**3GPP TSG-CT WG4 Meeting #96eC4-201189 was C4-200915**

**E-Meeting, 17th – 28th February 2020**

|  |
| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **TS 29.518** | **CR** | **0305** | **rev** | **1** | **Current version:** | **16.2.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
|  |

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

|  |
| --- |
|  |
| ***Title:***  | CM state Event Exposure per Access Type |
|  |  |
| ***Source to WG:*** | CATT |
| ***Source to TSG:*** | CT4 |
|  |  |
| ***Work item code:*** | 5G\_eLCS  |  | ***Date:*** | 2020-02-14 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | In Step 4, subclause 6.9.2, TS 23.273 v16.2.0, it indicate that (H)GMLC may retrieve the CM state per access type by UDM\_EventExposure service or via AMF\_EventExposure service. The CM state per Access Type is used to identify the access type and assicated AMF with other information.The event type “CONNECTIVITY\_STATE\_REPORT” is used to expose UE’S CM state. But the wording is not accurate. Generally, “connection management” is more common expression for CM state. |
|  |  |
| ***Summary of change:*** | 1. Corresponding descriptions are changed to use “connection”, not “connectivity”.
 |
|  |  |
| ***Consequences if not approved:*** | Misleading descriptions on CM state event |
|  |  |
| ***Clauses affected:*** | 6.2.6.3.3, A.3 |
|  |  |
|  | **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 will introduce backward corrections in the OpenAPI specification files of AmfEventReport Service. |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The start of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 5.3.1 Service Description

The AMF may offer this service as a Service Producer to enable an NF to subscribe to event notifications on its own or on behalf of another NF and get notified about an event. The known Service Consumers are NEF, SMF, UDM and NWDAF. See also clause 5.34.7 of 3GPP TS 23.501 [2] and clauses 4.15.1, 4.15.3.2, 4.15.4.2 and 5.2.2.3.1 of 3GPP TS 23.502 [3] , clause 6.2.2 in 3GPP TS 23.288 [38].

The following events are provided by Namf\_EventExposure Service:

Event: Location-Report

 A NF subscribes to this event to receive the Last Known Location of a UE or a group of UEs, and Updated Location of the UE or any UE in the group when AMF becomes aware of a location change of the UE with the granularity as requested.

 This event implements the "Location Reporting" event in table 4.15.3.1-1 of 3GPP TS 23.502 [3].

 UE Type: One UE, Group of UEs

 Report Type: One-Time Report (See NOTE 1), Continuous Report (See NOTE 2)

 Input: UE-ID(s), Optionally Filters: TAI, Cell-ID, N3IWF, UE-IP, UDP-PORT, TNAP ID, Global Line Id

 Notification; UE-ID, filtered updated location (TAI, Cell-ID for 3GPP access, most recent N3IWF node, UE local IP address and UDP source port number for non-3GPP access, TNAP ID, Global Line Id).

NOTE 1: Support of Continuous Report should be controlled by operator policy.

Event: Presence-In-AOI-Report

 A NF subscribe to this event to receive the current present state of a UE in a specific Area of Interest (AOI), and notification when a specified UE enters or leaves the specified area. The area could be identified by a TA list, an area ID or specific interested area name like "LADN".

 UE Type: One UE, Group of UEs

 Report Type: One-Time Report, Continuously Report

 Input: UE ID(s), Area identifier (a TA list, an area Id or "LADN").

 Notification: UE-ID, Area identifier, Presence Status (IN/OUT/UNKNOWN)

Event: Time-Zone-Report

 A NF subscribes to this event to receive the current time zone of a UE or a group of UEs, and updated time zone of the UE or any UE in the group when AMF becomes aware of a time zone change of the UE.

 UE Type: One UE, Group of UEs

 Report Type: One-Time Report, Continuous Report

 Input: UE ID(s)

 Notification; UE-ID, most recent time-zone

Event: Access-Type-Report

 A NF subscribes to this event to receive the current access type(s) of a UE or a group of UEs, and updated access type(s) of the UE or any UE in the group when AMF becomes aware of the access type change of the UE.

 UE Type: One UE, Group of UEs

 Report Type: One-Time Report, Continuous Report

 Input: UE ID(s)

 Notification; UE ID, most recent access-types (3GPP, Non-3GPP)

Event: Registration-State-Report

 A NF subscribes to this event to receive the current registration state of a UE or a group of UEs, and report for updated registration state of a UE or any UE in the group when AMF becomes aware of a registration state change of the UE.

 UE Type: One UE, Group of UEs

 Report Type: One-Time Report, Continuous Report

 Input: UE ID(s)

 Notification; UE ID, most recent registration state (REGISTERED/DEREGISTERED) with access type

Event: Connectivity-State-Report

 A NF subscribes to this event to receive the current connection management state of a UE or a group of UEs, and report for updated connection management state of a UE or any UE in the group when AMF becomes aware of a connection management state change of the UE.

 UE Type: One UE, Group of UEs

 Report Type: One-Time Report, Continuous Report

 Input: UE ID(s)

 Notification; UE ID, most recent connection management state (IDLE/CONNECTED) with access type

Event: Reachability-Report

 A NF subscribes to this event to receive the current reachability of a UE or a group of UEs, and report for updated reachability of a UE or any UE in the group when AMF becomes aware of a reachability change of the UE.

 UE Type: One UE, Group of UEs

 Report Type: One-Time Report, Continuous Report

 Input: UE ID(s)

 Notification; UE ID, AMF Id, most recent reachability state (REACHABLE/UNRACHABLE/REGULATORY-ONLY).

Event: Communication-Failure-Report

 A NF subscribes to this event to receive the Communication failure report of a UE or group of UEs or any UE, when the AMF becomes aware of a RAN or NAS failure event.

 This event implements the "Communication failure" event in table 4.15.3.1-1 of 3GPP TS 23.502 [3].

 UE Type: One UE, Group of UEs, any UE

 Report Type: One-Time Report, Continuous Report

 Input: UE ID(s), "ANY\_UE"

 Notification; UE ID, RAN/NAS release code.

Event: UEs-In-Area-Report

 A NF subscribes to this event to receive the number of UEs in a specific area. A NF may ask AMF for the UEs within the area based on Last Known Location or it may request AMF to actively look for the UEs within the area based on Current Location.

 This event implements the "Number of UEs present in a geographical area" event in table 4.15.3.1-1 of 3GPP TS 23.502 [3].

 UE Type: any UE

 Report Type: One-Time Report (See NOTE 3), Continuous Report (See NOTE 4)

 Input: Area identified in a TA List

 Notification: Number of UEs in the area

NOTE 2: For an Immediate Report, UE Last Known Location is used to count the UEs within the area.

NOTE 3: Support of Continuous Report should be controlled by operator.

Event: Loss-of-Connectivity

 An NF subscribes to this event to receive the event report of a UE or group of UEs when AMF detects that a target UE is no longer reachable for either signalling or user plane communication. Such condition is identified when Mobile Reachable timer expires in the AMF (see 3GPP TS 23.501 [2]), when the UE detaches and when AMF deregisters from UDM for an active UE. If the UE is already not reachable for either signalling or user plane communication when the event is subscribed, the AMF reports the event directly.

 This event implements the "Loss of Connectivity" event in table 4.15.3.1-1 of 3GPP TS 23.502 [3].

 UE Type: One UE, Group of UEs.

 Report Type: One-Time Report, Continuous Report

 Input: UE ID(s)

 Notification; UE ID.

Event: 5GS-User-State-Report

 A NF subscribes to this event to receive the 5GS User State of a UE.

 UE Type: One UE

 Report Type: One-Time Report

 Input: UE ID

 Notification; UE ID, 5GS User State

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 6.2.6.1 General

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

Table 6.2.6.1-1 specifies the data types defined for the Namf\_EventExposure service based interface protocol.

Table 6.2.6.1-1: Namf\_EventExposure specific Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Clause defined | Description |
| AmfEventSubscription | 6.2.6.2.2 | Represents an individual event subscription resource on AMF |
| AmfEvent | 6.2.6.2.3 | Describes an event to be subscribed |
| AmfEventNotification | 6.2.6.2.4 | Represents a notification generated by AMF to be delivered |
| AmfEventReport | 6.2.6.2.5 | Represents a report triggered by a subscribed event type, except the report triggered by UES\_IN\_AREA\_REPORT event type |
| AmfEventMode | 6.2.6.2.6 | Describes how the reports shall be generated by a subscribed event |
| AmfEventState | 6.2.6.2.7 | Represents the state of a subscribed event |
| RmInfo | 6.2.6.2.8 | Represents the registration state of a UE for an access type |
| CmInfo | 6.2.6.2.9 | Represents the connection management state of a UE for an access type |
| CommunicationFailure | 6.2.6.2.11 | Describes a communication failure detected by AMF |
| AmfCreateEventSubscription | 6.2.6.2.12 | Describes of an AMF Event Subscription to be created |
| AmfCreatedEventSubscription | 6.2.6.2.13 | Represents successful creation of an AMF Event Subscription |
| AmfUpdateEventSubscriptionItem | 6.2.6.2.14 | Document describes the modification(s) to an AMF Event Subscription |
| AmfUpdatedEventSubscription | 6.2.6.2.15 | Represents a successful update on an AMF Event Subscription |
| AmfEventArea | 6.2.6.2.16 | Represents an area to be monitored by an AMF event. |
| LadnInfo | 6.2.6.2.17 | LADN Information |
| AmfUpdateEventOptionItem | 6.2.6.2.18 | Document describing the modifications to AMF event subscription options. |
| 5GsUserStateInfo | 6.2.6.2.19 | Represents the 5GS User state of the UE for an access type |
| AmfEventType | 6.2.6.3.3 | Describes the supported event types of Namf\_EventExposure Service |
| AmfEventTrigger | 6.2.6.3.4 | Describes how AMF should generate the report for the event |
| LocationFilter | 6.2.6.3.5 | Describes the supported filters of LOCATION\_REPORT event type |
| UeReachability | 6.2.6.3.7 | Describes the reachability of the UE |
| RmState | 6.2.6.3.9 | Describes the registration management state of a UE |
| CmState | 6.2.6.3.10 | Describes the connection management state of a UE |
| 5GsUserState | 6.2.6.3.11 | Describes the 5GS User State of a UE |

Table 6.2.6.1-2 specifies data types re-used by the Namf\_EventExposure service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Namf\_EventExposure service based interface.

Table 6.2.6.1-2: Namf\_EventExposure re-used Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Comments |
| Supi | 3GPP TS 29.571 [6] |  |
| GroupId | 3GPP TS 29.571 [6] |  |
| DurationSec | 3GPP TS 29.571 [6] |  |
| Gpsi | 3GPP TS 29.571 [6] |  |
| Uri | 3GPP TS 29.571 [6] |  |
| Pei | 3GPP TS 29.571 [6] |  |
| UserLocation | 3GPP TS 29.571 [6] |  |
| TaI | 3GPP TS 29.571 [6] |  |
| TimeZone | 3GPP TS 29.571 [6] |  |
| AccessType | 3GPP TS 29.571 [6] |  |
| Ecgi | 3GPP TS 29.571 [6] | EUTRA Cell Identifier |
| Ncgi | 3GPP TS 29.571 [6] | NR Cell Identifier |
| NfInstanceId | 3GPP TS 29.571 [6] |  |
| ProblemDetails | 3GPP TS 29.571 [6] | Problem Details |
| SupportedFeatures | 3GPP TS 29.571 [6] | Supported Features |
| DateTime | 3GPP TS 29.571 [6] |  |
| NgApCause | 3GPP TS 29.571 [6] |  |
| PresenceInfo | 3GPP TS 29.571 [6] | Presence Reporting Area Information |
| PresenceState | 3GPP TS 29.571 [6] | Describes the presence state of the UE to a specified area of interest |
| ReferenceId | 3GPP TS 29.503 [35] |  |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

##### 6.2.6.2.5 Type: AmfEventReport

Table 6.2.6.2.5-1: Definition of type AmfEventReport

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| type | AmfEventType | M | 1 | Describes the type of the event which triggers the report |
| state | AmfEventState | M | 1 | Describes the state of the event which triggered the report. This IE shall be set to "TRUE" when subscriptionId IE is present. |
| timeStamp | DateTime | M | 1 | This IE shall contain the time at which the event is generated. |
| subscriptionId | Uri | C | 0..1 | This IE shall be included when the event notification is for informing the creation of a subscription Id at the AMF during mobility of a UE across AMFs.When present, this IE shall contain the URI of the created subscription resource at the AMF.The type IE shall be set to:- SUBSCRIPTION\_ID\_CHANGE, when the AMFcreates a subscription Id for a UE specific event subscription during mobility registration and handover procedures involving an AMF change.- SUBSCRIPTION\_ID\_ADDITION, when the AMF creates a subscription Id for a group Id specific event subscription during mobility registration and handover procedures involving an AMF change. |
| anyUe | boolean | C | 0..1 | This IE shall be included and shall be set to "true", if the event subscription is a bulk subscription for number of UEs and the event reported is for one of those UEs. |
| supi | Supi | C | 0..1 | This IE shall be present if available.When present, this IE identifies the SUPI of the UE associated with the report (NOTE). |
| areaList | array(AmfEventArea) | C | 1..N | This IE shall be present when the AMF event type is "PRESENCE\_IN\_AOI\_REPORT". When present, this IE represents the specified Area(s) of Interest the UE is currently IN / OUT / UNKNOWN. |
| refId | ReferenceId | C | 0..1 | This IE shall be present if a Reference Id has previously been associated with the event triggering the report.When present, this IE shall indicate the Reference Id associated with the event which triggers the report. |
| gpsi | Gpsi | C | 0..1 | This IE shall be present if available.When present, this IE identifies the GPSI of the UE associated with the report (NOTE). |
| pei | Pei | O | 0..1 | This IE may be included if the event reported is for a particular UE or any UE. This IE identifies the PEI of the UE associated with the report (NOTE). |
| location | UserLocation | O | 0..1 | Represents the location information of the UE |
| timezone | TimeZone | O | 0..1 | Describes the time zone of the UE |
| accessTypeList | array(AccessType) | O | 1..N | Describes the access type(s) of the UE |
| rmInfoList | array(RmInfo) | O | 1..N | Describes the registration management state of the UE |
| cmInfoList | array(CmInfo) | O | 1..N | Describes the connection management state of the UE |
| reachability | UeReachability | O | 0..1 | Describes the reachability of the UE |
| commFailure | CommunicationFailure | O | 0..1 | Describes a communication failure for the UE. |
| numberOfUes | integer | O | 0..1 | Represents the number of UEs in the specified area |
| 5gsUserStateList | array(5GsUserStateInfo) | O | 1..N | Represents the 5GS User State of the UE per access type |
| NOTE: If the event report corresponds to an event subscription of a single UE, then the same UE identifier (i.e. SUPI and/or GPSI and/or PEI) received during subscription creation shall be included in the report. If the event report corresponds to an event subscription for group of UEs or any UE, then the SUPI and if available the GPSI shall be included in the event report. SUPI, PEI and GPSI shall not be present in report for UES\_IN\_AREA\_REPORT event type. |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

##### 6.2.6.2.9 Type: CmInfo

Table 6.2.6.2.9-1: Definition of type CmInfo

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| cmState | CmState | M | 1 | Describes the Connection management state of the UE |
| accessType | AccessType | M | 1 | Describes the access type of the UE that applies to the Connection management state reported. |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

##### 6.2.6.3.3 Enumeration: AmfEventType

Table 6.2.6.3.3-1: Enumeration AmfEventType

|  |  |
| --- | --- |
| Enumeration value | Description |
| "LOCATION\_REPORT" | A NF subscribes to this event to receive the Last Known Location of a UE or a group of UEs, and Updated Location of the UE or any UE in the group when AMF becomes aware of a location change of the UE. |
| "PRESENCE\_IN\_AOI\_REPORT" | A NF subscribes to this event to receive the current present state of a UE in a specific Area of Interest (AOI), and notification when a specified UE enters or leaves the specified area. The area could be identified by a TA list, an area ID or specific interest area name like "LADN". |
| "TIMEZONE\_REPORT" | A NF subscribes to this event to receive the current time zone of a UE or a group of UEs, and updated time zone of the UE or any UE in the group when AMF becomes aware of a time zone change of the UE. |
| "ACCESS\_TYPE\_REPORT" | A NF subscribes to this event to receive the current access type(s) of a UE or a group of UEs, and updated access type(s) of the UE or any UE in the group when AMF becomes aware of the access type change of the UE. |
| "REGISTRATION\_STATE\_REPORT" | A NF subscribes to this event to receive the current registration state of a UE or a group of UEs, and report for updated registration state of a UE or any UE in the group when AMF becomes aware of a registration state change of the UE. |
| "CONNECTIVITY\_STATE\_REPORT" | A NF subscribes to this event to receive the current connection management state of a UE or a group of UEs, and report for updated connection management state of a UE or any UE in the group when AMF becomes aware of a connection management state change of the UE. |
| "REACHABILITY\_REPORT" | A NF subscribes to this event to receive the current reachability of a UE or a group of UEs, and report for updated reachability of a UE or any UE in the group when AMF becomes aware of a reachability change of the UE. |
| "COMMUNICATION\_FAILURE\_REPORT" | A NF subscribes to this event to receive the Communication failure report of a UE or group of UEs or any UE. |
| "UES\_IN\_AREA\_REPORT" | A NF subscribes to this event to receive the number of UEs in a specific area. |
| "SUBSCRIPTION\_ID\_CHANGE" | This event type is used by the AMF to inform the NF service consumer that the subscription Id for the event subscription is changed (e.g. Subscription Id creation at the target AMF for individual UE level event subscriptions, during mobility registration or handover procedures involving an AMF change). This event needs no explicit subscription form an NF service consumer. |
| "SUBSCRIPTION\_ID\_ADDITION" | This event type is used by the AMF to inform the NF service consumer that a new subscription Id is added (e.g creation of an event subscription for a UE group level event subscription at the target AMF, during mobility registration or handover procedures involving AMF change for a UE belonging to a group Id and when such a UE is the first UE of the group registering at the target AMF). This event needs no explicit subscription form the NF service consumer. |
| "LOSS\_OF\_CONNECTIVITY" | An NF subscribes to this event to receive the event report of a UE or group of UEs when AMF detects that a target UE is no longer reachable for either signalling or user plane communication. Such condition is identified when Mobile Reachable timer expires in the AMF (see 3GPP TS 23.501 [2]), when the UE detaches and when AMF deregisters from UDM for an active UE. If the UE is already not reachable for either signalling or user plane communication when the event is subscribed, the AMF reports the event directly. |
| "5GS\_USER\_STATE\_REPORT" | A NF subscribes to this event to receive the 5GS user state of a UE. |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

## A.3 Namf\_EventExposure API

openapi: 3.0.0

info:

 version: 1.1.0.alpha-2

 title: Namf\_EventExposure

 description: |

 AMF Event Exposure Service

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security:

 - {}

 - oAuth2ClientCredentials:

 - namf-evts

externalDocs:

 description: 3GPP TS 29.518 V16.2.0; 5G System; Access and Mobility Management Services

 url: 'http://www.3gpp.org/ftp/Specs/archive/29\_series/29.518/'

servers:

 - url: '{apiRoot}/namf-evts/v1'

 variables:

 apiRoot:

 default: https://example.com

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

paths:

 /subscriptions:

 post:

 summary: Namf\_EventExposure Subscribe service Operation

 tags:

 - Subscriptions collection (Document)

 operationId: CreateSubscription

 requestBody:

 content:

 application/json:

 schema:

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

 required: true

 responses:

 '201':

 description: Subsription Created

 headers:

 Location:

 description: 'Contains the URI of the newly created resource, according to the structure: {apiRoot}/namf-evts/<apiVersion>/subscriptions/{subscriptionId}'

 required: true

 schema:

 type: string

 content:

 application/json:

 schema:

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

 '400':

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

 '403':

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

 '411':

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

 '413':

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

 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

 description: Unexpected error

 callbacks:

 onEventReport:

 '{$request.body#/subscription/eventNotifyUri}':

 post:

 summary: Event Notificaiton Delivery

 requestBody:

 content:

 application/json:

 schema:

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

 required: true

 responses:

 '204':

 description: Successful acknowledgement

 '400':

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

 '411':

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

 '413':

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

 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

 description: Unexpected error

 onSubscriptionIdChangeEvtReport:

 '{$request.body#/subscription/subsChangeNotifyUri}':

 post:

 summary: Event Notificaiton Delivery For Subscription Id Change

 requestBody:

 content:

 application/json:

 schema:

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

 required: true

 responses:

 '204':

 description: Successful acknowledgement

 '400':

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

 '411':

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

 '413':

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

 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

 description: Unexpected error

 /subscriptions/{subscriptionId}:

 patch:

 summary: Namf\_EventExposure Subscribe Modify service Operation

 tags:

 - Individual subscription (Document)

 operationId: ModifySubscription

 parameters:

 - name: subscriptionId

 in: path

 required: true

 description: Unique ID of the subscription to be modified

 schema:

 type: string

 requestBody:

 content:

 application/json-patch+json:

 schema:

 oneOf:

 - $ref: '#/components/schemas/AmfUpdateEventSubscriptionItem'

 - $ref: '#/components/schemas/AmfUpdateEventOptionItem'

 required: true

 responses:

 '200':

 description: Subsription modified successfully

 content:

 application/json:

 schema:

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

 '400':

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

 '403':

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

 '404':

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

 '411':

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

 '413':

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

 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

 description: Unexpected error

 delete:

 summary: Namf\_EventExposure Unsubscribe service Operation

 tags:

 - Individual subscription (Document)

 operationId: DeleteSubscription

 parameters:

 - name: subscriptionId

 in: path

 required: true

 description: Unique ID of the subscription to be deleted

 schema:

 type: string

 responses:

 '204':

 description: Subsription deleted successfully

 '400':

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

 '404':

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

 '411':

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

 '413':

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

 '415':

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

 '429':

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

 '500':

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

 '503':

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

 default:

 description: Unexpected error

components:

 securitySchemes:

 oAuth2ClientCredentials:

 type: oauth2

 flows:

 clientCredentials:

 tokenUrl: '{nrfApiRoot}/oauth2/token'

 scopes:

 namf-evts: Access to the Namf\_EventExposure API

 schemas:

 AmfEventSubscription:

 type: object

 properties:

 eventList:

 type: array

 items:

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

 minItems: 1

 eventNotifyUri:

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

 notifyCorrelationId:

 type: string

 nfId:

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

 subsChangeNotifyUri:

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

 subsChangeNotifyCorrelationId:

 type: string

 supi:

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

 groupId:

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

 gpsi:

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

 pei:

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

 anyUE:

 type: boolean

 options:

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

 required:

 - eventList

 - eventNotifyUri

 - notifyCorrelationId

 - nfId

 AmfEvent:

 type: object

 properties:

 type:

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

 immediateFlag:

 type: boolean

 areaList:

 type: array

 items:

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

 minItems: 1

 locationFilterList:

 type: array

 items:

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

 minItems: 1

 refId:

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

 required:

 - type

 AmfEventNotification:

 type: object

 properties:

 notifyCorrelationId:

 type: string

 subsChangeNotifyCorrelationId:

 type: string

 reportList:

 type: array

 items:

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

 minItems: 1

 AmfEventReport:

 type: object

 properties:

 type:

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

 state:

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

 timeStamp:

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

 subscriptionId:

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

 anyUe:

 type: boolean

 supi:

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

 areaList:

 type: array

 items:

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

 minItems: 1

 refId:

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

 gpsi:

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

 pei:

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

 location:

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

 timezone:

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

 accessTypeList:

 type: array

 items:

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

 minItems: 1

 rmInfoList:

 type: array

 items:

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

 minItems: 1

 cmInfoList:

 type: array

 items:

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

 minItems: 1

 reachability:

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

 commFailure:

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

 numberOfUes:

 type: integer

 5gsUserStateList:

 type: array

 items:

 $ref: '#/components/schemas/5GsUserStateInfo'

 minItems: 1

 required:

 - type

 - state

 - timeStamp

 AmfEventMode:

 type: object

 properties:

 trigger:

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

 maxReports:

 type: integer

 expiry:

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

 required:

 - trigger

 AmfEventState:

 type: object

 properties:

 active:

 type: boolean

 remainReports:

 type: integer

 remainDuration:

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

 required:

 - active

 RmInfo:

 type: object

 properties:

 rmState:

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

 accessType:

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

 required:

 - rmState

 - accessType

 CmInfo:

 type: object

 properties:

 cmState:

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

 accessType:

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

 required:

 - cmState

 - accessType

 CommunicationFailure:

 type: object

 properties:

 nasReleaseCode:

 type: string

 ranReleaseCode:

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

 AmfCreateEventSubscription:

 type: object

 properties:

 subscription:

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

 supportedFeatures:

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

 oldGuami:

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

 required:

 - subscription

 AmfCreatedEventSubscription:

 type: object

 properties:

 subscription:

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

 subscriptionId:

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

 reportList:

 type: array

 items:

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

 minItems: 1

 supportedFeatures:

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

 required:

 - subscription

 - subscriptionId

 AmfUpdateEventSubscriptionItem:

 type: array

 items:

 type: object

 properties:

 op:

 type: string

 enum:

 - add

 - remove

 - replace

 path:

 type: string

 pattern: '\/eventList\/[0-]$|\/eventList\/[1-9][0-9]\*$'

 value:

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

 required:

 - op

 - path

 minItems: 1

 AmfUpdateEventOptionItem:

 type: object

 properties:

 op:

 type: string

 enum:

 - replace

 path:

 type: string

 pattern: '\/options\/expiry$'

 value:

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

 required:

 - op

 - path

 - value

 AmfUpdatedEventSubscription:

 type: object

 properties:

 subscription:

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

 required:

 - subscription

 AmfEventArea:

 type: object

 properties:

 presenceInfo:

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

 ladnInfo:

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

 LadnInfo:

 type: object

 properties:

 ladn:

 type: string

 presence:

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

 required:

 - ladn

 5GsUserStateInfo:

 type: object

 properties:

 5gsUserState:

 $ref: '#/components/schemas/5GsUserState'

 accessType:

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

 required:

 - 5gsUserState

 - accessType

 5gGuti:

 type: string

 AmfEventType:

 anyOf:

 - type: string

 enum:

 - LOCATION\_REPORT

 - PRESENCE\_IN\_AOI\_REPORT

 - TIMEZONE\_REPORT

 - ACCESS\_TYPE\_REPORT

 - REGISTRATION\_STATE\_REPORT

 - CONNECTIVITY\_STATE\_REPORT

 - REACHABILITY\_REPORT

 - COMMUNICATION\_FAILURE\_REPORT

 - UES\_IN\_AREA\_REPORT

 - SUBSCRIPTION\_ID\_CHANGE

 - SUBSCRIPTION\_ID\_ADDITION

 - LOSS\_OF\_CONNECTIVITY

 - 5GS\_USER\_STATE\_REPORT

 - type: string

 AmfEventTrigger:

 anyOf:

 - type: string

 enum:

 - ONE\_TIME

 - CONTINUOUS

 - type: string

 LocationFilter :

 anyOf:

 - type: string

 enum:

 - TAI

 - CELL\_ID

 - N3IWF

 - UE\_IP

 - UDP\_PORT

 - TNAP\_ID

 - GLI

 - type: string

 UeReachability:

 anyOf:

 - type: string

 enum:

 - UNREACHABLE

 - REACHABLE

 - REGULATORY\_ONLY

 - type: string

 RmState:

 anyOf:

 - type: string

 enum:

 - REGISTERED

 - DEREGISTERED

 - type: string

 CmState:

 anyOf:

 - type: string

 enum:

 - IDLE

 - CONNECTED

 - type: string

 5GsUserState:

 anyOf:

 - type: string

 enum:

 - DEREGISTERED

 - REGISTERED\_NOT\_REACHABLE\_FOR\_PAGING

 - REGISTERED\_REACHABLE\_FOR\_PAGING

 - CONNECTED\_NOT\_REACHABLE\_FOR\_PAGING

 - CONNECTED\_REACHABLE\_FOR\_PAGING

 - NOT\_PROVIDED\_FROM\_AMF

 - type: string

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The end of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*