**3GPP TSG-CT WG4 Meeting #101eC4-205abc**

**E-Meeting, 3rd – 13th November 2020 *was C4-205366***

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.518** | **CR** | **0430** | **rev** | **1** | **Current version:** | **16.5.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Event Subscription Synchronization between 4G&5G | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_CIoT | | | | |  | ***Date:*** | | | 2020-11-09 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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 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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | SA2 has agreed CR 2482 of TS 23.501 (S2-2007257) and CR 2421 of TS 23.502 (S2-2007258) which addressing the issue for Event Configuration Synchronization between 4G&5G observed by CT4 in LS S2-2006807 (C4-204338).  Stage 2 agreed that the AMF may initiate event subscriptions synchronization with UDM during the UE mobility procedure by indicating the event subscriptions (if not empty) in AMF to UDM and UDM will do synchronization if needed: 5.17.5.2 Support of interworking for Monitoring Events5.17.5.2.1 Interworking with N26 interface In addition to the interworking principles documented in clause 5.17.2.2, the following applies for interworking with N26:  - When UE moves from EPS to 5GS, when the AMF registers in UDM, if no event subscription via UDM is available, the AMF indicates the situation to the UDM, and in this case the UDM can decide if the event subscriptions should be provisioned, otherwise if the AMF has event subscription information, after the registration procedure is completed, the AMF may inform the UDM of the currently subscribed events, and UDM will do synchronization if needed.  - When UE moves from 5GS to EPS, the MME gets monitoring event configuration from HSS during as part of mobility procedure as specified in clause 4.11.1.3.2 of TS 23.502 [3].  The CR propose to reuse the subscription change notification report to carry the existing subscriptions in AMF to UDM. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1/ Specify service procedure for event subscription synchronization and update UE mobility procedures  2/ Specify new data types for event subscription synchronization information content.  3/ Add new attribute in AmfEventNotification to carry the event subscription synchronization information.  4/ Update OpenAPI accordingly. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Event subscription function not working properly during UE mobility, especially when EPS to 5GS mobility. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.2.2.1.1, 5.2.2.2.3.1, 5.3.2.2.2, 5.3.2.4.x(New), 6.2.6.1, 6.2.6.2.3, 6.2.6.2.x(New), 6.2.6.2.y(New), A.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS/TR 23.501 CR 2482  TS/TR 23.502 CR 2421 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This CR introduces backward compatible corrections to OpenAPI file of Namf\_EventExposure API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev1:  1/ Remove Create UE Context service operaiton will not invoked during EPS to 5GS mobility.  2/ Clarify the UDM behavior when receiving the synchronization information  3/ Update table note for usinag of Refernece Id | | | | | | | | |

\* \* \* First Change \* \* \* \*

###### 5.2.2.2.1.1 General

The UEContextTransfer service operation is used during the following procedure:

- General Registration procedure (see 3GPP TS 23.502 [3], clause 4.2.2.2.2)

The UEContextTransfer service operation is invoked by a NF Service Consumer, e.g. a target AMF, towards the AMF (acting as source AMF), when the target AMF receives a Registration Request with the UE's 5G-GUTI included and the serving AMF has changed since last registration, to retrieve the UE Context, e.g. the UE's SUPI and MM Context, in the source AMF.

The NF Service Consumer (e.g. the target AMF) shall retrieve the UE Context by invoking the "transfer" custom method on the URI of an "Individual ueContext" resource identified by UE's 5G-GUTI, see clause 6.1.3.2.4. See also Figure 5.2.2.2.1.1-1.



Figure 5.2.2.2.1.1-1 UE Context Transfer

1. The NF Service Consumer, e.g. target AMF, shall send a HTTP POST request to invoke "transfer" custom method on an "Individual ueContext" resource URI. The payload of the request shall be an object of "UeContextTranferReqData" data type.

If UE Context Transfer is triggered by UE initial registration or mobility registration, the NF Service Consumer, e.g. target AMF, shall set the reason attribute to "INIT\_REG" or "MOBI\_REG" and include the integrity protected registration request message which triggers the UE context transfer in the payload.

2a. On success:

- if the reason attribute is "INIT\_REG" and integrity check is successful, the (source) AMF shall respond with the status code "200 OK". The payload of the response shall be an object of "UeContextTransferRspData" data type, containing:

case a) the representation of the requested UE Context without PDU Session Contexts; or

case b) the representation of the requested UE Context only containing the "supi" attribute, if the UE is registered in a different access type in the (source) AMF and the source AMF determines based on the PLMN ID of the (target) AMF that there is no possibility for relocating the N2 interface to the (target) AMF.

- If the reason attribute is "MOBI\_REG" and integrity check is successful, the (source) AMF shall respond with the status code "200 OK". The payload of the response shall be an object of "UeContextTransferRspData" data type, containing the representation of the complete UE Context including available PDU Session Contexts.

The UE context shall contain trace control and configuration parameters, if signalling based trace has been activated (see 3GPP TS 32.422 [30]).   
  
The NF Service Consumer, e.g. target AMF, starts tracing according to the received trace control and configuration parameters, if trace data is received in the UE context indicating that signalling based trace has been activated. Once the NF Service Consumer receives subscription data, trace requirements received from the UDM supersedes the trace requirements received from the AMF.

The UE context shall contain event subscriptions information in the following cases:

a) Any NF Service Consumer has subscribed for UE specific event; and/or

b) Any NF Service Consumer has subscribed for UE group specific events to which the UE belongs. In this case the event subscriptions provided in the UE context shall contain the event details applicable to this specific UE in the group (e.g maxReports in options IE).

The NF Service Consumer, e.g. target AMF, shall:

- in case a) create event subscriptions for the UE specific events;

- in case b) create event subscriptions for the group Id if there are no existing event subscriptions for that group Id, subscription change notification URI (subsChangeNotifyUri) and the subscription change notification correlation Id (subsChangeNotifyCorrelationId). If there is already an existing event subscription for the group Id, and for the given subscription change notification URI (subsChangeNotifyUri) and subscription change notification correlation Id (subsChangeNotifyCorrelationId), then an event subscription shall not be created at the NF Service Consumer. The individual UE specific event details (e.g maxReports in options IE) within that group shall be taken into account.

- for both the cases, for each created event subscription, allocate a new subscription Id, if necessary (see clause 6.5.2 of 3GPP TS 29.500 [4]), and if allocated, send the new subscription Id to the notification endpoint for informing the subscription Id creation, along with the notification correlation Id for the subscription Id change. If the UEContextTransfer service operation is performed towards the old AMF as part of the EPS to 5GS mobility registration procedure using N26 interface (see clause 4.11.1.3.3 of 3GPP TS 23.502 [3]), the target AMF may also initiate event subscription synchronization with UDM, as specified in clause 5.3.2.4.x.

NOTE: Subscription Id can be reused if the mobility is between AMFs of same AMF Set.

If the UE context being transferred from the source AMF is the last UE context that belongs to a UE group Id related subscription, then the source AMF shall not delete the UE group Id related subscription until the expiry of that event subscription (see clause 5.3.2.2.2).

The source AMF shall not transfer those PDU sessions which are not supported by the target AMF, e.g. the MA-PDU sessions shall not be transferred if the target AMF does not support ATSSS.

2b. On failure or redirection, one of the HTTP status code listed in Table 6.1.3.2.4.4.2-2 shall be returned. For a 4xx/5xx response, the message body shall contain a ProblemDetails structure with the "cause" attribute set to one of the application errors listed in Table 6.1.3.2.4.4.2-2.

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

##### 5.3.2.2.2 Creation of a subscription

The Subscribe service operation is invoked by a NF Service Consumer, e.g. NEF, towards the AMF, when it needs to create a subscription to monitor at least one event relevant to the AMF. The NF Service Consumer may subscribe to multiple events in a subscription. A subscription may be associated with one UE, a group of UEs or any UE.

The NF Service Consumer shall request to create a new subscription by using HTTP method POST with URI of the subscriptions collection, see clause 6.2.3.2.

The NF Service Consumer shall include the following information in the HTTP message body:

- NF ID, indicates the identity of the network function instance initiating the subscription;

- Subscription Target, indicates the target(s) to be monitored, as one of the following types:

- A specific UE, identified with a SUPI, a PEI or a GPSI;

- A group of UEs, identified with a group identity;

- Any UE, identified by the "anyUE" flag.

- Notification URI, indicates the address to deliver the event notifications generated by the subscription;

- Notification Correlation ID, indicates the correlation identity to be carried in the event notifications generated by the subscription;

- List of events to be subscribed;

- Event Types per event, as specified in clause 5.3.1.

The NF Service Consumer may include the following information in the HTTP message body:

- Immediate Report Flag per event, indicates an immediate report to be generated with current event status;

- Event Trigger, indicates how the events shall be reported (One-time Reporting or Continuously Reporting).

- Maximum Number of Reports, defines the maximum number of reports after which the event subscription ceases to exist;

- Expiry, defines maximum duration after which the event subscription ceases to exist;

- Sampling ratio, defines the random subset of UEs among target UEs, and AMF only report the event(s) related to the selected subset of UEs;

- Periodic Report Flag per event, indicates the report to be generated periodically;

- Repetition Period, defines the period for periodic reporting;

- Event Filter per applicable event, defines further options on how the event shall be reported.

- Reference Id per event, indicates the value of the Reference Id associated with the event to be monitored. If provided, the Reference Id shall be included in the reports triggered by the event.



Figure 5.3.2.2.2-1 Subscribe for Creation

1. The NF Service Consumer shall send a POST request to create a subscription resource in the AMF. The payload body of the POST request shall contain a representation of the individual subscription resource to be created. The request may contain an expiry time, suggested by the NF Service Consumer as a hint, representing the time upto which the subscription is desired to be kept active and the time after which the subscribed event(s) shall stop generating report.

2a. On success, the request is accepted, the AMF shall include a HTTP Location header to provide the location of a newly created resource (subscription) together with the status code 201 indicating the requested resource is created in the response message. If the NF Service Consumer has included the immediateFlag with value as "true" in the event subscription, the AMF shall include the current status of the events subscribed, if available (e.g. last known location information is included if the subscribed event is LOCATION\_REPORT). If the NF Service Consumer has set the event reporting option as ONE\_TIME and if the AMF has included the current status of the events subscribed in the response, then the AMF shall not do any subsequent event notification for the events given in the AmfCreateEventSubscription parameter.

The response, based on operator policy and taking into account the expiry time included in the request, may contain the expiry time, as determined by the AMF, after which the subscription becomes invalid. Once the subscription expires, if the NF Service Consumer wants to keep receiving notifications, it shall create a new subscription in the AMF. The AMF shall not provide the same expiry time for many subscriptions in order to avoid all of them expiring and recreating the subscription at the same time. If the expiry time is not included in the response, the NF Service Consumer shall consider the subscription to be valid without an expiry time.

If the sampling ratio ("sampRatio") attribute is included in the subscription, the AMF shall select a random subset of UEs among target UEs according to the sampling ratio and only report the event(s) related to the selected subset of UEs.

2b. On failure or redirection, one of the HTTP status code listed in Table 6.2.3.2.3.1-3 shall be returned. For a 4xx/5xx response, the message body shall contain a ProblemDetails structure with the "cause" attribute set to one of the application error listed in Table 6.2.3.2.3.1-3.

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

##### 5.3.2.4.x Event Subscription Synchronization for specific UE

The AMF may initiate synchronization for event subscriptions with UDM for the specific UE during EPS to 5GS mobility registration procedure (see clause 4.11.5.2 of 3GPP TS 23.502 [3]), if UE specific subscriptions are available in UE Context.

To initiate event subscription synchronization, when sending notification for subscription change to the UDM, the AMF shall include the event subscription synchronization information in the notification request. If subscription change notification is not needed, e.g. when UE registers to the same AMF after moving from EPS, the AMF may send a notification to the subscription change notification URI. The notification request in this case only includes the event subscription synchronization information but no event report list,

The AMF shall only include active event subscriptions for the specific UE from UDM/NEF, i.e. the subscriptions targeting specifically the UE (not a group of UEs or any UE) and the events with Reference Id, in the event subscription synchronization information. For each active subscription, the following information shall include:

- URI of the subscription resource in the AMF; and

- list of Reference Ids, one per event in the subscription; and

- optionally, the URI of old subscription resource on the source AMF, if the subscription Id is changed during the mobility procedure.

When UDM received event subscription synchronization information from AMF, the UDM shall compare the active event subscriptions in AMF with the active event subscriptions in UDM with Reference Id(s) and Notification Correlation Id, and perform following:

- if an event is to be detected by AMF but not existing in the AMF, the UDM shall subscribe the event in AMF by creating a new AMF event subscription or updating an existing AMF event subscription;

- if an event exists in AMF but does not exist in UDM, the UDM shall unsubscribe the event from AMF by removing or update an AMF event subscription.

\* \* \* 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 |
| TrafficDescriptor | 6.2.6.2.20 | Represents the Traffic Descriptor |
| UEIdExt | 6.2.6.2.21 | UE Identity |
| AmfEventSubsSyncInfo | 6.2.6.2.x | AMF Event Subscription Synchronization Information |
| AmfEventSubscriptionInfo | 6.2.6.2.y | AMF Event Subscription Information |
| 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 |
| LossOfConnectivityReason | 6.2.6.3.12 | Describes the reason for loss of connectivity |
| ReachabilityFilter | 6.2.6.3.13 | Event filter for REACHABILITY\_REPORT event type. |

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 |
| Dnn | 3GPP TS 29.571 [6] |  |
| Snssai | 3GPP TS 29.571 [6] |  |
| DddTrafficDescriptor | 3GPP TS 29.571 [6] | Downlink Data Delivery Traffic Descriptor |
| ReferenceId | 3GPP TS 29.503 [35] |  |
| NsiId | 3GPP TS 29.531 [18] | NSI ID |
| SamplingRatio | 3GPP TS 29.571 [6] | Sampling Ratio. |

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

##### 6.2.6.2.3 Type: AmfEvent

Table 6.2.6.2.3-1: Definition of type AmfEvent

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| type | AmfEventType | M | 1 | Describes the AMF event type to be reported |
| immediateFlag | boolean | O | 0..1 | Indicates if an immediate event report in the subscription response is requested. The report contains the current value / status of the event stored at the time of the subscription in the AMF (NOTE 1). If the flag is not present then immediate reporting shall not be done. |
| areaList | array(AmfEventArea) | O | 1..N | Identifies the area to be applied.  More than one instance of AmfEventArea IE shall be used only when the AmfEventArea is provided during event subscription for Presence Reporting Area subscription. |
| locationFilterList | array(LocationFilter) | O | 1..N | Describes the filters to be applied for LOCATION\_REPORT event type.  If this attribute is not present in the request, it indicates the change of the TA used by the UE should be reported. |
| refId | ReferenceId | O | 0..1 | Indicates the Reference Id associated with the event.  (NOTE x) |
| trafficDescriptorList | array(TrafficDescriptor) | O | 1..N | Indicates the filters to be applied for AVAILABILITY\_AFTER\_DDN\_FAILURE event type. |
| reportUeReachable | boolean | C | 0..1 | This IE shall be present and set to value "true" by the source AMF to request the target AMF to notify the subscriber when UE becomes reachable, during inter-AMF mobility procedures.  When present, this IE shall be set as following:  - true: target AMF shall notify the subscriber when UE becomes reachable  - false (default): target AMF shall not notify the subscriber when UE becomes reachable, until next reporting trigger is detected, i.e. DDN failure detected (for AVAILABILITY\_AFTER\_DDN\_FAILURE event) or UE becomes unreachable for downlink traffic (for "UE Reachable for DL Traffic" of REACHABILITY\_REPORT event)  This IE only applies to following Event Types:  - AVAILABILITY\_AFTER\_DDN\_FAILURE  - REACHABILITY\_REPORT (for "UE Reachable for DL Traffic") |
| reachabilityFilter | ReachabilityFilter | O | 0..1 | When present, this IE shall indicate the filter to be applied for the REACHABILITY\_REPORT event type.  If the subscription of REACHABILITY\_REPORT is for "UE Reachability Status Change", the AMF shall report current reachability state and subsequent updated reachability state of the UE, when AMF becomes aware of a UE reachability state change between REACHABLE, UNREACHABLE and REGULATORY\_ONLY.  If the subscription of REACHABILITY\_REPORT is for "UE Reachable for DL Traffic", the AMF shall report the "REACHABLE" state, when the UE transitions to CM-CONNECTED mode or when the UE will become reachable for paging, as specified in table 4.15.3.1-1, clauses 4.2.5 and 4.3.3 of 3GPP TS 23.502 [3].  If this IE is absent, the subscription of REACHABILITY\_REPORT is for "UE Reachability Status Change". |
| maxReports | integer | O | 0..1 | This IE may be present if the trigger is set to "CONTINUOUS". When present, this IE describes the maximum number of reports that can be generated by the subscribed event. If the AMF event subscription is for a group of UEs, this parameter shall be applied to each individual member UE of the group. If the event subscription is transferred from source AMF to target AMF, this IE shall contain:  - the remaining number of reports for the event subscription, in the case of individual UE event subscription;  - the remaining number of reports for the event subscription for this specific UE in a group, in the case of group ID specific event subscription.  (NOTE 2) |
| NOTE 1: The current value of the location is the last known location if the immediate report filter request to provide the 3GPP location information down to the Cell-ID or the TAI. An NF Service Consumer willing to only receive the current location shall not set the immediateFlag to true when subscribing to a location event report.  NOTE 2: maxReports in this attribute shall have precedence over the maxReports in the AmfEventMode.  NOTE x: Each Monitoring Configuration subscribed via UDM Event Exposure service uses a Reference Id as the key. This IE shall carry the Reference Id when UDM subscribes to the AMF event for the corresponding Monitoring Configuration. | | | | |

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

##### 6.2.6.2.4 Type: AmfEventNotification

Table 6.2.6.2.4-1: Definition of type AmfEventNotification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| notifyCorrelationId | string | C | 0..1 | This IE shall be included if the notification is not for informing creation of a new subscription Id.  This IE shall also be included if the notification is for informing the creation of a new subscription Id and the corresponding event subscription did not contain subsChangeNotifyCorrelationId attribute (see clause 6.2.6.2.2).  When present, this IE shall indicate the notification correlation Id provided by the NF service consumer during event subscription. This parameter can be useful if the NF service consumer uses a common call-back URI for multiple subscriptions. |
| subsChangeNotifyCorrelationId | string | C | 0..1 | This IE shall be included if the notification is for informing the creation of a new subscription Id at the AMF and the corresponding event subscription contains the subsChangeNotifyCorrelationId attribute (see clause 6.2.6.2.2).  When present, this IE shall be set to the value of the subsChangeNotifyCorrelationId provided during subscription (see clause 6.2.6.2.2). |
| reportList | array(AmfEventReport) | C | 1..N | This IE shall be present if a event is reported. When present, this IE represents the event reports to be delivered. |
| eventSubsSyncInfo | AmfEventSubsSyncInfo | C | 0..1 | This IE may be present for AMF to initiate event subscription synchronization with UDM during UE mobility procedures.  When present, this IE shall contain the information for event subscription synchronization, including all active event subscriptions specificially targeting the UE. |

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

##### 6.2.6.2.x Type: AmfEventSubsSyncInfo

Table 6.2.6.2.x-1: Definition of type AmfEventSubsSyncInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| subscriptionList | array(AmfEventSubscriptionInfo) | M | 1..N | This IE shall contain all active subscriptions in the AMF for the target UE. |  |

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

##### 6.2.6.2.y Type: AmfEventSubscriptionInfo

Table 6.2.6.2.y-1: Definition of type AmfEventSubscriptionInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| subId | Uri | M | 1 | This IE shall contain the URI of the subscription resource of events with Reference Id. |  |
| notifyCorrelationId | string | M | 1 | This IE shall contain the notification correlation ID of the subscription. |  |
| refIdList | array(ReferenceId) | M | 1..N | This IE shall contain the Reference Ids of the events in the subscription, one Reference Id per event. |  |
| oldSubId | Uri | C | 0..1 | This IE shall be present if new event subscription Id is created in the new AMF, i.e. the event subscription has been retrieved from an old AMF in UE context during EPS to 5GS mobility.  When present, this IE shall include the URI of the subscription resouce on the source AMF. |  |

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

## A.3 Namf\_EventExposure API

openapi: 3.0.0

info:

version: 1.1.1

title: Namf\_EventExposure

description: |

AMF Event Exposure Service

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security:

- {}

- oAuth2ClientCredentials:

- namf-evts

externalDocs:

description: 3GPP TS 29.518 V16.5.0; 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

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Text Skipped for Clarity \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

AmfEventNotification:

type: object

properties:

notifyCorrelationId:

type: string

subsChangeNotifyCorrelationId:

type: string

reportList:

type: array

items:

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

minItems: 1

eventSubsSyncInfo:

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

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Text Skipped for Clarity \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

UEIdExt:

type: object

properties:

supi:

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

gpsi:

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

5gGuti:

type: string

AmfEventSubsSyncInfo:

type: object

properties:

subscriptionList:

type: array

items:

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

minItems: 1

required:

- subscriptionList

AmfEventSubscriptionInfo:

type: object

properties:

subId:

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

refIdList:

type: array

items:

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

minItems: 1

oldSubId:

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

required:

- subId

- refIdList

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Text Skipped for Clarity \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

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