**3GPP TSG CT WG3 Meeting #138 *C3-246258***

**Orlando, US, 18 - 22 November, 2024 (Revision of C3-24xxxx)**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **29.122** | **CR** | **0891** | **rev** | **-** | **Current version:** | **19.0.0** |  |
|  |
| *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:***  |  Add IP domain in MonitoringEvent API |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | NBI19 |  | ***Date:*** | 2024-10-31 |
|  |  |  |  |  |
| ***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 canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | For event monitoring targeting individual UE with IPv4 address, two or more UEs may share the same private IPv4 address. It is needed to distinguish those UEs in monitoring configuration similar as IP domain was added in Chargeable Party API and QoS API, also in the query parameter of Monitoring API.Note: GET query parameter supports IP domain in Table 5.3.3.2.3.1-1 of TS 29.122 but the monitoring event subscription resource representation does not have any IP domain info. |
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| ***Summary of change:*** | Add IP domain associated with UE IPv4 address in MonitoringEventSubscription. |
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| ***Consequences if not approved:*** | Inaccurate event monitoring when two or more UEs sharing the same private IPv4 address in different IP domain. |
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| ***Clauses affected:*** | 5.3.2.1.2, 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 backward compatible feature in the OpenAPI file of MonitoringEvent API.The feature description in clause 5.3.4 is included in TS 29.122 CR 0895. |
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| ***This CR's revision history:*** |  |

**Additional discussion(if needed):**

**Proposed changes:**

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

##### 5.3.2.1.2 Type: MonitoringEventSubscription

This type represents a subscription to monitoring an event. The same structure is used in the subscription request and subscription response.

Table 5.3.2.1.2-1: Definition of type MonitoringEventSubscription

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| --- | --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description | Applicability (NOTE 3) |
| Self | Link | 0..1 | Link to the resource "Individual Monitoring Event Subscription". This parameter shall be supplied by the SCEF in HTTP responses. |  |
| supportedFeatures | SupportedFeatures | 0..1 | Used to negotiate the supported optional features of the API as described in clause 5.2.7.This attribute shall be provided in the POST request and in the response of successful resource creation. |  |
| mtcProviderId | string | 0..1 | Identifies the MTC Service Provider and/or MTC Application. (NOTE 7) |  |
| appIds | array(string) | 0..N | Contains the Application Identifier(s). (NOTE 16) | AppDetection\_5G |
| externalId | ExternalId | 0..1 | Identifies a user as defined in Clause 4.6.2 of 3GPP TS 23.682 [2].This attribute may also be present in a monitoring event subscription response message, if the "UEId\_retrieval" feature is supported and the corresponding request message includes the "ueIpAddr" attribute or the "ueMacAddr" attribute.(NOTE 1) (NOTE 5) |  |
| Msisdn | Msisdn | 0..1 | Identifies the MS internal PSTN/ISDN number allocated for a UE.(NOTE 1) (NOTE 5) |  |
| addedExternalIds | array(ExternalId) | 0..N | Indicates addition of the external Identifier(s) within the active group. | Partial\_group\_modification |
| addedMsisdns | array(Msisdn) | 0..N | Indicates addition of the MSISDN(s) within the active group. | Partial\_group\_modification |
| excludedExternalIds | array(ExternalId) | 0..N | Indicates cancellation of the external Identifier(s) within the active group. | Partial\_group\_modification |
| excludedMsisdns | array(Msisdn) | 0..N | Indicates cancellation of the MSISDN(s) within the active group. | Partial\_group\_modification |
| externalGroupId | ExternalGroupId | 0..1 | Identifies a user group as defined in Clause 4.6.2 of 3GPP TS 23.682 [2].(NOTE 1) (NOTE 6) |  |
| addExtGroupIds | array(ExternalGroupId) | 0..N | Identifies user groups as defined in Clause 4.6.2 of 3GPP TS 23.682 [2].(NOTE 1) (NOTE 6) | Number\_of\_UEs\_in\_an\_area\_notification, Number\_of\_UEs\_in\_an\_area\_notification\_5G |
| ipv4Addr | Ipv4Addr | 0..1 | Identifies the Ipv4 address.(NOTE 1) | Location\_notification,Communication\_failure\_notification |
| ipDomain | string | 0..1 | Contains the IPv4 address domain identifier. This could be public IPv4 address.The attribute may only be provided if the "ipv4Addr" attribute is present. | enNB2 |
| ipv6Addr | Ipv6Addr | 0..1 | Identifies the Ipv6 address.(NOTE 1) | Location\_notification,Communication\_failure\_notification |
| Dnn | Dnn | 0..1 | Identifies a DNN, a full DNN with both the Network Identifier and Operator Identifier, or a DNN with the Network Identifier only.This attribute shall be present when the "AppDetection\_5G" feature is supported and the "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "APPLICATION\_START" or "APPLICATION\_STOP".(NOTE 8) (NOTE 16) | Session\_Management\_Enhancement, UEId\_retrieval, AppDetection\_5G |
| notificationDestination | Link | 1 | An URI of a notification destination that T8 message shall be delivered to. |  |
| requestTestNotification | boolean | 0..1 | 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 notificationDefault "false" if omitted. | Notification\_test\_event |
| websockNotifConfig | WebsockNotifConfig | 0..1 | Configuration parameters to set up notification delivery over Websocket protocol as defined in clause 5.2.5.4. | Notification\_websocket |
| monitoringType | MonitoringType | 1 | Enumeration of monitoring type. Refer to clause 5.3.2.4.3. |  |
| maximumNumberOfReports | integer | 0..1 | 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 [2].(NOTE 2, NOTE 9, NOTE 13)If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to (or contains) the "NUM\_OF\_REGD\_UES" or "NUM\_OF\_ESTD\_PDU\_SESSIONS" values, this attribute may also be provided with a value of 1 to indicate that one-time reporting of the network slice status information is requested by the AF. |  |
| monitorExpireTime | DateTime | 0..1 | Identifies the absolute time at which the related monitoring event request is considered to expire, as specified in clause 5.6.0 of 3GPP TS 23.682 [2].When the "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to either "NUM\_OF\_REGD\_UES" or "NUM\_OF\_ESTD\_PDU\_SESSIONS", this attribute shall be absent in the response to a one-time reporting monitoring subscription request.(NOTE 2) |  |
| repPeriod | DurationSec | 0..1 | Identifies the periodic time for the event reports. (NOTE 8, NOTE 9, NOTE 13)If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "NUM\_OF\_REGD\_UES" or "NUM\_OF\_ESTD\_PDU\_SESSIONS", this attribute may be provided. When provided, it also indicates that periodic reporting of the network slice status information is requested by the AF. |  |
| groupReportGuardTime | DurationSec | 0..1 | Identifies the time for which the SCEF can aggregate the monitoring event reports detected by the UEs in a group and report them together to the SCS/AS, as specified in clause 5.6.0 of 3GPP TS 23.682 [2]. |  |
| maximumDetectionTime | DurationSec | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOSS\_OF\_CONNECTIVITY", this parameter may be included to identify the maximum period of time after which the UE is considered to be unreachable. | Loss\_of\_connectivity\_notification |
| reachabilityType | ReachabilityType | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "UE\_REACHABILITY", this parameter shall be included to identify whether the request is for "Reachability for SMS" or "Reachability for Data". | Ue-reachability\_notification |
| maximumLatency | DurationSec | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "UE\_REACHABILITY", this parameter may be included to identify the maximum delay acceptable for downlink data transfers. | Ue-reachability\_notification |
| maximumResponseTime | DurationSec | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "UE\_REACHABILITY", this parameter may be included to identify the length of time for which the UE stays reachable to allow the SCS/AS to reliably deliver the required downlink data. | Ue-reachability\_notification |
| suggestedNumberOfDlPackets | integer | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "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. | Ue-reachability-notification |
| idleStatusIndication | boolean | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) 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": indicate enabling of notification- "false": indicate no need to notifyDefault: "false" if omitted. | Ue-reachability\_notification,Availability\_after\_DDN\_failure\_notification,Availability\_after\_DDN\_failure\_notification\_enhancement |
| locationType | LocationType | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING" or "NUMBER\_OF\_UES\_IN\_AN\_AREA", this parameter shall be included to identify whether the request is for Current Location, Initial Location or Last known Location. (NOTE 4) | Location\_notification, Number\_of\_UEs\_in\_an\_area\_notification, Number\_of\_UEs\_in\_an\_area\_notification\_5G,eLCS |
| accuracy | Accuracy | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to identify the desired level of accuracy of the requested location information, as described in clause 4.9.2 of 3GPP TS 23.682 [2]. (NOTE 10, NOTE 11)For 5G, if the eLCS feature is not supported, the default value is "TA\_RA". | Location\_notification,eLCS |
| minimumReportInterval | DurationSec | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to identify a minimum time interval between Location Reporting notifications. If the "ldrType" attribute is present and set to "ENTERING\_INTO\_AREA". "LEAVING\_FROM\_AREA", "BEING\_INSIDE\_AREA" or "MOTION", this attribute shall not be included if the maximumNumberOfReports attribute is present and set to one time event. | Location\_notification,eLCS |
| maxRptExpireIntvl | DurationSec | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to identify a maximum time interval between Location Reporting notifications. If the "ldrType" attribute is present and set to "ENTERING\_INTO\_AREA". "LEAVING\_FROM\_AREA", "BEING\_INSIDE\_AREA" or "MOTION", this attribute shall not be included if the maximumNumberOfReports attribute is present and set to one time event. | eLCS |
| samplingInterval | DurationSec | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to identify the maximum time interval between consecutive evaluations by a UE of a trigger event. | eLCS |
| reportingLocEstInd | boolean | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to indicate whether event reporting requires the location information.Set to "true", indiates the location estimation information shall be included in event reporting.Set to "false", indicates the location estimation information shall not be included in event reporting.Default: "false" if omitted. | eLCS |
| linearDistance | LinearDistance | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to indicate the linear(straight line) distance threshold for motion event reporting. | eLCS |
| locQoS | LocationQoS | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to indicate the expected location QoS requirement for an immediate MT-LR or deferred MT-LR.The "Multiple QoS Class" (i.e. the "lcsQosClass" attribute within the LocationQoS data structure is set to "MULTIPLE\_QOS") shall only be used when the "MUTIQOS" feature is supported.(NOTE 10) | eLCS, MULTIQOS |
| svcId | ServiceIdentity | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to indicate the service identity of AF. | eLCS |
| ldrType | LdrType | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to indicate the event type for a deferred MT-LR. | eLCS |
| velocityRequested | VelocityRequested | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to indicate if the velocity of the target UE is requested or not. | eLCS |
| maxAgeOfLocEst | AgeOfLocationEstimate | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to indicate acceptable maximum age of location estimate. | eLCS |
| locTimeWindow | TimeWindow | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to indicate the starting time and ending time for a deferred MT-LR. | eLCS |
| supportedGADShapes | array(SupportedGADShapes) | 0..N | Supported Geographical Area Description shapes. | eLCS |
| codeWord | CodeWord | 0..1 | Code word. | eLCS |
| upLocRepIndAf | boolean | 0..1 | If the "LOCATION\_REPORTING" value is set in either the "monitoringType" attribute and/or an array element of the "addnMonTypes" attribute, this attribute may be included to convey the indication of location reporting over user plane.When present, this attribute shall be set as follows:"true": the location reporting over user plane is required."false": the location reporting over user plane is not required.Default: "false" if omitted. | eLCS\_en |
| upLocRepAddrAf | UpLocRepAddrAfRm | 0..1 | If the "upLocRepIndAf" attribute is present and set to "true", this attribute may be present to convey the AF's user plane addressing information to be used for location reporting over user plane. | eLCS\_en |
| associationType | AssociationType | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "CHANGE\_OF\_IMSI\_IMEI\_ASSOCIATION", this parameter shall be included to identify whether the change of IMSI-IMEI or IMSI-IMEISV association shall be detected. | Change\_of\_IMSI\_IMEI\_association\_notification |
| plmnIndication | boolean | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "ROAMING\_STATUS", this parameter may be included to indicate the notification of UE's Serving PLMN ID.- "true": The value shall be used to indicate enabling of notification;- "false": The value shall be used to indicate disabling of notification.Default: "false" if omitted. | Roaming\_status\_notification |
| locationArea | LocationArea | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "NUMBER\_OF\_UES\_IN\_AN\_AREA", this parameter may be included to indicate the area within which the SCS/AS requests the number of UEs.If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "AREA\_OF\_INTEREST", this parameter shall be included to indicate the area within which the SCS/AS requests the presence status of a specific UE (i.e. UAV). | Number\_of\_UEs\_in\_an\_area\_notification, UAV |
| locationArea5G | LocationArea5G | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "NUMBER\_OF\_UES\_IN\_AN\_AREA", this parameter may be included to indicate the area within which the AF requests the number of UEs. If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "LOCATION\_REPORTING", this parameter may be included to indicate the area within which the AF requests the area event of the target UE. (NOTE 12)If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "AREA\_OF\_INTEREST", this parameter shall be included to indicate the area within which the AF requests the presence status of a specific UE (i.e. UAV). | Number\_of\_UEs\_in\_an\_area\_notification\_5G, eLCS, UAV |
| dddTraDescriptors | array(DddTrafficDescriptor) | 0..N | The traffic descriptor(s) of the downlink data source. May be included for event "DOWNLINK\_DATA\_DELIVERY\_STATUS" or "AVAILABILITY\_AFTER\_DDN\_FAILURE". | Downlink\_data\_delivery\_status\_5G,Availability\_after\_DDN\_failure\_notification\_enhancement |
| dddStati | array(DlDataDeliveryStatus) | 0..N | May be included for event "DOWNLINK\_DATA\_DELIVERY\_STATUS". The subscribed stati (delivered, transmitted, buffered) for the event. If omitted all stati are subscribed. | Downlink\_data\_delivery\_status\_5G |
| monitoringEventReport | MonitoringEventReport | 0..1 | Identifies a monitoring event report which is sent from the SCEF to the SCS/AS.(NOTE 18) |  |
| apiNames | array(string) | 0..N | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "API\_SUPPORT\_CAPABILITY", this parameter may be included. Each element identifies the name of an API.It shall set as {apiName} part of the URI structure for each T8 or N33 API as defined in the present specification or 3GPP TS 29.522 [62], respectively.This allows the SCS/AS to request the capability change for its interested APIs. If it is omitted, the SCS/AS requests to be notified for capability change for all APIs the SCEF+NEF supports.  | API\_support\_capability\_notification |
| tgtNsThreshold | SACInfo | 0..1 | Indicates the monitoring threshold value, for the network slice identified by the "snssai" attirbute, upon which event notification(s) are triggered.This attribute may be provided if the "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "NUM\_OF\_REGD\_UES" or "NUM\_OF\_ESTD\_PDU\_SESSIONS". When provided, it also indicates that threshold based reporting of the network slice status information is requested by the AF.(NOTE 13) | NSAC |
| nsRepFormat | SACRepFormat | 0..1 | Indicates the requested NSAC reporting format, i.e. "PERCENTAGE" or "NUMERICAL".It shall be provided only if the "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "NUM\_OF\_REGD\_UES" or "NUM\_OF\_ESTD\_PDU\_SESSIONS" and periodic reporting is requested (i.e. the "repPeriod" attribute is provided instead of the "tgtNsThreshold" attribute) or one-time reporting is requested (i.e. the "maximumNumberOfReports" attribute is provided with a value of 1). | NSAC |
| afServiceId | string | 0..1 | Contains the identifier of a service on behalf of which the AF is sending the request.It may be provided by an untrusted AF and only if the "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to either "NUM\_OF\_REGD\_UES" or "NUM\_OF\_ESTD\_PDU\_SESSIONS".(NOTE 15) | NSAC |
| snssai | Snssai | 0..1 | Indicates the S-NSSAI that the event monitoring subscription is targeting.This attribute may be provided if the "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "NUM\_OF\_REGD\_UES" or "NUM\_OF\_ESTD\_PDU\_SESSIONS".This attribute may also be provided if the "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "PDN\_CONNECTIVITY\_STATUS" or "DOWNLINK\_DATA\_DELIVERY\_STATUS".This attribute shall be present when the "AppDetection\_5G" feature is supported and the "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "APPLICATION\_START" or "APPLICATION\_STOP".(NOTE 8) (NOTE 15) (NOTE 16) | NSAC, Session\_Management\_Enhancement, UEId\_retrieval, AppDetection\_5G |
| immediateRep | boolean | 0..1 | Indicates whether immediate reporting is requested or not.- "true": indicate that immediate reporting is requested.- "false": indicate that immediate reporting is not requested.- Default value: "false" if omitted.When the "NSAC" feature is supported, this attribute may be included if the "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to either "NUM\_OF\_REGD\_UES" or "NUM\_OF\_ESTD\_PDU\_SESSIONS". (NOTE 13)When the "enNB1\_5G" feature is supported, this attribute may be included if the SCS/AS requires immediate reporting of the subscribed event(s).(NOTE 4) | NSAC, enNB1\_5G |
| uavPolicy | UavPolicy | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "AREA\_OF\_INTEREST", this parameter may be included to indicate the 3GPP network to take corresponding action. | UAV |
| subType | SubType | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "NUMBER\_OF\_UES\_IN\_AN\_AREA", this parameter may be included to indicate the subscription type to be listed in the Event report.(NOTE 14) | UAV |
| sesEstInd | Boolean | 0..1 | If "monitoringType" attribute (and/or an array element of the "addnMonTypes" attribute) is set to "NUMBER\_OF\_UES\_IN\_AN\_AREA", this parameter may be included. If set to “true”, it indicates that only UE’s with “PDU session established for DNN(s) subject to aerial service” are to be listed in the Event report.If set to "false", it indicates that UE’s with "PDU session established for DNN(s) subject to aerial service" are not to be listed in the Event report.Default: "false" if omitted.(NOTE 14) | UAV |
| addnMonTypes | array(MonitoringType) | 0..N | Contains additional monitoring types.(NOTE 17) | enNB |
| addnMonEventReports | array(MonitoringEventReport) | 0..N | Contains additional monitoring event reports.This attribute may be present only in subscription creation/update responses and only if the "addnMonTypes" attribute is provided in the corresponding subscription creation/update request.(NOTE 18) | enNB |
| ueIpAddr | IpAddr | 0..1 | UE IP address. | UEId\_retrieval |
| ueMacAddr | MacAddr48 | 0..1 | UE MAC address. | UEId\_retrieval |
| revocationNotifUri | Uri | 0..1 | Contains the URI via which the AF desires to receive user consent revocation notifications. | UserConsentRevocation |
| reqRangSlRes | array(RangingSlResult) | 0..N | Contains the type of result(s) requested for ranging and sidelink positioning. | Ranging\_SL |
| relatedUes | map(RelatedUe) | 0..N | 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 any unique string encoded value. | Ranging\_SL |
| NOTE 1: One of the properties "externalId", "msisdn", "ipv4Addr", "ipv6Addr" or "externalGroupId" shall be included for features "Location\_notification" and "Communication\_failure\_notification";. One of the properties "externalId", "msisdn" or "externalGroupId" shall be included for feature "eLCS". "ipv4Addr" or "ipv6Addr" is required for monitoring via the PCRF for an individual UE. One of the properties "externalId", "msisdn" or "externalGroupId" shall be included for features "Pdn\_connectivity\_status", "Loss\_of\_connectivity\_notification", "Ue-reachability\_notification", "Change\_of\_IMSI\_IMEI\_association\_notification", "Roaming\_status\_notification", "Availability\_after\_DDN\_failure\_notification" and "Availability\_after\_DDN\_failure\_notification\_enhancement".When the "GMEC" feature is supported, the "externalGroupId" attribute shall be included to subscribe to the group members list change event reporting.NOTE 2: Inclusion of either "maximumNumberOfReports" (with a value higher than 1) or "monitorExpireTime" makes the Monitoring Request a Continuous Monitoring Request, where the SCEF sends Notifications until either the maximum number of reports or the monitoring duration indicated by the property "monitorExpireTime" is exceeded. The "maximumNumberOfReports" with a value 1 makes the Monitoring Request a One-time Monitoring Request. At least one of "maximumNumberOfReports" or "monitorExpireTime" shall be provided.NOTE 3: Properties marked with a feature as defined in clause 5.3.4 are applicable as described in clause 5.2.7. If no features are indicated, the related property applies for all the features.NOTE 4: In this release of the specification, for the "Number\_of\_UEs\_in\_an\_area\_notification" and "Number\_of\_UEs\_in\_an\_area\_notification\_5G" features, the "locationType" attribute shall be set to "LAST\_KNOWN\_LOCATION". For 5G, if the "locationType" attribute is set to "LAST\_KNOWN\_LOCATION", the "maximumNumberOfReports" attribute shall be set to 1 as a One-time Monitoring Request. For 5G, when the "enNB1\_5G" feature is supported and the "immediateRep" attribute is present set to "true" and outside the scope of the "NSAC" feature, then the "locationType" attribute shall be set to "LAST\_KNOWN\_LOCATION". For 5G, when the "enNB1\_5G" feature is supported and the "immediateRep" is either absent or present and set to "false" and outside the scope of the "NSAC" feature, then the "locationType" attribute shall be set to "CURRENT\_LOCATION".NOTE 5: The property does not apply for the features "Number\_of\_UEs\_in\_an\_area\_notification" and "Number\_of\_UEs\_in\_an\_area\_notification\_5G".NOTE 6: For the features "Number\_of\_UEs\_in\_an\_area\_notification" and "Number\_of\_UEs\_in\_an\_area\_notification\_5G", the property "externalGroupId" may be included for single group and "addExtGroupIds" may be included for multiple groups but not both.NOTE 7: The SCEF should check received MTC provider identifier and then the SCEF may: - override it with local configured value and send it to HSS;- send it directly to the HSS; or- reject the monitoring configuration request.NOTE 8: This property is only applicable for the NEF.NOTE 9: The value of the "maximumNumberOfReports" attribute sets to 1 and the "repPeriod" attribute are mutually exclusive.NOTE 10: If the "eLCS" feature is supported, the "accuracy" attribute and "locQoS" attribute are mutually exclusive, and only the "GEO\_AREA" value is applicable for the"accuracy" attribute.NOTE 11: The value of "TWAN\_ID" is only applicable when the monitoring subscription is via the PCRF as described in clause 4.4.2.2.4.NOTE 12: If the "eLCS" feature is supported, only the "geographicAreas" attribute within the "locationArea5G" attribute is applicable.NOTE 13: For the "NSAC" feature, if the "maximumNumberOfReports" attribute is provided with a value of 1, the "repPeriod" attribute and the "tgtNsThreshold" attribute shall not be provided and the "immediateRep" attribute shall be provided and set to "true"; otherwise, either the "repPeriod" attribute or the "tgtNsThreshold" attribute shall be provided, and if immediate reporting is requested, the "immediateRep" attribute shall be provided and set to "true".NOTE 14: For the feature "UAV", the event "Number of UEs present in a geographical area" is used, where "subType" indication and/or "sesEstInd" may be used as event filters.NOTE 15: For the "NSAC" feature, the "snssai" and "afServiceId" attributes are mutually exclusive.NOTE 16: Void.NOTE 17: When the "enNB" feature is supported and the "addnMonTypes" attribute is present and contains at least one array element, then this attribute shall not contain an array element set to the same value as the "monitoringType" attribute.NOTE 18: When the "enNB" feature is supported, the "monitoringEventReport" is present and the "addnMonEventReports" attribute is present and contains at least one array element, then the "addnMonEventReports" attribute shall not contain an array element set to the same value as the "monitoringEventReport" attribute. |

\*\*\* 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'

 ipDomain:

 type: string

 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'

 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 \*\*\*