**3GPP TSG CT WG3 Meeting #142 *C3-253489***

**Goteborg, SE, 25th – 29th August, 2025 was C3-253347**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.508** | **CR** | **0358** | **rev** | **1** | **Current version:** | **19.3.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

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

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Access type for energy consumption information | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, Samsung | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | EnergySys | | | | |  | ***Date:*** | | | 2025-08-25 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | According to S2-2506100, only the energy consumption information over the 3GPP access is considered in this release. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | If the PDU session is over non-3GPP access, the data volume shall be set to 0 and gNB ID shall not be provided. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The definition of energy consumption information collection not aligned with SA2. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.2.2.2, 5.6.2.16, 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 backwards compatible new feature and corrections to the OpenAPI descriptions of the following API:   * TS29508\_Nsmf\_EventExposure.yaml | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* Start of Changes \* \* \*

#### 4.2.2.2 Notification about subscribed events

The present "notification about subscribed events" procedure is performed by the SMF when any of the subscribed events occur.

The following applies with respect to the detection of subscribed events:

- If:

- the SMF supports the "DownlinkDataDeliveryStatus" feature,

- the event "DDDS" is subscribed,

- the traffic descriptors of the downlink data source have been provided for that subscription, and

- the SMF is informed that the UE corresponding to that subscription is unreachable,

- if the data is buffered at the UPF, then the SMF shall interact with the UPF to notify that the UPF buffers the downlink packets. The SMF shall include the traffic descriptor of the subscriptions in the PDR with a higher priority if the PCC is not applied to the PDU session or derive the PDR from the PCC rule received from the PCF as defined in clause 4.2.4.27 of 3GPP TS 29.512 [14] if the PCC is applied to the PDU session and request the UPF to report when there are corresponding buffered downlink packets or discarded packets in the UPF as defined in clause 5.28.1 of 3GPP TS 29.244 [23]. When receiving the report from the UPF, the SMF shall determine whether that subscribed event with delivery status "DISCARDED" or "BUFFERED" occurred. The SMF shall determine that subscribed event with delivery status "TRANSMITTED" occurred by the fact that the related PDU session becomes ACTIVE.

- if the data is buffered at the SMF, the SMF shall determine whether that subscribed event occurred by comparing the downlink packets with the traffic descriptors received in the corresponding event subscription. If the SMF decides to buffer the packets, the subscribed event with delivery status "BUFFERED" occurred. If the SMF decides to discard the packets, the subscribed event with delivery status "DISCARDED" occurred. The SMF shall determine that subscribed event with delivery status "TRANSMITTED" occurred by the fact that the related PDU session becomes ACTIVE.

Figure 4.2.2.2-1 illustrates the notification about subscribed events.



Figure 4.2.2.2-1: Notification about subscribed events

If the SMF observes PDU Session related event(s) for which an NF service consumer has subscribed, the SMF shall send an HTTP POST request with "{notifUri}", as previously provided by the NF service consumer within the corresponding subscription, as URI and NsmfEventExposureNotification data structure as request body that shall include:

- Notification correlation ID provided by the NF service consumer during the subscription, or as provided by the PCF for implicit subscription of UP path change traffic correlation, and/or traffic routing requirement installation outcome, and/or simultaneous connectivity failure as defined in clause 4.2.6.2.6.2 of 3GPP TS 29.512 [14], or as provided by the PCF for implicit subscription of QoS Monitoring as defined in clause 4.2.3.25 of 3GPP TS 29.512 [14], or as provided by the V-NEF for implicit subscription of UP path change as defined in clause 4.4.2.4.2 of 3GPP TS 29.591 [28], as "notifId" attribute; and

- information about the observed event(s) within the "eventNotifs" attribute that shall contain for each observed event an "EventNotification" data structure that shall include:

1. the Event Trigger as "event" attribute, and if the "EnhEventMgmt" feature is supported and optionally, a reference identifier within the "referenceId" attribute;

2. for a UP path change notification:

a) type of notification ("EARLY" or "LATE") as "dnaiChgType" attribute;

b) source DNAI and/or target DNAI as "sourceDnai" attribute and "targetDnai" attribute if DNAI is changed, respectively; and

c) if the PDU Session type is IP, for the source DNAI IP address/prefix of the UE as "sourceUeIpv4Addr" attribute or "sourceUeIpv6Prefix" attribute; and

d) if the PDU Session type is IP, for the target DNAI IP address/prefix of the UE as "targetUeIpv4Addr" attribute or "targetUeIpv6Prefix" attribute;

e) if available, for the source DNAI, N6 traffic routing information related to the UE as "sourceTraRouting" attribute;

f) if available, for the target DNAI, N6 traffic routing information related to the UE as "targetTraRouting" attribute;

g) if the PDU Session type is Ethernet, the MAC address of the UE in the "ueMac" attribute;

h) if the "CommonEASDNAI" feature is supported,

- the candidate DNAI(s) for the PDU Session in "candidateDnais" attribute, optionally together with the indication of their prioritization within the "candDnaisPrioInd" attribute, if the "candDnaiInd" attribute was set to "true" in the PCC rule(s); or

- the indication of EAS re-discovery in "easRediscoverInd" attribute if EAS re-discovery took place.

NOTE 1: In this release, when SMF acting as the I-SMF based on the Local Offloading Management does not cover common DNAI/EAS selection.

i) if both the SMF and the NF service consumer support "ULBuffering" and/or "EASIPreplacement" features, these supported features within the "supportedFeatures" attribute.

NOTE 2: The SMF gets the knowledge of the feature supported by the NF service consumer as described in clause 5.8.

j) if the "EasRelocationEnh" feature is supported and the SMF determines that the target DNAI is supported by an AF different to the one that shall receive this notification, the identifier of the target AF that supports this DNAI in the "targetAfId" attribute.

NOTE 3: The SMF can determine that the target DNAI is supported by an AF different to the one that shall receive this notification by comparing the AF ID of the EAS Deployment Information entry that contains the old DNAI with the AF ID of the EAS Deployment Information entry that contains the target DNAI. These EAS Deployment Information entries are received via the Nnef\_EASDeployment API defined in 3GPP TS 29.591 [25].

k) if the "HR-SBO" feature is supported and the SMF determines that the UE has moved to a serving PLMN in which local traffic offload is allowed, the identifier of this new serving PLMN within the "plmnId" attribute, as well as the DNN and S-SNSSAI of the HPLMN within the "dnn" and "snssai" attributes, respectively.

l) if available and if the "UeSatUeComm" feature is supported, the serving satellite identity in the "servSatId" attribute, when the UE is accessible via regenerative satellite access.

NOTE 4: UP path change notification, i.e. DNAI change notification and/or N6 traffic routing information change notification, can be the result of an implicit subscription of the PCF on behalf of the NEF/AF as part of setting PCC rule(s) via the Npcf\_SMPolicyControl service (see clause 4.2.6.2.6.2 of 3GPP TS 29.512 [14]).

NOTE 5: If the DNAI is not changed while the N6 traffic routing information change, the source DNAI and target DNAI are not provided.

NOTE 6: The change from the UP path status where no DNAI applies to a status where a DNAI applies indicates the activation of the related AF request and therefore only the target DNAI and N6 traffic routing information is provided in the event notification; the change from the UP path status where a DNAI applies to a status where no DNAI applies indicates the de-activation of the related AF request and therefore only the source DNAI and N6 traffic routing information is provided in the event notification.

NOTE 7: UP path change notification, i.e. DNAI change notification can be the result of an implicit subscription of the PCF on behalf of the AF as part of setting PCC rule(s) in case of UE-Satellite-UE communication in IMS via the Npcf\_SMPolicyControl service (see clause 4.2.6.2.6.2 of 3GPP TS 29.512 [14]). The DNAI mapping to satellite identifier is derived as per operator policy and implementation.

3. for a UE IP address change:

a) added new UE IP address or prefix as "adIpv4Addr" attribute or "adIpv6Prefix" attribute, respectively; and/or

b) released UE IP address or prefix as "reIpv4Addr" attribute or "reIpv6Prefix" attribute, respectively;

4. for an access type change:

a) new access type as "accType" attribute;

5. for a PLMN Change:

a) new PLMN as "plmnId" attribute;

6. for a PDU Session Release:

a) ID of the released PDU session as "pduSeId" attribute;

b) DNN of the released PDU session as "dnn" attribute, if the "PduSessionStatus" feature is supported;

c) The type of the released PDU session as "pduSessType" attribute, if the "PduSessionStatus" feature is supported;

d) UE IPv4 address as "ipv4Addr" attribute and/or IPv6 information (IPv6 prefix(es) or IPv6 address(es)) as "ipv6Prefixes" or "ipv6Addrs" attributes, if the released PDU session type is IP and the "PduSessionStatus" feature is supported; and

e) S-NSSAI of the released PDU session as "snssai" attribute, if the "EneNA" feature is supported and "snssai" attribute is present in the subscribed "NsmfEventExposure" data type;

7. the time at which the event was observed encoded as "timeStamp" attribute;

8. the SUPI as the "supi" attribute if the subscription applies to a group of UE(s) or any UE. If the "WlanPerformanceExt\_AIML " feature is supported, the "supi" attribute may also be included for a single UE when the subscription applies to the "WLAN\_INFO" event;

9. if available, the GPSI as the "gpsi" attribute if the subscription applies to a group of UE(s) or any UE;

10. for a Downlink Data Delivery Status, if the "DownlinkDataDeliveryStatus" feature is supported:

a) the downlink data delivery status as "dddStatus" attribute;

b) the downlink data descriptors impacted by the downlink data delivery status change within the "dddTraDescriptor" attribute; and

c) for downlink data delivery status "BUFFERED". the estimated maximum waiting time as "maxWaitTime" attribute;

11. for a Communication Failure, if the "CommunicationFailure" feature is supported:

a) the detailed communication failure information (e.g. 5G SM cause) as "commFailure" attribute; and

12. for QoS Monitoring event, if the "QoSMonitoring" feature is supported:

a) the uplink packet delays within the "ulDelays" attribute; and/or

b) the downlink packet delays within the "dlDelays" attribute; and/or

c) the round trip packet delays within the "rtDelays" attribute; or

NOTE 8: The UPF reports one UL, DL and/or round-trip packet delay measurement for each periodic and/or event-triggered report as described in 3GPP TS 29.244 [23]. i.e, the SMF can include only one element within the "ulDelays", "dlDelays", and/or "rtDelays" array(s), each one with the received report from the UPF for the UL, DL and/or round trip delay(s).

d) if the feature "PacketDelayFailureReport" is supported, the packet delay measurement failure indicator within the "pdmf" attribute; and/or

e) if the feature "EnQoSMon" is supported, UL and/or DL congestion information within the "ulCongInfo" attribute and "dlCongInfo" attribute; and/or

f) if the feature "EnQoSMon" is supported, UL and/or DL data rate measurement within the "ulDataRate" attribute and/or "dlDataRate" attribute.

NOTE 9: The SMF gets the knowledge of the NF service consumer support of "QoSMonitoring", "PacketDelayFailureReport" and "EnQoSMon" features as described in 3GPP TS 29.512 [14].

NOTE 10: QoS Monitoring notification can be the result of an implicit subscription of the PCF on behalf of the NEF/AF as part of setting PCC rule(s) via the Npcf\_SMPolicyControl service (see clause 4.2.3.25 of 3GPP TS 29.512 [14]).

13. for a PDU Session Establishment, if the "PduSessionStatus" feature is supported:

a) ID of the established PDU session as "pduSeId" attribute;

b) DNN of the established PDU session as "dnn" attribute;

c) The type of the established PDU session as "pduSessType" attribute;

d) UE IPv4 address as "ipv4Addr" attribute and/or IPv6 information (IPv6 prefix(es) or IPv6 address(es)) as "ipv6Prefixes" or "ipv6Addrs" attributes if available at PDU session establishment; and

e) S-NSSAI of the established PDU session as "snssai" attribute, if the "EneNA" feature is supported and "snssai" attribute is present in the subscribed "NsmfEventExposure" data type;

14. for a QFI allocation, if the "QfiAllocation" feature is supported, or for a QFI deallocation or a QoS flow change if the "QoSAssistance" feature is supported:

a) QFI of the allocated QoS Flow ID for the application as "qfi" attribute or, if the "EnQfiAllocation" feature is also supported, the 5QI of the allocated QoS Flow ID for the application as "5qi" attribute;

b) DNN of the allocated PDU session as "dnn" attribute;

c) Slice of the allocated PDU session as "snssai" attribute;

d) The description of the application traffic as "appId", "fDescs" or "ethfDescs" attribute; and

e) ID of the allocated PDU session as "pduSeId" attribute if the subscription was for a UE, a group of UEs, or any UE, and not for a specific PDU Session;

f) To obtain the PDU Session information, if the "PduSessionInfo" feature is supported:

i) the information about the UE access type provided as "accessType" attribute;

ii) the information about the PDU Session Type in the "pduSessType" attribute and/or the SSC mode in the "sscMode" attribute associated with the application provided as "appId" attribute; and/or

iii) the information about the PDU Session associated list of access types as "pduAccTypes" attribute, if the "MultipleAccessTypes" feature is also supported.

g) if the "QoSAssistance" feature is supported, the QoS parameters of the QoS flow in the "qosPara" attribute.

15. for an RAT type change event, if the "EneNA" feature is supported:

a) new RAT type as "ratType" attribute;

16. for a SM congestion control experience for PDU Session, if the "SMCCE" feature is supported:

a) DNN of the PDU session as "dnn" attribute if DNN based SMCC is applied

or Slice of the allocated PDU session as "snssai" attribute if S-NSSAI based SMCC is applied;

b) Time window representing a start time and a stop time of the data collection period as "timeWindow" attribute;

c) The information of the SM NAS requests from UE as "smNasFromUe" attribute; and

d) The information of the SM NAS messages from SMF with backoff timer as "smNasFromSmf" attribute;

17. for transactions dispersion collection, if the Dispersion feature is supported:

a) The transactions dispersion information collected as "transacInfos" attribute; and

b) The UE IP address as "ueIpAddr" attribute if it is available and requested in the subscription;

18. for redundant transmission experience of PDU Session, if the "RedundantTransmissionExp" feature is supported:

a) DNN associated with URLLC service for the PDU session as "dnn" attribute; and

b) UP with redundant transmission setup as "upRedTrans" attribute;

19. for WLAN information on PDU Session, if the "WlanPerformance" feature is supported:

a) SSID or BSSID that the PDU session is related to as "ssId" or "bssId" attribute; and

b) start time or end time of the PDU Session for WLAN as "startWlan" or "endWlan" attribute;

20. for obtaining the UPF information, if the "ServiceExperience" and/or "DnPerformance" feature is supported:

a) the information of the UPF serving the UE provided as "upfInfo" attribute.

21. for obtaining the User Plane status information, if the "UeCommunication" feature is supported:

a) the information about the User Plane status provided as "pduSessInfos" attribute.

22. for a satellite backhaul category change, if the "EnSatBackhaulCategoryChg" feature is supported:

a) satellite backhaul category as "satBackhaulCat" attribute.

23. for traffic correlation, if the "CommonEASDNAI" feature is supported:

a) the traffic correlation information in the "trafCorreInfo" attribute, if the "notifUri" attribute, "notifCorrId" attribute and "tfcCorrId" attribute are provided in the PCC rule, and the common EAS is not provided in the PCC rule or the SMF decides to trigger EAS discovery for the set of UE(s).

NOTE 11: Traffic correlation notification can be the result of an implicit subscription of the PCF on behalf of the NEF as part of setting PCC rule(s) via the Npcf\_SMPolicyControl service (see clause 4.2.6.2.6.2 of 3GPP TS 29.512 [14]).

- an URI for further AF acknowledgement in the "ackUri" attribute if the SMF determines to wait for the AF acknowledgement before activating the new UP path associated with the new DNAI.

NOTE 12: Based on the indication of AF acknowledgment to be expected in the PCC rules received from the PCF and local configuration, the SMF may determine to wait for the AF acknowledgement before activating the new UP path associated with the new DNAI.

24. for a traffic route requirement installation outcome notification, if the "TraffRouteReqOutcome" feature is supported:

a) the information indicating the installation outcome of the traffic routing requirements within the "traffRouteReqOutcome" attribute.

b) the source DNAI and/or target DNAI within the "sourceDnai" attribute and "targetDnai" attribute respectively, if the DNAI is changed;

c) if available, for the source DNAI, the N6 traffic routing information related to the UE within the "sourceTraRouting" attribute; and

d) if available, for the target DNAI, the N6 traffic routing information related to the UE within the "targetTraRouting" attribute;

NOTE 13: The Traffic Routing Requirement Installation Outcome Notification i.e. N6 traffic routing requirements installation outcome, can be the result of an implicit subscription of the PCF on behalf of the NEF/AF as part of setting PCC rule(s) via the Npcf\_SMPolicyControl service (see clause 4.2.6.2.6.2 of 3GPP TS 29.512 [14]).

25. for a simultaneous connectivity failure notification, if the "SimConnFailure" feature is supported:

a) the source DNAI and/or target DNAI within the "sourceDnai" attribute and "targetDnai" attribute respectively, if the DNAI is changed;

NOTE 14: The Simultaneous Connectivity Failure Notification can be the result of an implicit subscription of the PCF on behalf of the NEF/AF as part of setting PCC rule(s) via the Npcf\_SMPolicyControl service (see clause 4.2.6.2.6.2 of 3GPP TS 29.512 [14]).

26. for energy consumption information collection, if the "Energy" feature is supported:

a) the list of Data Volume information within the "dataVolInfos" attribute, which includes UL/DL Data Volume, (I-)UPF ID(s) and gNB ID; and

b) the SUPI as the "supi" attribute; or

c) the DNN as the "dnn" attribute and/or the slice as the "snssai" attribute.

27. for signalling information, if the "SignallingInfo" feature is supported:

a) the usage information of UE IP address resources as "usageInfo" attribute;

b) the load information of connected UPFs as "loadInfos" attribute;

c) the number of received Session Report from UPF as "numSessRep" attribute;

d) the session-related state transitions as "stateTransitions" attribute; and/or

e) the signalling information of the SMF as "nfSignalInfo" attribute.

Upon the reception of an HTTP POST request with "{notifUri}" as URI and an NsmfEventExposureNotification data structure as request body, the notified NF shall send an HTTP "204 No Content" response for a successful processing.

If errors occur when processing the HTTP POST request, the notified NF shall send the HTTP error response as specified in clause 5.7.

If the feature "ES3XX" is not supported and,

- if the notified NF is not able to handle the Notification but another unknown NF could possibly handle the notification, it shall reply with an HTTP "404 Not found" error response.

NOTE 15: An AMF as NF service consumer and/or notified NF can change.

- if the SMF becomes aware that a new NF service consumer is requiring notifications (e.g. via the "404 Not found" response, or via Namf\_Communication service AMFStatusChange Notifications, see 3GPP TS 29.518 [13], or via link level failures or via the Nnrf\_NFDiscovery Service (using the service name and GUAMI obtained during the creation of the subscription) to discover the other AMFs within the AMF set) specified in 3GPP TS 29.510 [12]), and the SMF knows alternate or backup IPv4 Address(es), IPv6 Address(es) or FQDN(s) where to send Notifications (e.g. via "altNotifIpv4Addrs", "altNotifIpv6Addrs" or "altNotifFqdns" attributes received when the subscription was created), the SMF shall exchange the authority part of the Notification URI with one of those addresses and shall use that URI in any subsequent communication. If the SMF received a "404 Not found" response, the SMF should resend the failed notification to that URI.

If the feature "ES3XX" is supported, and the notified NF determines the received HTTP POST request needs to be redirected, the NF service consumer shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4] and,

- if the SMF receives a "307 Temporary Redirect" response, the SMF shall resend the failed event notification request using the received URI in the Location header field as Notification URI. Subsequent event notifications, triggered after the failed one, shall be sent to the Notification URI provided by the NF service consumer during the corresponding subscription creation/update; or

- if the SMF receives a "308 Permanent Redirect" response, the SMF shall resend the failed event notification request and send the subsequent event notification using the received URI in the Location header field as Notification URI.

If the SMF in the VPLMN needs to send an event notification to the NEF in the HPLMN, it may normalize the event based on roaming agreements when required before provisioning the event report to the NEF of the HPLMN.

If the "Energy" feature is supported,

- the SMF only reports the energy consumption information of the UP resources over the 3GPP access for the UE. If the PDU session is over non-3GPP access, the data volume shall be set to 0 and the gNB information not provided.

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

#### 5.6.2.16 Type: DataVolumeInformation

Table 5.6.2.16-1: Definition of type DataVolumeInformation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| dataVol | VolumeTimedReport | M | 1 | Data usage for UL/DL of a PDU Session.  (NOTE 1) |  |
| upfIds | array(UpfInformation) | M | 1..N | List of identifier of any (I-)UPF(s) associated to a reported data volume. |  |
| gNBId | GNbId | O | 0..1 | Identifier of the gNB serving the UE.  (NOTE 2) |  |
| NOTE 1: The value of the "downlinkVolume" and "uplinkVolume" attributes within the VolumeTimedReport data structure shall be set to 0 when the PDU session is over a non-3GPP access type.  NOTE 2: This attribute may be present only when the PDU session is over a 3GPP access type. | | | | | |

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

# A.2 Nsmf\_EventExposure API

openapi: 3.0.0

info:

version: 1.4.0-alpha.3

title: Nsmf\_EventExposure

description: |

Session Management Event Exposure Service.

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externalDocs:

description: 3GPP TS 29.508 V19.3.0; 5G System; Session Management Event Exposure Service.

url: https://www.3gpp.org/ftp/Specs/archive/29\_series/29.508/

servers:

- url: '{apiRoot}/nsmf-event-exposure/v1'

variables:

apiRoot:

default: https://example.com

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

security:

- {}

- oAuth2ClientCredentials:

- nsmf-event-exposure

paths:

/subscriptions:

post:

operationId: CreateIndividualSubcription

summary: Create an individual subscription for event notifications from the SMF

tags:

- Subscriptions (Collection)

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: Created.

headers:

Location:

description: >

Contains the URI of the newly created resource, according to the structure

{apiRoot}/nsmf-event-exposure/v1/subscriptions/{subId}

required: true

schema:

type: string

content:

application/json:

schema:

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

'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:

myNotification:

'{$request.body#/notifUri}':

post:

requestBody:

required: true

content:

application/json:

schema:

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

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'

callbacks:

afAcknowledgement:

'{$request.body#/ackUri}':

post:

requestBody: # contents of the callback message

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content (successful acknowledgement)

'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'

/subscriptions/{subId}:

parameters:

- name: subId

in: path

description: Event Subscription ID

required: true

schema:

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

get:

operationId: GetIndividualSubcription

summary: Read an individual subscription for event notifications from the SMF

tags:

- IndividualSubscription (Document)

responses:

'200':

description: OK. Resource representation is returned

content:

application/json:

schema:

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

'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'

put:

operationId: ReplaceIndividualSubcription

summary: Replace an individual subscription for event notifications from the SMF

tags:

- IndividualSubscription (Document)

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: OK. Resource was successfully modified and representation is returned

content:

application/json:

schema:

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

'204':

description: No Content. Resource was successfully modified

'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'

delete:

operationId: DeleteIndividualSubcription

summary: Delete an individual subscription for event notifications from the SMF

tags:

- IndividualSubscription (Document)

responses:

'200':

description: OK. Resource was successfully deleted and representation is returned

content:

application/json:

schema:

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

'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'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{nrfApiRoot}/oauth2/token'

scopes:

nsmf-event-exposure: Access to the Nsmf\_EventExposure API

schemas:

NsmfEventExposure:

description: >

Represents an Individual SMF Notification Subscription resource. The serviveName property

corresponds to the serviceName in the main body of the specification.

type: object

properties:

supi:

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

gpsi:

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

anyUeInd:

type: boolean

description: >

Any UE indication. This IE shall be present if the event subscription is applicable to

any UE. Default value "false" is used, if not present.

groupId:

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

pduSeId:

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

dnn:

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

snssai:

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

dnai:

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

ssId:

type: string

description: SSID that the PDU session is related to.

bssId:

type: string

description: BSSID that the PDU session is related to.

upfId:

type: string

description: UPF identity.

nfId:

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

subId:

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

notifId:

type: string

description: Notification Correlation ID assigned by the NF service consumer.

notifUri:

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

altNotifIpv4Addrs:

type: array

items:

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

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

minItems: 1

altNotifIpv6Addrs:

type: array

items:

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

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

minItems: 1

altNotifFqdns:

type: array

items:

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

minItems: 1

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

eventSubs:

type: array

items:

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

minItems: 1

description: Subscribed events

eventNotifs:

type: array

items:

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

minItems: 1

ImmeRep:

type: boolean

notifMethod:

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

maxReportNbr:

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

expiry:

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

repPeriod:

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

guami:

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

serviveName:

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

supportedFeatures:

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

sampRatio:

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

partitionCriteria:

type: array

items:

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

minItems: 1

description: Criteria for partitioning the UEs before applying the sampling ratio.

grpRepTime:

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

notifFlag:

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

notifFlagInstruct:

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

mutingSetting:

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

defQosSupp:

type: boolean

description: >

Indicates whether the NF service consumer requests to receive QoS Flow performance

information for the QoS Flow associated with the default QoS rule if there are no

measurements available for the provided Application Identifier included in the appIds

attribute. Set to "true" if NF service consumer requests to receive QoS Flow

performance information for the QoS Flow associated with the default QoS rule, otherwise

Set to "false" to indicate if NF service consumer does not request to receive QoS Flow

Performance information for the QoS Flow associated with the default QoS rule. Default

value is "false" if omitted.

qosMonPending:

type: boolean

enum:

- true

description: >

Indicates whether the reporting will be activated when the measurements are

enabled by a PCC rule. Set to "true" indicates that the reporting will be activated.

It may only be provided in the response.

required:

- notifId

- notifUri

- eventSubs

NsmfEventExposureNotification:

description: Represents notifications on events that occurred.

type: object

properties:

notifId:

type: string

description: Notification correlation ID

eventNotifs:

type: array

items:

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

minItems: 1

description: Notifications about Individual Events

ackUri:

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

required:

- notifId

- eventNotifs

EventSubscription:

description: Represents a subscription to a single event.

type: object

properties:

event:

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

referenceId:

$ref: 'TS29503\_Nudm\_EE.yaml#/components/schemas/ReferenceId'

dnaiChgType:

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

dddTraDescriptors:

type: array

items:

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

minItems: 1

dddStati:

type: array

items:

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

minItems: 1

appIds:

type: array

items:

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

minItems: 1

networkArea:

$ref: 'TS29554\_Npcf\_BDTPolicyControl.yaml#/components/schemas/NetworkAreaInfo'

targetPeriod:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/TimeWindow'

tws:

type: array

items:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/TimeWindow'

minItems: 1

transacDispInd:

type: boolean

description: >

Indicates the subscription for UE transaction dispersion collectionon, if it is included

and set to "true". Default value is "false".

transacMetrics:

type: array

items:

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

description: Indicates Session Management Transaction metrics.

minItems: 1

ueIpAddr:

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

upfEvents:

type: array

items:

$ref: 'TS29564\_Nupf\_EventExposure.yaml#/components/schemas/UpfEvent'

description: Indicates UPF event exposure information.

minItems: 1

flowDescs:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/FlowDescription'

description: Descriptor(s) of IP traffic.

minItems: 1

required:

- event

EventNotification:

description: Represents a notification related to a single event that occurred.

type: object

properties:

event:

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

referenceId:

$ref: 'TS29503\_Nudm\_EE.yaml#/components/schemas/ReferenceId'

timeStamp:

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

supi:

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

gpsi:

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

ueIpAddr:

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

transacInfos:

type: array

items:

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

description: Transaction Information.

minItems: 1

sourceDnai:

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

targetDnai:

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

dnaiChgType:

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

traffRouteReqOutcome:

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

candidateDnais:

type: array

items:

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

minItems: 1

description: The candidate DNAI(s) for the PDU Session.

candDnaisPrioInd:

type: boolean

description: >

If provided and set to true, it indicates that the candidate DNAIs provided

in the candidateDnais attribute are in descending priority order, i.e.,

the lower the array index the higher the priority of the respective DNAI.

If omitted, the default value is false.

easRediscoverInd:

type: boolean

description: >

Indication of EAS re-discovery. If present and set to "true", it indicates the EAS

re-discovery is performed, e.g. due to change of common EAS. Default value is "false" if

omitted.

trafCorreInfo:

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

sourceUeIpv4Addr:

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

sourceUeIpv6Prefix:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

targetUeIpv4Addr:

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

targetUeIpv6Prefix:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

sourceTraRouting:

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

targetTraRouting:

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

ueMac:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/MacAddr48'

adIpv4Addr:

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

adIpv6Prefix:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

reIpv4Addr:

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

reIpv6Prefix:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

plmnId:

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

accType:

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

pduAccTypes:

type: array

items:

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

minItems: 1

pduSeId:

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

ratType:

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

dddStatus:

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

dddTraDescriptor:

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

maxWaitTime:

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

commFailure:

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

ipv4Addr:

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

ipv6Prefixes:

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

minItems: 1

ipv6Addrs:

type: array

items:

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

minItems: 1

pduSessType:

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

sscMode:

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

qfi:

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

appId:

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

ethFlowDescs:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/EthFlowDescription'

minItems: 1

description: >

Descriptor(s) for non-IP traffic. It allows the encoding of multiple UL and/or DL flows.

Each entry of the array describes a single Ethernet flow.

ethfDescs:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/EthFlowDescription'

minItems: 1

maxItems: 2

description: >

Contains the UL and/or DL Ethernet flows. Each entry of the array describes a single

Ethernet flow.

flowDescs:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/FlowDescription'

minItems: 1

description: >

Descriptor(s) for IP traffic. It allows the encoding of multiple UL and/or DL flows.

Each entry of the array describes a single IP flow.

fDescs:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/FlowDescription'

minItems: 1

maxItems: 2

description: >

Contains the UL and/or DL IP flows. Each entry of the array describes a single

IP flow.

dnn:

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

snssai:

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

ulDelays:

type: array

items:

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

minItems: 1

dlDelays:

type: array

items:

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

minItems: 1

rtDelays:

type: array

items:

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

minItems: 1

ulCongInfo:

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

dlCongInfo:

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

ulDataRate:

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

dlDataRate:

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

timeWindow:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/TimeWindow'

smNasFromUe:

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

smNasFromSmf:

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

upRedTrans:

type: boolean

description: >

Indicates whether the redundant transmission is setup or terminated. Set to "true" if

the redundant transmission is setup, otherwise set to "false" if the redundant

transmission is terminated. Default value is "false" if omitted.

ssId:

type: string

bssId:

type: string

startWlan:

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

endWlan:

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

pduSessInfos:

type: array

items:

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

minItems: 1

upfInfo:

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

pdmf:

type: boolean

description: >

Represents the packet delay measurement failure indicator. Default value is false

if omitted.

satBackhaulCat:

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

supportedFeatures:

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

targetAfId:

type: string

description: Identifier of the Application Function responsible for the target DNAI.

5qi:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/5Qi'

servSatId:

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

qosPara:

$ref: 'TS29520\_Nnwdaf\_EventsSubscription.yaml#/components/schemas/QosPara'

dataVolInfos:

type: array

items:

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

minItems: 1

usageInfo:

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

loadInfos:

type: array

items:

$ref: 'TS29520\_Nnwdaf\_EventsSubscription.yaml#/components/schemas/NfLoadLevelInformation'

minItems: 1

numSessRep:

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

stateTransitions:

type: array

items:

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

minItems: 1

nfSignalInfo:

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

required:

- event

- timeStamp

not:

required: [ipv6Prefixes,ipv6Addrs]

StateTransitionInfo:

description: Represents session-related state transition information.

type: object

properties:

supi:

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

groupId:

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

transType:

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

numOfTran:

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

pctUes:

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

required:

- transType

allOf:

- oneOf:

- required: [supi]

- required: [groupId]

- anyOf:

- required: [numOfTran]

- required: [pctUes]

SubId:

type: string

format: SubId

description: >

Identifies an Individual SMF Notification Subscription. To enable that the value is used as

part of a URI, the string shall only contain characters allowed according to the

"lower-with-hyphen" naming convention defined in 3GPP TS 29.501. In an OpenAPI schema, the

format shall be designated as "SubId".

AckOfNotify:

description: Represents an acknowledgement information of an event notification.

type: object

properties:

notifId:

type: string

ackResult:

$ref: 'TS29522\_TrafficInfluence.yaml#/components/schemas/AfResultInfo'

supi:

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

gpsi:

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

remoteImsAddress:

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

required:

- notifId

- ackResult

SmNasFromUe:

description: >

Represents information on the SM NAS messages that SMF receives from UE for PDU Session.

type: object

properties:

smNasType:

type: string

timeStamp:

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

required:

- smNasType

- timeStamp

SmNasFromSmf:

description: >

Represents information on the SM congestion control applied SM NAS messages that SMF sends

to UE for PDU Session.

type: object

properties:

smNasType:

type: string

timeStamp:

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

backoffTimer:

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

appliedSmccType:

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

required:

- smNasType

- timeStamp

- backoffTimer

- appliedSmccType

TransactionInfo:

description: Represents SMF Transaction Information.

type: object

properties:

transaction:

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

snssai:

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

appIds:

type: array

items:

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

minItems: 1

transacMetrics:

type: array

items:

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

minItems: 1

required:

- transaction

PduSessionInformation:

description: Represents the PDU session related information.

type: object

properties:

pduSessId:

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

sessInfo:

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

PduSessionInfo:

description: Represents session information.

type: object

properties:

n4SessId:

type: string

description: The identifier of the N4 session for the reported PDU Session.

sessInactiveTimer:

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

pduSessStatus:

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

UpfInformation:

description: Represents the ID/address/FQDN of the UPF.

type: object

properties:

upfId:

type: string

upfAddr:

$ref: 'TS29517\_Naf\_EventExposure.yaml#/components/schemas/AddrFqdn'

TrafficCorrelationNotification:

description: Represents notifications for 5GC determined Traffic Correlation Information.

type: object

properties:

smfId:

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

tfcCorrId:

type: string

description: >

Identification of a set of UEs accessing the application identified by the

Application Identifier or traffic filtering information.

dnais:

type: array

items:

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

minItems: 1

easFqdn:

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

easIpAddr:

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

pduSessionNbr:

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

required:

- smfId

- pduSessionNbr

- tfcCorrId

anyOf:

- required: [dnais]

- oneOf:

- required: [easFqdn]

- required: [easIpAddr]

TraffRouteReqOutcome:

description: >

Represents the installation outcome of the requested traffic routing requirements.

type: object

properties:

succTrafficFlows:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/FlowDescription'

minItems: 1

succEthTrafficFlows:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/EthFlowDescription'

minItems: 1

failedTrafficFlows:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/FlowDescription'

minItems: 1

failedEthTrafficFlows:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/EthFlowDescription'

minItems: 1

allOf:

- not:

required: [succTrafficFlows, succEthTrafficFlows]

- not:

required: [failedTrafficFlows, failedEthTrafficFlows]

DataVolumeInformation:

description: Represents the Data Volume information.

type: object

properties:

dataVol:

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

upfIds:

type: array

items:

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

minItems: 1

gNBId:

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

required:

- dataVol

- upfIds

IpAddrUsageInfo:

description: Indicates the usage information of UE IP address resources.

type: object

properties:

ipv4AllocNum:

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

Ipv6AllocNum:

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

ipv4Usage:

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

Ipv6Usage:

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

UeIpNum:

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

prohibitTimeWins:

type: array

items:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/TimeWindow'

minItems: 1

SmfEvent:

anyOf:

- type: string

enum:

- AC\_TY\_CH

- UP\_PATH\_CH

- PDU\_SES\_REL

- PLMN\_CH

- UE\_IP\_CH

- RAT\_TY\_CH

- DDDS

- COMM\_FAIL

- PDU\_SES\_EST

- QFI\_ALLOC

- QOS\_MON

- SMCC\_EXP

- DISPERSION

- RED\_TRANS\_EXP

- WLAN\_INFO

- UPF\_INFO

- UP\_STATUS\_INFO

- UPF\_EVENT

- SATB\_CH

- TRAFFIC\_CORRELATION

- TRAFF\_ROUTE\_REQ\_OUTCOME

- SIM\_CONN\_FAIL

- QFI\_DEALLOCATION

- QOS\_FLOW\_CHANGE

- ENERGY\_USAGE\_DATA

- SIGNALLING\_INFO

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Represents the types of events that can be subscribed.

Possible values are:

- AC\_TY\_CH: Access Type Change.

- UP\_PATH\_CH: UP Path Change.

- PDU\_SES\_REL: PDU Session Release.

- PLMN\_CH: PLMN Change.

- UE\_IP\_CH: UE IP address change.

- RAT\_TY\_CH: RAT Type Change.

- DDDS: Downlink data delivery status.

- COMM\_FAIL: Communication Failure.

- PDU\_SES\_EST: PDU Session Establishment.

- QFI\_ALLOC: QFI allocation.

- QOS\_MON: QoS Monitoring.

- SMCC\_EXP: SM congestion control experience for PDU Session.

- DISPERSION: Session Management transaction dispersion.

- RED\_TRANS\_EXP: Redundant transmission experience for PDU Session.

- WLAN\_INFO: WLAN information on PDU session for which Access Type is NON\_3GPP\_ACCESS and

RAT Type is TRUSTED\_WLAN.

- UPF\_INFO: The UPF information, including the UPF ID/address/FQDN information.

- UP\_STATUS\_INFO: The User Plane status information.

- UPF\_EVENT: UPF event subscribed via SMF.

- SATB\_CH: Satellite backhaul category change.

- TRAFFIC\_CORRELATION: Indicates that the SMF provides 5GC determined traffic correlation

information for a set of UEs identified by Traffic Correlation ID.

- TRAFF\_ROUTE\_REQ\_OUTCOME: Indicates the report of the installation outcome of the requested

traffic routing requirements.

- SIM\_CONN\_FAIL: Indicates that the simultaneous connectivity over the source and the target

PDU Session Anchor failed to be established during a PDU Session Anchor change.

- QFI\_DEALLOCATION: QFI deallocation.

- QOS\_FLOW\_CHANGE: QoS flow change.

- ENERGY\_USAGE\_DATA: Indicates that the SMF provides user-plane energy consumption

information.

- SIGNALLING\_INFO: Indicates the report of Service Signalling characteristics.

NotificationMethod:

anyOf:

- type: string

enum:

- PERIODIC

- ONE\_TIME

- ON\_EVENT\_DETECTION

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Represents the notification methods that can be subscribed.

Possible values are:

- PERIODIC: The notification is periodically sent.

- ONE\_TIME: The notification is only sent one time.

- ON\_EVENT\_DETECTION: The notification is sent each time the event is detected.

AppliedSmccType:

anyOf:

- type: string

enum:

- DNN\_CC

- SNSSAI\_CC

description: >

This string indicates the type of applied SM congestion control.

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration and is not used to encode

content defined in the present version of this API.

description: |

Represents the type of applied SM congestion control.

Possible values are:

- DNN\_CC: Indicates the DNN based congestion control.

- SNSSAI\_CC: Indicates the S-NSSAI based congestion control.

TransactionMetric:

anyOf:

- type: string

enum:

- PDU\_SES\_EST

- PDU\_SES\_AUTH

- PDU\_SES\_MODIF

- PDU\_SES\_REL

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the metric on UE Session Management transactions.

Possible values are:

- PDU\_SES\_EST: PDU Session Establishment.

- PDU\_SES\_AUTH: PDU Session Authentication.

- PDU\_SES\_MODIF: PDU Session Modification.

- PDU\_SES\_REL: PDU Session Release

PduSessionStatus:

anyOf:

- type: string

enum:

- ACTIVATED

- DEACTIVATED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the status of the PDU Session.

Possible values are:

- ACTIVATED: PDU Session status is activated.

- DEACTIVATED: PDU Session status is deactivated.

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