**3GPP TSG CT WG3 Meeting #137C3-245469**

**Hefei, CN, 14 - 18 October, 2024 was C3-245055**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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:*** | Addition of local geographical co-ordinates in Monitoring Event API | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | CEWiT, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI19, 5G\_eLCS\_Ph2 | | | | |  | ***Date:*** | | | 2024-10-07 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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:*** | | When an AF requests for the precise location information of a UE, the NEF forwards it to GMLC. This is forwarded by GMLC to LMF via AMF and LMF may determine the UE location in local geographical co-ordinates or universal geographical co-ordinates or both based on the LCS client type and supported GAD shapes.  As per stage 3 TS 29.522 Clause 4.4.2,  "4) based on the received AF information and local authorization policy, the NEF shall derive the LCS client type with a suitable enumeration value for the AF location request, to be provided as the "externalClientType" attribute when invoking the Ngmlc\_Location\_ProvideLocation service operation as defined in clause 6.1 of 3GPP TS 29.515 [35];"  In response, the GMLC can provide UE’s location in universal and/or local geographical co-ordinates to the NEF. According to stage 3 TS 29.515, clause 6.1.5.2.3 data type LocationData, the response going from GMLC to NEF contains the local geographical co-ordinates. Currently, there is no provision at the NEF to convey the UE’s location in terms of local geographical co-ordinates to AF.  But, as per stage 2 specification TS 23.273 clause 6.1.2 5GC-MT-LR Procedure for the commercial location services, step 24 mentions that,  “If the external LCS client or AF requires it, the (H)GMLC may first transform the universal location co-ordinates provided by the AMF into some local geographic reference system”  So, as per stage 2, the GMLC may convert the UE’s location into local geographical co-ordinates and can send it to AF via NEF.  This CR intends to address this gap in TS 29.122 by adding an attribute “localLocationEstimate” with data type LocalArea in Table 5.3.2.3.5-1 in the response to AF | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Addition of “LocalArea” in Table 5.3.2.1.1-1 MonitoringEvent API re-used Data Types. 2. Addition of attribute “localLocationEstimate” of data type “LocalArea” in section 5.3.2.3.5 in Table 5.3.2.3.5-1. 3. Addition of nee feature “eLCS\_ext” in Table 5.3.4-1 to support above updation. 4. Corresponding modifications in the OpenAPI file. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | UE’s location in terms of local geographical co-ordinates cannot be conveyed to the AF. This will cause a mismatch with the stage 2 specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.3.2.1.1, 5.3.2.3.5, 5.3.4, 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 introduces backwards compatible feature in the OpenAPI file of MonitoringEvent API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | None | | | | | | | | |

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

##### 5.3.2.1.1 Introduction

This clause defines data structures to be used in resource representations, including subscription resources.

Table 5.3.2.1.1-1 specifies data types re-used by the MonitoringEvent API from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the MonitoringEvent API.

Table 5.3.2.1.1-1: MonitoringEvent API re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| 2DRelativeLocation | 3GPP TS 29.572 [42] | Represents 2D local co-ordinates with origin corresponding to another known point. | Ranging\_SL |
| 3DRelativeLocation | 3GPP TS 29.572 [42] | Represents 3D local co-ordinates with origin corresponding to another known point. | Ranging\_SL |
| AccuracyFulfilmentIndicator | 3GPP TS 29.572 [42] | The indication whether the obtained location estimate satisfies the requested QoS or not. | eLCS |
| AgeOfLocationEstimate | 3GPP TS 29.572 [42] | Age of the location estimate for change of location type or motion type of Location deferred report. | eLCS |
| ApplicationlayerId | 3GPP TS 29.571 [45] | Represents the Application Layer ID. | Ranging\_SL |
| CivicAddress | 3GPP TS 29.572 [42] | Civic address. | eLCS |
| CodeWord | 3GPP TS 29.515 [65] | Code word. | eLCS |
| DddTrafficDescriptor | 3GPP TS 29.571 [45] | Traffic Descriptor of source of downlink data. | Downlink\_data\_delivery\_status\_5G  Availability\_after\_DDN\_failure\_notification\_enhancement |
| DlDataDelDlDataDeliveryStatus | 3GPP TS 29.571 [45] | Traffic Descriptor of source of downlink data notifications. | Downlink\_data\_delivery\_status\_5G |
| Dnn | 3GPP TS 29.571 [45] | Identifies a DNN. | Session\_Management\_Enhancement  UEId\_retrieval  AppDetection\_5G |
| Fqdn | 3GPP TS 29.571 [45] | Identifies a FQDN. |  |
| GeographicArea | 3GPP TS 29.572 [42] | Identifies the geographical information of the user(s). |  |
| Gpsi | 3GPP TS 29.571 [45] | Represents a GPSI. | GMEC |
| IpAddr | 3GPP TS 29.571 [45] | UE IP Address. | enNB  UEId\_retrieval |
| LdrType | 3GPP TS 29.572 [42] | Location deferred requested event type. | eLCS |
| LinearDistance | 3GPP TS 29.572 [42] | This IE shall be present and set to true if a location estimate is required for motion event report. | eLCS |
| LocalArea | 3GPP TS 29.572 [42] | Local area specified by different shapes | eLCS\_ext |
| LocationQoS | 3GPP TS 29.572 [42] | Requested location QoS. | eLCS  MULTIQOS |
| MacAddr48 | 3GPP TS 29.571 [45] | MAC Address. | enNB  UEId\_retrieval |
| MinorLocationQoS | 3GPP TS 29.572 [42] | Minor Location QoS. | MULTIQOS |
| VelocityRequested | 3GPP TS 29.572 [42] | Velocity of the target UE requested. | eLCS |
| PatchItem | 3GPP TS 29.571 [45] | Contains the list of changes to be made to a resource according to the JSON PATCH format specified in IETF RFC 6902 [67]. |  |
| PduSessionInformation | 3GPP TS 29.523 [70] | Represents PDU session identification information. | AppDetection\_5G |
| Pei | 3GPP TS 29.571 [45] | Represents a PEI. |  |
| PositioningMethod | 3GPP TS 29.572 [42] | Identifies the positioning method used to obtain the location estimate of the UE. | eLCS |
| RangeDirection | 3GPP TS 29.572 [42] | Represents the range and direction between two points. | Ranging\_SL |
| RangingSlResult | 3GPP TS 29.572 [42] | Represents the requested result type for ranging and sidelink positioning | Ranging\_SL |
| RelatedUE | 3GPP TS 29.572 [42] | Represents information on the related UE for ranging and sidelink positioning | Ranging\_SL |
| SACEventStatus | 3GPP TS 29.571 [45] | Contains the network slice status information related to network slice admission control. | NSAC |
| SACInfo | 3GPP TS 29.571 [45] | Represents network slice admission control information to control the triggering of notifications or convey network slice status information. | NSAC |
| Snssai | 3GPP TS 29.571 [45] | Contains a S-NSSAI. | NSAC  Session\_Management\_Enhancement  UEId\_retrieval  AppDetection\_5G |
| SupportedFeatures | 3GPP TS 29.571 [45] | Used to negotiate the applicability of the optional features defined in table 5.3.4-1. |  |
| ServiceIdentiy | 3GPP TS 29.515 [65] | Service identity. | eLCS |
| SupportedGADShapes | 3GPP TS 29.572 [42] | Supported Geographical Area Description shapes. | eLCS |
| UcPurpose | 3GPP TS 29.503 [63] | Represents the purpose of a user consent. | DataTransfer |
| Uinteger | 3GPP TS 29.571 [45] | Represents an unsigned Integer. |  |
| Uri | 5.2.1.3.2 | Represents a URI. | UserConsentRevocation |
| UserLocation | 3GPP TS 29.571 [6] | Represents a user location. | enNB1 |
| VelocityEstimate | 3GPP TS 29.572 [42] | UE velocity, if requested and available. | eLCS  Ranging\_SL |

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

##### 5.3.2.3.5 Type: LocationInfo

This data type represents the user location information which is sent from the SCEF to the SCS/AS.

Table 5.3.2.3.5-1: Definition of LocationInfo data Type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description | Applicability |
| ageOfLocationInfo | DurationMin | 0..1 | Indicates the elapsed time since the last network contact of the UE.  Refer to the Age-Of-Location-Information AVP as defined in clause 7.3.126 of 3GPP TS 29.272 [33]. |  |
| cellId | string | 0..1 | Indicates the Cell Global Identification of the user which identifies the cell the UE is registered.  Refer to the Cell-Global-Identity AVP or E-UTRAN-Cell-Global-Identity AVP as defined in clause 7.3.119 or clause 7.3.117 of 3GPP TS 29.272 [33].  (NOTE 2) |  |
| enodeBId | string | 0..1 | Indicates the eNodeB in which the UE is currently located.  Refer to the eNodeB-ID AVP or Extended-eNodeB-ID AVP as defined in clause 7.3.198 or clause 7.3.218 of 3GPP TS 29.272 [33]. |  |
| routingAreaId | string | 0..1 | Identifies the Routing Area Identity of the user where the UE is located.  Refer to the Routing-Area-Identity AVP as defined in clause 7.3.120 of 3GPP TS 29.272 [33]. |  |
| trackingAreaId | string | 0..1 | Identifies the Tracking Area Identity of the user where the UE is located.  Refer to the Tracking-Area-Identity AVP as defined in clause 7.3.118 of 3GPP TS 29.272 [33].  (NOTE 3) |  |
| plmnId | string | 0..1 | Identifies the PLMN Identity of the user where the UE is located.  Refer to the Visited-PLMN-Id AVP as defined in clause 7.3.9 of 3GPP TS 29.272 [33]. |  |
| twanId | string | 0..1 | Identifies the TWAN Identity of the user where the UE is located. |  |
| userLocation | UserLocation | 0..1 | Contains UE location information.  (NOTE 4) | enNB1 |
| geographicArea | GeographicArea | 0..1 | Identifies a geographic area of the user where the UE is located. |  |
| civicAddress | CivicAddress | 0..1 | The civic address of the target UE. | eLCS |
| positionMethod | PositioningMethod | 0..1 | Identifies the positioning method used to obtain the location estimate of the UE, if it is available at the LCS server and if needed. | eLCS |
| qosFulfilInd | AccuracyFulfilmentIndicator | 0..1 | Represents whether the requested accuracy is fulfilled or not.  (NOTE 1) | eLCS |
| ueVelocity | VelocityEstimate | 0..1 | UE velocity, if requested and available | eLCS |
| ldrType | LdrType | 0..1 | The IE may be included to indicate the type of event that triggers event notification. | eLCS |
| achievedQos | MinorLocationQoS | 0..1 | When present, this IE shall contain the achieved Location QoS Accuracy of the estimated location.  This IE shall be present if received. | MULTIQOS |
| relAppLayerId | ApplicationlayerId | 0..1 | Identifies the application layer ID of the related UE for ranging and sidelink positioning. | Ranging\_SL |
| rangeDirection | RangeDirection | 0..1 | Contains the range and direction information. | Ranging\_SL |
| twoDRelLoc | 2DRelativeLocation | 0..1 | Contains the 2D relative location information. | Ranging\_SL |
| threeDRelLoc | 3DRelativeLocation | 0..1 | Contains the 3D relative location information. | Ranging\_SL |
| relVelocity | VelocityEstimate | 0..1 | Contains the UE velocity relative to the UE identified via the "relAppLayerId" attribute. | Ranging\_SL |
| upCumEvtRep | UpCumEvtRep | 0..1 | Contains the cumulative event report for events reported via user plane. | eLCS\_en |
| localLocationEstimate | LocalArea | 0..1 | Contains a local area in a geographical reference system.  May be included only when the value of "supportedGADShapes" attribute contains "LOCAL\_2D\_POINT\_UNCERTAINTY\_ELLIPSE" and/or  "LOCAL\_3D\_POINT\_UNCERTAINTY\_ELLIPSOID" in the subscription request. | eLCS\_ext |
| NOTE 1: For the eLCS feature, if "reportingLocEstInd" attribute is set to false or omitted during the monitoring event request, the location estimation information shall not be included. Otherwise, if the "reportingLocEstInd" attribute is set to true, and  - if the "qosFulfilInd" attribute is set to "REQUESTED\_ACCURACY\_FULFILLED", the location estimate information may be included if the "lcsQosClass" attribute within the "locQoS" attribute is set to "BEST\_EFFORT"; or  - if the "qosFulfilInd" attribute is set to "REQUESTED\_ACCURACY\_NOT\_FULFILLED", the location estimate shall not be included if the "lcsQosClass" attribute within "locQoS" attribute is set to "ASSURED".  NOTE 2: For NEF, the context of the property shall refer to the Ecgi or Ncgi data type as defined in clause 5.4.4.5 or clause 5.4.4.6 of 3GPP TS 29.571 [45].  NOTE 3: For NEF, the context of the property shall refer to the Tai data type as defined in clause 5.4.4 of 3GPP TS 29.571 [45]].  NOTE 4: When the "enNB1" feature is supported, the "userLocation" attribute may be provided instead of the "ageOfLocationInfo", "cellId", "enodeBId", "routingAreaId", "trackingAreaId", "plmnId" and "twanId" attributes, when applicable. | | | | |

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

### 5.3.4 Used Features

The table below defines the features applicable to the MonitoringEvent API. Those features are negotiated as described in clause 5.2.7.

Table 5.3.4-1: Features used by MonitoringEvent API

|  |  |  |
| --- | --- | --- |
| Feature Number | Feature | Description |
| 1 | Loss\_of\_connectivity\_notification | The SCS/AS is notified when the 3GPP network detects that the UE is no longer reachable for signalling or user plane communication |
| 2 | Ue-reachability\_notification | The SCS/AS is notified when the UE becomes reachable for sending either SMS or downlink data to the UE |
| 3 | Location\_notification | The SCS/AS is notified of the current location or the last known location of the UE |
| 4 | Change\_of\_IMSI\_IMEI\_association\_notification | The SCS/AS is notified when the association of an ME (IMEI(SV)) that uses a specific subscription (IMSI) is changed |
| 5 | Roaming\_status\_notification | The SCS/AS is notified when the UE's roaming status changes |
| 6 | Communication\_failure\_notification | The SCS/AS is notified of communication failure events |
| 7 | Availability\_after\_DDN\_failure\_notification | The SCS/AS is notified when the UE has become available after a DDN failure |
| 8 | Number\_of\_UEs\_in\_an\_area\_notification | The SCS/AS is notified the number of UEs present in a given geographic area  The feature supports pre-5G (e.g. 4G) requirement. |
| 9 | Notification\_websocket | The delivery of notifications over Websocket is supported according to clause 5.2.5.4. This feature requires that the Notification\_test\_event featute is also supported. |
| 10 | Notification\_test\_event | The testing of notification connection is supported according to clause 5.2.5.3. |
| 11 | Subscription\_modification | Modifications of an individual subscription resource. |
| 12 | Number\_of\_UEs\_in\_an\_area\_notification\_5G | The AF is notified the number of UEs present in a given geographic area.  The feature supports the 5G requirement. This feature may only be supported in 5G. |
| 13 | Pdn\_connectivity\_status | The SCS/AS requests to be notified when the 3GPP network detects that the UE’s PDN connection is set up or torn down. |
| 14 | Downlink\_data\_delivery\_status\_5G | The AF requests to be notified when the 3GPP network detects that the downlink data delivery status is changed. The feature is not applicable to pre-5G. |
| 15 | Availability\_after\_DDN\_failure\_notification\_enhancement | The AF is notified when the UE has become available after a DDN failure and the traffic matches the packet filter provided by the AF. The feature is not applicable to pre-5G. |
| 16 | Enhanced\_param\_config | This feature supports the co-existence of multiple event configurations for target UE(s) if there are parameters affecting periodic RAU/TAU timer and/or Active Time. Supporting this feature also requires the support of feature number 1 or 2. |
| 17 | API\_support\_capability\_notification | The SCS/AS is notified of the availability of support of service APIs. This feature is only applicable in interworking SCEF+NEF scenario. |
| 18 | eLCS | This feature supports the enhanced location exposure service (e.g. location information preciser than cell level).  The feature is not applicable to pre-5G (e.g. 4G). |
| 19 | NSAC | This feature controls the support of the Network Slice Admission Control (NSAC) functionalities.  The feature is not applicable to pre-5G (e.g. 4G). |
| 20 | Partial\_group\_modification | This feature supports the partial cancellation and/or partial addition to the group member(s) within the grouped event monitoring subscription. |
| 21 | UAV | The SCS/AS requests to be notified of the UAV presence status in a specific geographic area. This feature is only applicable in interworking SCEF+NEF scenario, or standalone 5G scenario.  This feature requires that Number\_of\_UEs\_in\_an\_area\_notification and Number\_of\_UEs\_in\_an\_area\_notification\_5G features are also supported. |
| 22 | MULTIQOS | This feature indicates the support for "Multiple QoS Class" which enables to support more than one Location QoS during LCS procedures.  This feature requires that the eLCS feature is also supported. |
| 23 | Session\_Management\_Enhancement | This feature supports Session Management enhancement with requested DNN and/or S-NSSAI. This feature requires that the Pdn\_connectivity\_status feature or Downlink\_data\_delivery\_status\_5G feature is also supported. |
| 24 | enNB | Indicates the support of enhancements to the northbound interfaces. |
| 25 | EDGEAPP | This feature controls the support of EDGE applications related functionalities (e.g. support the civic address as a possible location granularity).  The feature is not applicable to pre-5G (e.g. 4G). |
| 26 | UEId\_retrieval | This feature supports AF specific UE ID retrieval which is not applicable to pre-5G (e.g. 4G). |
| 27 | UserConsentRevocation | This feature indicates the support of user consent revocation management and enforcement (e.g. stop data processing) for EDGE applications. |
| 28 | Subscription\_Patch | This feature indicates the support of the PATCH method for partial modification of an existing event monitoring subscription. |
| 29 | GMEC | This feature indicates the support of Generic Group Management, Exposure and Communication Enhancements.  The following functionalities are supported:  - Support Group Members List Change event reporting.  This feature is not applicable to pre-5G (e.g., 4G). |
| 30 | Loss\_of\_connectivity\_notification\_5G | The AF is notified when the 3GPP network detects that the UE is no longer reachable for signalling or user plane communication.  This feature is not applicable to pre-5G (e.g. 4G). |
| 31 | enNB1 | Indicates the support of enhancements to this northbound API in Rel-18. |
| 32 | AppDetection\_5G | This feature indicates the support of Application traffic detection (e.g., start and stop) monitoring event.  This feature is not applicable to pre-5G (e.g., 4G). |
| 33 | enNB1\_5G | Indicates the support of enhancements to this northbound API for 5G in Rel-18.  This feature is not applicable to pre-5G (e.g. 4G). |
| 34 | eLCS\_en | This feature indicates the support of the enhancements to the eLCS feature.  The following functionalities are supported:  - Support the error handling related to the area event reporting for the case where the requested location area is not allowed.  - Support location reporting over user plane between UE and AF.  This feature is not applicable to pre-5G (e.g. 4G). |
| 35 | eNSAC | This feature indicates the support of the enhancements to the NSAC feature.  The following functionalities are supported:  - Support the status notification of the current number of UEs with at least one PDU session/PDN connection.This feature is not applicable to pre-5G (e.g. 4G). |
| 36 | Ranging\_SL | This feature indicates the support of the ranging and sidelink positioning functionality.  The following functionalities are supported:  - Support the ranging and sidelink input/output parameters.  This feature requires the support of eLCS feature.  This feature is not applicable to pre-5G (e.g. 4G). |
| 37 | DataTransfer | This feature indicates the support of Session inactivity time, Traffic volume and UL/DL data rate events for data transfer and measurement.  This feature is not applicable to pre-5G (e.g. 4G). |
| 38 | RVAS\_5G | This feature indicates the support of the 5G Roaming Value-Added Services (RVAS).  The following functionalities are supported:  - Support the reporting of the equipment and subscription identifers as part of the roaming status report in order to support the RVAS Welcome SMS functionality.  This feature requires the support of "Roaming\_status\_notification" feature.  This feature is not applicable to pre-5G (e.g., 4G). |
| 39 | eLCS\_ext | This feature indicates the support of the extension to the eLCS feature.  The following functionalities are supported:  - Support the location reporting in terms of local geographical co-ordinates.  Supporting this feature also requires the support of eLCS feature.  This feature is not applicable to pre-5G (e.g. 4G). |
| Feature: A short name that can be used to refer to the bit and to the feature, e.g. "Notification".  Description: A clear textual description of the feature. | | |

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

# A.3 MonitoringEvent API

openapi: 3.0.0

info:

title: 3gpp-monitoring-event

version: 1.4.0-alpha.1

description: |

API for Monitoring Event.

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externalDocs:

description: 3GPP TS 29.122 V19.0.0 T8 reference point for Northbound APIs

url: 'https://www.3gpp.org/ftp/Specs/archive/29\_series/29.122/'

security:

- {}

- oAuth2ClientCredentials: []

servers:

- url: '{apiRoot}/3gpp-monitoring-event/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 5.2.4 of 3GPP TS 29.122.

paths:

/{scsAsId}/subscriptions:

get:

summary: Read all or queried active subscriptions for the SCS/AS.

operationId: FetchAllMonitoringEventSubscriptions

tags:

- Monitoring Event Subscriptions

parameters:

- name: scsAsId

in: path

description: Identifier of the SCS/AS

required: true

schema:

type: string

- name: ip-addrs

in: query

description: The IP address(es) of the requested UE(s).

required: false

content:

application/json:

schema:

type: array

items:

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

minItems: 1

- name: ip-domain

in: query

description: >

The IPv4 address domain identifier. The attribute may only be provided if IPv4 address

is included in the ip-addrs query parameter.

required: false

schema:

type: string

- name: mac-addrs

in: query

description: The MAC address(es) of the requested UE(s).

required: false

schema:

type: array

items:

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

minItems: 1

responses:

'200':

description: OK (Successful get all or queried active subscriptions for the SCS/AS)

content:

application/json:

schema:

type: array

items:

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

minItems: 0

description: Monitoring event subscriptions

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

post:

summary: Creates a new subscription resource for monitoring event notification.

operationId: CreateMonitoringEventSubscription

tags:

- Monitoring Event Subscriptions

parameters:

- name: scsAsId

in: path

description: Identifier of the SCS/AS

required: true

schema:

type: string

requestBody:

description: Subscription for notification about monitoring event

required: true

content:

application/json:

schema:

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

callbacks:

notificationDestination:

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

post:

requestBody: # contents of the callback message

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content (successful notification)

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

UserConsentRevocationNotif:

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

post:

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content (successful notification).

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

responses:

'201':

description: Created (Successful creation of subscription)

content:

application/json:

schema:

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

headers:

Location:

description: 'Contains the URI of the newly created resource'

required: true

schema:

type: string

'200':

description: The operation is successful and immediate report is included.

content:

application/json:

schema:

oneOf:

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

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

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

/{scsAsId}/subscriptions/{subscriptionId}:

get:

summary: Read an active subscriptions for the SCS/AS and the subscription Id.

operationId: FetchIndMonitoringEventSubscription

tags:

- Individual Monitoring Event Subscription

parameters:

- name: scsAsId

in: path

description: Identifier of the SCS/AS

required: true

schema:

type: string

- name: subscriptionId

in: path

description: Identifier of the subscription resource

required: true

schema:

type: string

responses:

'200':

description: OK (Successful get the active subscription)

content:

application/json:

schema:

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

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

put:

summary: Updates/replaces an existing subscription resource.

operationId: UpdateIndMonitoringEventSubscription

tags:

- Individual Monitoring Event Subscription

parameters:

- name: scsAsId

in: path

description: Identifier of the SCS/AS

required: true

schema:

type: string

- name: subscriptionId

in: path

description: Identifier of the subscription resource

required: true

schema:

type: string

requestBody:

description: Parameters to update/replace the existing subscription

required: true

content:

application/json:

schema:

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

responses:

'200':

description: OK (Successful update of the subscription)

content:

application/json:

schema:

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

'204':

description: No Content (Successful update of the subscription)

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

patch:

summary: Modifies an existing subscription of monitoring event.

operationId: ModifyIndMonitoringEventSubscription

tags:

- Individual Monitoring Event Subscription

parameters:

- name: scsAsId

in: path

description: Identifier of the SCS/AS.

required: true

schema:

type: string

- name: subscriptionId

in: path

description: Identifier of the subscription resource.

required: true

schema:

type: string

requestBody:

description: >

This is used for PATCH request for partial cancellation and/or partial addition of certain

UE(s) within an active group.

required: true

content:

application/json-patch+json:

schema:

type: array

items:

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

minItems: 1

responses:

'204':

description: The resource was modified successfully.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

delete:

summary: Deletes an already existing monitoring event subscription.

operationId: DeleteIndMonitoringEventSubscription

tags:

- Individual Monitoring Event Subscription

parameters:

- name: scsAsId

in: path

description: Identifier of the SCS/AS

required: true

schema:

type: string

- name: subscriptionId

in: path

description: Identifier of the subscription resource

required: true

schema:

type: string

responses:

'204':

description: No Content (Successful deletion of the existing subscription)

'200':

description: OK (Successful deletion of the existing subscription)

content:

application/json:

schema:

type: array

items:

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

minItems: 1

description: >

The subscription was terminated successfully, the monitoring event report(s)

shall be included if received.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

MonitoringEventSubscription:

description: Represents a subscription to event(s) monitoring.

type: object

properties:

self:

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

supportedFeatures:

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

mtcProviderId:

type: string

description: Identifies the MTC Service Provider and/or MTC Application.

appIds:

type: array

items:

type: string

description: Identifies the Application Identifier(s)

minItems: 1

externalId:

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

msisdn:

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

addedExternalIds:

type: array

items:

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

minItems: 1

description: Indicates the added external Identifier(s) within the active group.

addedMsisdns:

type: array

items:

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

minItems: 1

description: Indicates the added MSISDN(s) within the active group.

excludedExternalIds:

type: array

items:

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

minItems: 1

description: Indicates cancellation of the external Identifier(s) within the active group.

excludedMsisdns:

type: array

items:

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

minItems: 1

description: Indicates cancellation of the MSISDN(s) within the active group.

externalGroupId:

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

addExtGroupId:

type: array

items:

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

minItems: 2

ipv4Addr:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Ipv4Addr'

ipv6Addr:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Ipv6Addr'

dnn:

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

notificationDestination:

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

requestTestNotification:

type: boolean

description: >

Set to true by the SCS/AS to request the SCEF to send a test notification

as defined in clause 5.2.5.3. Set to false by the SCS/AS indicates not request SCEF to

send a test notification, default false if omitted otherwise.

websockNotifConfig:

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

monitoringType:

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

maximumNumberOfReports:

type: integer

minimum: 1

description: >

Identifies the maximum number of event reports to be generated by the HSS, MME/SGSN

as specified in clause 5.6.0 of 3GPP TS 23.682.

monitorExpireTime:

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

repPeriod:

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

groupReportGuardTime:

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

maximumDetectionTime:

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

reachabilityType:

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

maximumLatency:

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

maximumResponseTime:

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

suggestedNumberOfDlPackets:

type: integer

minimum: 0

description: >

If "monitoringType" is "UE\_REACHABILITY", this parameter may be included to identify

the number of packets that the serving gateway shall buffer in case that

the UE is not reachable.

idleStatusIndication:

type: boolean

description: >

If "monitoringType" is set to "UE\_REACHABILITY" or "AVAILABILITY\_AFTER\_DDN\_FAILURE",

this parameter may be included to indicate the notification of when a UE, for which PSM

is enabled, transitions into idle mode. "true" indicates enabling of notification;

"false" indicate no need to notify. Default value is "false" if omitted.

locationType:

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

accuracy:

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

minimumReportInterval:

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

maxRptExpireIntvl:

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

samplingInterval:

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

reportingLocEstInd:

type: boolean

description: >

Indicates whether to request the location estimate for event reporting. If

"monitoringType" is "LOCATION\_REPORTING", this parameter may be included to indicate

whether event reporting requires the location information. If set to true, the location

estimation information shall be included in event reporting. If set to "false",

indicates the location estimation information shall not be included in event reporting.

Default "false" if omitted.

linearDistance:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LinearDistance'

locQoS:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LocationQoS'

svcId:

$ref: 'TS29515\_Ngmlc\_Location.yaml#/components/schemas/ServiceIdentity'

ldrType:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LdrType'

velocityRequested:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/VelocityRequested'

maxAgeOfLocEst:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/AgeOfLocationEstimate'

locTimeWindow:

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

supportedGADShapes:

type: array

items:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/SupportedGADShapes'

codeWord:

$ref: 'TS29515\_Ngmlc\_Location.yaml#/components/schemas/CodeWord'

upLocRepIndAf:

description: >

Indicates whether location reporting over user plane is requested or not.

"true" indicates the location reporting over user plane is requested.

"false" indicates the location reporting over user plane is not requested.

Default value is "false" if omitted.

type: boolean

default: false

upLocRepAddrAf:

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

associationType:

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

plmnIndication:

type: boolean

description: >

If "monitoringType" is "ROAMING\_STATUS", this parameter may be included to indicate the

notification of UE's Serving PLMN ID. Value "true" indicates enabling of notification;

"false" indicates disabling of notification. Default value is "false" if omitted.

locationArea:

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

locationArea5G:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

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

apiNames:

type: array

items:

type: string

minItems: 1

monitoringEventReport:

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

snssai:

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

tgtNsThreshold:

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

nsRepFormat:

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

afServiceId:

type: string

immediateRep:

type: boolean

description: >

Indicates whether an immediate reporting is requested or not.

"true" indicate an immediate reporting is requested.

"false" indicate an immediate reporting is not requested.

Default value "false" if omitted.

uavPolicy:

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

sesEstInd:

type: boolean

description: >

Set to true by the SCS/AS so that only UAV's with "PDU session established for DNN(s)

subject to aerial service" are to be listed in the Event report. Set to false or default

false if omitted otherwise.

subType:

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

addnMonTypes:

type: array

items:

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

addnMonEventReports:

type: array

items:

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

ueIpAddr:

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

ueMacAddr:

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

revocationNotifUri:

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

reqRangSlRes:

type: array

items:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/RangingSlResult'

minItems: 1

relatedUes:

type: object

additionalProperties:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/RelatedUe'

minProperties: 1

description: >

Contains a list of the related UE(s) for the ranging and sidelink positioning and the

corresponding information.

The key of the map shall be a any unique string set to the value.

required:

- notificationDestination

- monitoringType

anyOf:

- required: [maximumNumberOfReports]

- required: [monitorExpireTime]

MonitoringNotification:

description: Represents an event monitoring notification.

type: object

properties:

subscription:

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

configResults:

type: array

items:

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

minItems: 1

description: Each element identifies a notification of grouping configuration result.

monitoringEventReports:

type: array

items:

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

minItems: 1

description: Monitoring event reports.

addedExternalIds:

type: array

items:

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

minItems: 1

description: >

Identifies the added external Identifier(s) within the active group via

the "externalGroupId" attribute within the MonitoringEventSubscription data type.

addedMsisdns:

type: array

items:

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

minItems: 1

description: >

Identifies the added MSISDN(s) within the active group via the "externalGroupId"

attribute within the MonitoringEventSubscription data type.

cancelExternalIds:

type: array

items:

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

minItems: 1

description: >

Identifies the cancelled external Identifier(s) within the active group via

the "externalGroupId" attribute within the MonitoringEventSubscription data type.

cancelMsisdns:

type: array

items:

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

minItems: 1

description: >

Identifies the cancelled MSISDN(s) within the active group via the "externalGroupId"

attribute within the MonitoringEventSubscription data type.

cancelInd:

type: boolean

description: >

Indicates whether to request to cancel the corresponding monitoring subscription.

Set to false or omitted otherwise.

appliedParam:

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

required:

- subscription

MonitoringEventReport:

description: Represents an event monitoring report.

type: object

properties:

imeiChange:

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

externalId:

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

appId:

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

pduSessInfo:

$ref: 'TS29523\_Npcf\_EventExposure.yaml#/components/schemas/PduSessionInformation'

idleStatusInfo:

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

locationInfo:

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

locFailureCause:

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

lossOfConnectReason:

type: integer

description: >

If "monitoringType" is "LOSS\_OF\_CONNECTIVITY", this parameter shall be included

if available to identify the reason why loss of connectivity is reported.

See also 3GPP TS 29.336 clause 8.4.58 for pre-5G.

unavailPerDur:

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

maxUEAvailabilityTime:

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

msisdn:

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

monitoringType:

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

uePerLocationReport:

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

plmnId:

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

reachabilityType:

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

roamingStatus:

type: boolean

description: >

If "monitoringType" is "ROAMING\_STATUS", this parameter shall be set to "true"

if the new serving PLMN is different from the HPLMN. Set to false or

omitted otherwise.

pei:

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

failureCause:

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

eventTime:

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

pdnConnInfoList:

type: array

items:

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

minItems: 1

dddStatus:

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

dddTrafDescriptor:

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

maxWaitTime:

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

apiCaps:

type: array

items:

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

minItems: 0

nSStatusInfo:

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

afServiceId:

type: string

servLevelDevId:

type: string

description: >

If "monitoringType" is "AREA\_OF\_INTEREST", this parameter may be included

to identify the UAV.

uavPresInd:

type: boolean

description: >

If "monitoringType" is "AREA\_OF\_INTEREST", this parameter shall be set to true

if the specified UAV is in the monitoring area. Set to false or omitted otherwise.

groupMembListChanges:

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

sessInactiveTime:

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

trafficInfo:

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

required:

- monitoringType

MonitoringEventReports:

description: Represents a set of event monitoring reports.

type: object

properties:

monitoringEventReports:

type: array

items:

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

minItems: 1

required:

- monitoringEventReports

IdleStatusInfo:

description: Represents the information relevant to when the UE transitions into idle mode.

type: object

properties:

activeTime:

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

edrxCycleLength:

format: float

type: number

minimum: 0

suggestedNumberOfDlPackets:

type: integer

minimum: 0

description: >

Identifies the number of packets shall be buffered in the serving gateway.

It shall be present if the idle status indication is requested by the SCS/AS

with "idleStatusIndication" in the "monitoringEventSubscription" sets to "true".

idleStatusTimestamp:

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

periodicAUTimer:

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

UePerLocationReport:

description: Represents the number of UEs found at the indicated location.

type: object

properties:

ueCount:

type: integer

minimum: 0

description: Identifies the number of UEs.

externalIds:

type: array

items:

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

minItems: 1

description: Each element uniquely identifies a user.

msisdns:

type: array

items:

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

minItems: 1

description: Each element identifies the MS internal PSTN/ISDN number allocated for a UE.

servLevelDevIds:

type: array

items:

type: string

minItems: 1

description: Each element uniquely identifies a UAV.

required:

- ueCount

LocationInfo:

description: Represents the user location information.

type: object

properties:

ageOfLocationInfo:

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

cellId:

type: string

description: >

Indicates the Cell Global Identification of the user which identifies the cell the UE

is registered.

enodeBId:

type: string

description: Indicates the eNodeB in which the UE is currently located.

routingAreaId:

type: string

description: Identifies the Routing Area Identity of the user where the UE is located.

trackingAreaId:

type: string

description: Identifies the Tracking Area Identity of the user where the UE is located.

plmnId:

type: string

description: Identifies the PLMN Identity of the user where the UE is located.

twanId:

type: string

description: Identifies the TWAN Identity of the user where the UE is located.

userLocation:

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

geographicArea:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/GeographicArea'

civicAddress:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/CivicAddress'

positionMethod:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/PositioningMethod'

qosFulfilInd:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/AccuracyFulfilmentIndicator'

ueVelocity:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/VelocityEstimate'

ldrType:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LdrType'

achievedQos:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/MinorLocationQoS'

relAppLayerId:

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

rangeDirection:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/RangeDirection'

twoDRelLoc:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/2DRelativeLocation'

threeDRelLoc:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/3DRelativeLocation'

relVelocity:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/VelocityEstimate'

upCumEvtRep:

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

localLocationEstimate:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LocalArea'

FailureCause:

description: Represents the reason of communication failure.

type: object

properties:

bssgpCause:

type: integer

description: >

Identifies a non-transparent copy of the BSSGP cause code. Refer to 3GPP TS 29.128.

causeType:

type: integer

description: Identify the type of the S1AP-Cause. Refer to 3GPP TS 29.128.

gmmCause:

type: integer

description: >

Identifies a non-transparent copy of the GMM cause code. Refer to 3GPP TS 29.128.

ranapCause:

type: integer

description: >

Identifies a non-transparent copy of the RANAP cause code. Refer to 3GPP TS 29.128.

ranNasCause:

type: string

description: >

Indicates RAN and/or NAS release cause code information, TWAN release cause code

information or untrusted WLAN release cause code information. Refer to 3GPP TS 29.214.

s1ApCause:

type: integer

description: >

Identifies a non-transparent copy of the S1AP cause code. Refer to 3GPP TS 29.128.

smCause:

type: integer

description: >

Identifies a non-transparent copy of the SM cause code. Refer to 3GPP TS 29.128.

PdnConnectionInformation:

description: Represents the PDN connection information of the UE.

type: object

properties:

status:

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

apn:

type: string

description: >

Identify the APN, it is depending on the SCEF local configuration whether or

not this attribute is sent to the SCS/AS.

pdnType:

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

interfaceInd:

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

ipv4Addr:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Ipv4Addr'

ipv6Addrs:

type: array

items:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Ipv6Addr'

minItems: 1

macAddrs:

type: array

items:

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

minItems: 1

required:

- status

- pdnType

AppliedParameterConfiguration:

description: Represents the parameter configuration applied in the network.

type: object

properties:

externalIds:

type: array

items:

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

minItems: 1

description: Each element uniquely identifies a user.

msisdns:

type: array

items:

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

minItems: 1

description: Each element identifies the MS internal PSTN/ISDN number allocated for a UE.

maximumLatency:

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

maximumResponseTime:

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

maximumDetectionTime:

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

ApiCapabilityInfo:

description: Represents the availability information of supported API.

type: object

properties:

apiName:

type: string

suppFeat:

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

required:

- apiName

- suppFeat

UavPolicy:

description: >

Represents the policy information included in the UAV presence monitoring request.

type: object

properties:

uavMoveInd:

type: boolean

revokeInd:

type: boolean

required:

- uavMoveInd

- revokeInd

ConsentRevocNotif:

description: >

Represents the user consent revocation information conveyed in a user consent

revocation notification.

type: object

properties:

subscriptionId:

type: string

consentsRevoked:

type: array

items:

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

minItems: 1

required:

- subscriptionId

- consentsRevoked

ConsentRevoked:

description: Represents the information related to a revoked user consent.

type: object

properties:

ucPurpose:

$ref: 'TS29503\_Nudm\_SDM.yaml#/components/schemas/UcPurpose'

externalId:

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

msisdn:

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

required:

- ucPurpose

oneOf:

- required: [externalId]

- required: [msisdn]

GroupMembListChanges:

description: Represents information on the change(s) to a group's members list.

type: object

properties:

addedUEs:

type: array

items:

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

minItems: 1

removedUEs:

type: array

items:

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

minItems: 1

anyOf:

- required: [addedUEs]

- required: [removedUEs]

UpLocRepAddrAfRm:

description: Represents the user plane addressing information.

type: object

properties:

ipv4Addrs:

type: array

items:

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

minItems: 1

ipv6Addrs:

type: array

items:

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

minItems: 1

fqdn:

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

nullable: true

anyOf:

- required: [ipv4Addrs]

- required: [ipv6Addrs]

- required: [fqdn]

UpCumEvtRep:

description: Represents the cumulative event report.

type: object

properties:

upLocRepStat:

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

#

# ENUMS

#

MonitoringType:

anyOf:

- type: string

enum:

- LOSS\_OF\_CONNECTIVITY

- UE\_REACHABILITY

- LOCATION\_REPORTING

- CHANGE\_OF\_IMSI\_IMEI\_ASSOCIATION

- ROAMING\_STATUS

- COMMUNICATION\_FAILURE

- AVAILABILITY\_AFTER\_DDN\_FAILURE

- NUMBER\_OF\_UES\_IN\_AN\_AREA

- PDN\_CONNECTIVITY\_STATUS

- DOWNLINK\_DATA\_DELIVERY\_STATUS

- API\_SUPPORT\_CAPABILITY

- NUM\_OF\_REGD\_UES

- NUM\_OF\_ESTD\_PDU\_SESSIONS

- AREA\_OF\_INTEREST

- GROUP\_MEMBER\_LIST\_CHANGE

- APPLICATION\_START

- APPLICATION\_STOP

- SESSION\_INACTIVITY\_TIME

- TRAFFIC\_VOLUME

- UL\_DL\_DATA\_RATE

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Represents a monitoring event type.

Possible values are

- LOSS\_OF\_CONNECTIVITY: The SCS/AS requests to be notified when the 3GPP network detects

that the UE is no longer reachable for signalling or user plane communication

- UE\_REACHABILITY: The SCS/AS requests to be notified when the UE becomes reachable for

sending either SMS or downlink data to the UE

- LOCATION\_REPORTING: The SCS/AS requests to be notified of the current location or

the last known location of the UE

- CHANGE\_OF\_IMSI\_IMEI\_ASSOCIATION: The SCS/AS requests to be notified when the association

of an ME (IMEI(SV)) that uses a specific subscription (IMSI) is changed

- ROAMING\_STATUS: The SCS/AS queries the UE's current roaming status and requests to get

notified when the status changes

- COMMUNICATION\_FAILURE: The SCS/AS requests to be notified of communication failure events

- AVAILABILITY\_AFTER\_DDN\_FAILURE: The SCS/AS requests to be notified when the UE has become

available after a DDN failure

- NUMBER\_OF\_UES\_IN\_AN\_AREA: The SCS/AS requests to be notified the number of UEs in a given

geographic area

- PDN\_CONNECTIVITY\_STATUS: The SCS/AS requests to be notified when the 3GPP network detects

that the UE’s PDN connection is set up or torn down

- DOWNLINK\_DATA\_DELIVERY\_STATUS: The AF requests to be notified when the 3GPP network

detects that the downlink data delivery status is changed.

- API\_SUPPORT\_CAPABILITY: The SCS/AS requests to be notified of the availability of support

of service APIs.

- NUM\_OF\_REGD\_UES: The AF requests to be notified of the current number of registered UEs

for a network slice.

- NUM\_OF\_ESTD\_PDU\_SESSIONS: The AF requests to be notified of the current number of

established PDU Sessions for a network slice.

- AREA\_OF\_INTEREST: The SCS/AS requests to be notified when the UE(i.e. UAV) moves in or

out of the geographic area.

- GROUP\_MEMBER\_LIST\_CHANGE: The AF requests to be notified of the changes to a group members

list.

- APPLICATION\_START: The AF requests to be notified about the start of application traffic

has been detected.

- APPLICATION\_STOP: The AF requests to be notified about the stop of application traffic

has been detected.

- SESSION\_INACTIVITY\_TIME: The AF requests to be notified of session inactivity time of the

measured UE PDU Session.

- TRAFFIC\_VOLUME: The AF requests to be notified of traffic volume of the measured UE.

- UL\_DL\_DATA\_RATE: The AF requests to be notified of uplink and downlink data rate of the

measured UE.

ReachabilityType:

anyOf:

- type: string

enum:

- SMS

- DATA

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Represents a reachability type.

Possible values are

- SMS: The SCS/AS requests to be notified when the UE becomes reachable for sending SMS

to the UE

- DATA: The SCS/AS requests to be notified when the UE becomes reachable for sending

downlink data to the UE.

LocationType:

anyOf:

- type: string

enum:

- CURRENT\_LOCATION

- LAST\_KNOWN\_LOCATION

- CURRENT\_OR\_LAST\_KNOWN\_LOCATION

- INITIAL\_LOCATION

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Represents a location type.

Possible values are

- CURRENT\_LOCATION: The SCS/AS requests to be notified for current location

- LAST\_KNOWN\_LOCATION: The SCS/AS requests to be notified for last known location

- CURRENT\_OR\_LAST\_KNOWN\_LOCATION: The AF requests the current or last known location

- INITIAL\_LOCATION: The AF requests the initial location

AssociationType:

anyOf:

- type: string

enum:

- IMEI

- IMEISV

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Represents an IMEI or IMEISV to IMSI association.

Possible values are

- IMEI: The value shall be used when the change of IMSI-IMEI association shall be detected

- IMEISV: The value shall be used when the change of IMSI-IMEISV association shall be

detected

Accuracy:

anyOf:

- type: string

enum:

- CGI\_ECGI

- ENODEB

- TA\_RA

- PLMN

- TWAN\_ID

- GEO\_AREA

- CIVIC\_ADDR

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Represents a desired granularity of accuracy of the requested location information.

Possible values are

- CGI\_ECGI: The SCS/AS requests to be notified using cell level location accuracy.

- ENODEB: The SCS/AS requests to be notified using eNodeB level location accuracy.

- TA\_RA: The SCS/AS requests to be notified using TA/RA level location accuracy.

- PLMN: The SCS/AS requests to be notified using PLMN level location accuracy.

- TWAN\_ID: The SCS/AS requests to be notified using TWAN identifier level location accuracy.

- GEO\_AREA: The SCS/AS requests to be notified using the geographical area accuracy.

- CIVIC\_ADDR: The SCS/AS requests to be notified using the civic address accuracy.

PdnConnectionStatus:

anyOf:

- type: string

enum:

- CREATED

- RELEASED

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Represents the PDN connection status.

Possible values are

- CREATED: The PDN connection is created.

- RELEASED: The PDN connection is released.

PdnType:

anyOf:

- type: string

enum:

- IPV4

- IPV6

- IPV4V6

- NON\_IP

- ETHERNET

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Represents the PDN connection type.

Possible values are

- IPV4: PDN connection of IPv4 type.

- IPV6: PDN connection of IPv6 type.

- IPV4V6: PDN connection of IPv4v6 type.

- NON\_IP: PDN connection of non-IP type.

- ETHERNET: PDN connection of Ethernet type.

InterfaceIndication:

anyOf:

- type: string

enum:

- EXPOSURE\_FUNCTION

- PDN\_GATEWAY

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Represents the network entity used for data delivery towards the SCS/AS.

Possible values are

- EXPOSURE\_FUNCTION: SCEF is used for the PDN connection towards the SCS/AS.

- PDN\_GATEWAY: PDN gateway is used for the PDN connection towards the SCS/AS.

LocationFailureCause:

anyOf:

- type: string

enum:

- POSITIONING\_DENIED

- UNSUPPORTED\_BY\_UE

- NOT\_REGISTED\_UE

- UNSPECIFIED

- REQUESTED\_AREA\_NOT\_ALLOWED

- type: string

description: >

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

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

description: >

Represents the cause of location positioning failure.

Possible values are:

- POSITIONING\_DENIED: Positioning is denied.

- UNSUPPORTED\_BY\_UE: Positioning is not supported by UE.

- NOT\_REGISTED\_UE: UE is not registered.

- UNSPECIFIED: Unspecified.

- REQUESTED\_AREA\_NOT\_ALLOWED: The location request is rejected because the location area

requested by the AF for area event reporting is not allowed.

SubType:

anyOf:

- type: string

enum:

- AERIAL\_UE

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Represents a subscription type.

Possible values are

- AERIAL\_UE: The UE has Aerial subscription.

SACRepFormat:

anyOf:

- type: string

enum:

- NUMERICAL

- PERCENTAGE

- type: string

description: >

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

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

description: Indicates the NSAC reporting format.

\* \* \* \* End of changes \* \* \* \*