: 'https://www.3gpp.org/ftp/Specs/archive/29\_series/29.507/'

servers:

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

 variables:

 apiRoot:

 default: https://example.com

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

security:

 - {}

 - oAuth2ClientCredentials:

 - npcf-am-policy-control

paths:

 /policies:

 post:

 operationId: CreateIndividualAMPolicyAssociation

 summary: Create individual AM policy association.

 tags:

 - AM 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-am-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'

 '502':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/502'

 '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:

 '200':

 description: >

 OK. The current applicable values corresponding to the policy control request

 trigger is reported

 content:

 application/json:

 schema:

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

 '204':

 description: No Content, Notification was successful.

 '307':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/308'

 '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'

 '502':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/502'

 '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 successful.

 '307':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/308'

 '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'

 '502':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/502'

 '503':

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

 default:

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

 /policies/{polAssoId}:

 get:

 operationId: ReadIndividualAMPolicyAssociation

 summary: Read individual AM policy association.

 tags:

 - Individual AM 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'

 '307':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/308'

 '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'

 '502':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/502'

 '503':

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

 default:

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

 delete:

 operationId: DeleteIndividualAMPolicyAssociation

 summary: Delete individual AM policy association.

 tags:

 - Individual AM 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 successfully deleted.

 '307':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/308'

 '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'

 '502':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/502'

 '503':

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

 default:

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

 /policies/{polAssoId}/update:

 post:

 operationId: ReportObservedEventTriggersForIndividualAMPolicyAssociation

 summary: >

 Report observed event triggers and obtain updated policies for an individual AM

 policy association.

 tags:

 - Individual AM 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'

 '307':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/308'

 '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'

 '502':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/502'

 '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-am-policy-control: Access to the Npcf\_AMPolicyControl API

 schemas:

 PolicyAssociation:

 description: Represents an individual AM Policy Association resource.

 type: object

 properties:

 request:

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

 triggers:

 type: array

 items:

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

 minItems: 1

 description: Request Triggers that the PCF subscribes.

 servAreaRes:

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

 wlServAreaRes:

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

 rfsp:

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

 targetRfsp:

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

 smfSelInfo:

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

 ueAmbr:

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

 ueSliceMbrs:

 type: array

 items:

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

 minItems: 1

 description: >

 One or more UE-Slice-MBR(s) for S-NSSAI(s) of serving PLMN as part of the

 AMF Access and Mobility Policy as determined by the PCF.

 pras:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: >

 Contains the presence reporting area(s) for which reporting was requested.

 The praId attribute within the PresenceInfo data type is the key of the map.

 suppFeat:

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

 pcfUeInfo:

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

 matchPdus:

 type: array

 items:

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

 nullable: true

 asTimeDisParam:

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

 required:

 - suppFeat

 PolicyAssociationRequest:

 description: >

 Information which the NF service consumer provides when requesting the creation of a policy

 association. The serviveName property corresponds to the serviceName in the main body

 of the specification.

 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.

 altNotifFqdns:

 type: array

 items:

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

 minItems: 1

 description: Alternate or backup FQDN(s) 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'

 accessTypes:

 type: array

 items:

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

 minItems: 1

 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'

 ratTypes:

 type: array

 items:

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

 minItems: 1

 groupIds:

 type: array

 items:

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

 minItems: 1

 servAreaRes:

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

 wlServAreaRes:

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

 rfsp:

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

 ueAmbr:

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

 ueSliceMbrs:

 type: array

 items:

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

 minItems: 1

 description: >

 The subscribed UE Slice-MBR for each subscribed S-NSSAI of the home PLMN mapping to

 a S-NSSAI of the serving PLMN Shall be provided when available.

 allowedSnssais:

 description: array of allowed S-NSSAIs for the 3GPP access.

 type: array

 items:

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

 minItems: 1

 targetSnssais:

 description: array of target S-NSSAIs.

 type: array

 items:

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

 minItems: 1

 mappingSnssais:

 description: >

 mapping of each S-NSSAI of the Allowed NSSAI to the corresponding S-NSSAI of the HPLMN.

 type: array

 items:

 $ref: 'TS29531\_Nnssf\_NSSelection.yaml#/components/schemas/MappingOfSnssai'

 minItems: 1

 n3gAllowedSnssais:

 description: array of allowed S-NSSAIs for the Non-3GPP access.

 type: array

 items:

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

 minItems: 1

 guami:

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

 serviveName:

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

 traceReq:

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

 nwdafDatas:

 type: array

 items:

 $ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/NwdafData'

 minItems: 1

 suppFeat:

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

 required:

 - notificationUri

 - suppFeat

 - supi

 PolicyAssociationUpdateRequest:

 description: >

 Represents information that the NF service consumer provides when requesting the update of

 a policy association.

 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.

 altNotifFqdns:

 type: array

 items:

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

 minItems: 1

 description: Alternate or backup FQDN(s) where to send Notifications.

 triggers:

 type: array

 items:

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

 minItems: 1

 description: Request Triggers that the NF service consumer observes.

 servAreaRes:

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

 wlServAreaRes:

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

 rfsp:

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

 smfSelInfo:

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

 ueAmbr:

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

 ueSliceMbrs:

 type: array

 items:

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

 minItems: 1

 description: >

 The subscribed UE-Slice-MBR for each subscribed S-NSSAI of the home PLMN mapping

 to a S-NSSAI of the serving PLMN Shall be provided for the "UE\_SLICE\_MBR\_CH"

 policy control request trigger.

 praStatuses:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: >

 Contains the UE presence status for tracking area for which changes of the UE presence

 occurred. The praId attribute within the PresenceInfo data type is the key of the map.

 userLoc:

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

 allowedSnssais:

 description: array of allowed S-NSSAIs for the 3GPP access.

 type: array

 items:

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

 minItems: 1

 targetSnssais:

 description: array of target S-NSSAIs.

 type: array

 items:

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

 minItems: 1

 mappingSnssais:

 description: >

 mapping of each S-NSSAI of the Allowed NSSAI to the corresponding S-NSSAI of the HPLMN.

 type: array

 items:

 $ref: 'TS29531\_Nnssf\_NSSelection.yaml#/components/schemas/MappingOfSnssai'

 minItems: 1

 accessTypes:

 type: array

 items:

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

 minItems: 1

 ratTypes:

 type: array

 items:

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

 minItems: 1

 n3gAllowedSnssais:

 description: array of allowed S-NSSAIs for the Non-3GPP access.

 type: array

 items:

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

 minItems: 1

 unavailSnssais:

 description: array of unavailable S-NSSAIs.

 type: array

 items:

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

 minItems: 1

 traceReq:

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

 guami:

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

 nwdafDatas:

 type: array

 items:

 $ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/NwdafData'

 minItems: 1

 nullable: true

 suppFeat:

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

 PolicyUpdate:

 description: >

 Represents updated policies that the PCF provides in a notification or in a reply to an

 Update Request.

 type: object

 properties:

 resourceUri:

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

 triggers:

 type: array

 items:

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

 minItems: 1

 nullable: true

 description: Request Triggers that the PCF subscribes.

 servAreaRes:

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

 wlServAreaRes:

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

 rfsp:

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

 targetRfsp:

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

 smfSelInfo:

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

 ueAmbr:

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

 ueSliceMbrs:

 type: array

 items:

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

 minItems: 1

 description: >

 One or more UE-Slice-MBR(s) for S-NSSAI(s) of serving PLMN the allowed NSSAI as

 part of the AMF Access and Mobility Policy as determined by the PCF.

 pras:

 type: object

 additionalProperties:

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

 description: >

 Contains the presence reporting area(s) for which reporting was requested. The praId

 attribute within the PresenceInfo data type is the key of the map.

 minProperties: 1

 nullable: true

 pcfUeInfo:

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

 matchPdus:

 type: array

 items:

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

 nullable: true

 asTimeDisParam:

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

 suppFeat:

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

 snssaiReplInfos:

 type: array

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

 nullable: true

 required:

 - resourceUri

 TerminationNotification:

 description: >

 Represents a request to terminate a policy Association that the PCF provides in a

 notification.

 type: object

 properties:

 resourceUri:

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

 cause:

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

 required:

 - resourceUri

 - cause

 SmfSelectionData:

 description: Represents the SMF Selection information that may be replaced by the PCF.

 type: object

 properties:

 unsuppDnn:

 type: boolean

 candidates:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: >

 Contains the list of DNNs per S-NSSAI that are candidates for replacement. The snssai

 attribute within the CandidateForReplacement data type is the key of the map.

 nullable: true

 snssai:

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

 mappingSnssai:

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

 dnn:

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

 nullable: true

 CandidateForReplacement:

 description: Represents a list of candidate DNNs for replacement for an S-NSSAI.

 type: object

 properties:

 snssai:

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

 dnns:

 type: array

 items:

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

 minItems: 1

 nullable: true

 required:

 - snssai

 nullable: true

 AmRequestedValueRep:

 description: >

 Represents the current applicable values corresponding to the policy control request

 triggers.

 type: object

 properties:

 userLoc:

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

 praStatuses:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: >

 Contains the UE presence statuses for tracking areas. The praId attribute within the

 PresenceInfo data type is the key of the map.

 accessTypes:

 type: array

 items:

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

 minItems: 1

 ratTypes:

 type: array

 items:

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

 allowedSnssais:

 description: array of allowed S-NSSAIs for the 3GPP access.

 type: array

 items:

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

 n3gAllowedSnssais:

 description: array of allowed S-NSSAIs for the Non-3GPP access.

 type: array

 items:

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

 AsTimeDistributionParam:

 description: Contains the 5G acess stratum time distribution parameters.

 type: object

 properties:

 asTimeDistInd:

 type: boolean

 uuErrorBudget:

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

 nullable: true

 UeSliceMbr:

 description: Contains a UE-Slice-MBR and the related information.

 type: object

 properties:

 sliceMbr:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: Contains the MBR for uplink and the MBR for downlink.

 servingSnssai:

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

 mappedHomeSnssai:

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

 required:

 - sliceMbr

 - servingSnssai

 nullable: true

 RequestTrigger:

 anyOf:

 - type: string

 enum:

 - LOC\_CH

 - PRA\_CH

 - SERV\_AREA\_CH

 - RFSP\_CH

 - ALLOWED\_NSSAI\_CH

 - UE\_AMBR\_CH

 - UE\_SLICE\_MBR\_CH

 - SMF\_SELECT\_CH

 - ACCESS\_TYPE\_CH

 - NWDAF\_DATA\_CH

 - TARGET\_NSSAI

 - SLICE\_REPLACE\_MGMT

 - 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: |

 Represents the possible request triggers.

 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 AMF reports the current presence status

 of the UE in a Presence Reporting Area, and notifies that the UE enters/leaves the

 Presence Reporting Area.

 - SERV\_AREA\_CH: Service Area Restriction change. The UDM notifies the AMF that the

 subscribed service area restriction information has changed.

 - RFSP\_CH: RFSP index change. The UDM notifies the AMF that the subscribed RFSP index has

 changed.

 - ALLOWED\_NSSAI\_CH: Allowed NSSAI change. The AMF notifies that the set of UE allowed

 S-NSSAIs has changed.

 - UE\_AMBR\_CH: UE-AMBR change. The UDM notifies the AMF that the subscribed UE-AMBR has

 changed.

 - SMF\_SELECT\_CH: SMF selection information change. The UE requested for an unsupported

 DNN or UE requested for a DNN within the list of DNN candidates for replacement per

 S-NSSAI.

 - ACCESS\_TYPE\_CH: Access Type change. The AMF notifies that the access type and the RAT

 type combinations available in the AMF for a UE with simultaneous 3GPP and non-3GPP

 connectivity has changed.

 - UE\_SLICE\_MBR\_CH: UE-Slice-MBR change. The NF service consumer notifies any changes

 in the subscribed UE-Slice-MBR for each subscribed S-NSSAI of the home PLMN mapping

 to a S-NSSAI of the serving PLMN.

 - NWDAF\_DATA\_CH: NDWAF DATA CHANGE. The AMF notifies that the NWDAF instance IDs used

 for the UE and/or associated Analytics IDs used for the UE and available in the AMF

 have changed.

 - TARGET\_NSSAI: Generation of Target NSSAI. The NF service consumer notifies that the

 Target NSSAI was generated.

 - SLICE\_REPLACE\_MGMT: the AMF notifies that slice replacement is needed and it cannot

 determine the Alternative S-NSSAI for an S-NSSAI.

 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: |

 Represents the cause why the PCF requests the termination of the policy association.

 Possible values are:

 - UNSPECIFIED: This value is used for unspecified reasons.

 - UE\_SUBSCRIPTION: This value is used to indicate that the session 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 session.

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