**3GPP TSG CT WG3 Meeting #135 *C3-243494***

**Hyderabad, IN, 27 - 31 May, 2024 was C3-243244**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | **0845** | **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:*** | Various essential corrections | | | | | | | | |
|  |  | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | |
|  |  | | | | | | | | |
| ***Work item code:*** | NBI18 | | | | |  | ***Date:*** | | 2024-05-29 |
|  |  | | | |  | |  | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | |  |
|  | *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:*** | | | The following issues (mainly related to the corrections or new functionalities introduced under the "enNB", "enNB1", "enNB\_5G" or "enNB1\_5G" features) have been identified:   * The data type of the string based "target" attribute in Table 5.2.13.2-1 is incorrectly written as "**S**tring". * The formulation of some of the provisions related to the usage of the immediate reporting mechanism outside the NSAC functionality can be confusing. * It is not clearly specified that the "addnMonEventReports" cannot be provided in subscription requests, but only in responses to convey available/immediate monitoring reports. * In GET requests defining query parameters, it is sometimes incorrectly referred to these query parameters as "attributes". Also, tables NOTEs applicable to query parameters should be indicated in their description fields, which is sometimes missing. | | | | | | |
|  | | |  | | | | | | |
| ***Summary of change:*** | | | This CR proposes to:   * Address the above-detailed issues. * Apply some additional editorial corrections. | | | | | | |
|  | | |  | | | | | | |
| ***Consequences if not approved:*** | | | * The above-detailed issues remain in the specification. | | | | | | |
|  | |  | | | | | | | |
| ***Clauses affected:*** | | 5.2.13.3, 5.3.2.1.2, 5.3.2.3.5, 5.3.3.2.3.1, 5.3.3.2.3.4, 5.4.2.1.3, 5.5.2.1.3, 5.5.3.2.3.1, 5.11.3.2.3.1, 5.14.2.1.2, 5.14.2.1.3, 5.14.2.1.5, 5.14.3.2.3.1 | | | | | | | |
|  | |  | | | | | | | |
|  | | **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 does not impact the OpenAPI descriptions of the APIs defined in this specification. | | | | | | | |
|  | |  | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | |

\* \* \* \* Start of changes \* \* \* \*

#### 5.2.13.3 Vendor-specific query parameters

Vendor-specific extensions to the query component of an HTTP request may be supported in the 3GPP northbound and application layer APIs by allowing the provisioning of vendor-specific query parameters in order to support additional vendor-specific filtering criteria. Whether an operation (e.g., using the HTTP GET method) on a specific resource of a 3GPP northbound or application layer API shall support the processing of vendor-specific query parameters shall be explicitly specified (within the corresponding resource or custom operation definition clauses) in the definition of this API operation in the technical specification where it is defined. This pattern applies to querying resources of "collection" or "store" archetype.

A vendor-specific query parameter shall be encoded as follows:

- The query parameter name shall start with "vend-spec" followed by the actual name of the query parameter, i.e., "vend-spec-<query parameter name>".

- The query parameter value shall be encoded as a JSON object containing two attributes as defined in Table 5.2.13.2-1, wherein:

- the "target" attribute is a JSON pointer (as per RFC 6901 [70]) towards the targeted attribute in the targeted resource representation; and

- the "value" attribute contains the actual value of the query parameter that is to be used for filtering and shall hence be encoded in the same way as the attribute in the resource representation that it targets.

Table 5.2.13.2-1: Vendor-specific query parameter value content definition

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| target | string | M | 1 | Contains the JSON pointer (as per RFC 6901 [70]) to the attribute in the resource representation that the provided vendor-specific query parameter is targeting. |  |
| value | <Any simple or structured data structure> | M | 1 | Contains the vendor-specific query parameter value. |  |

EXAMPLE 1: Assuming that vendor-specific query parameters are supported for the MonitoringEvent API, if an authorized service consumer wants to retrieve the representations of the "Individual Monitoring Event Subscription" resources that contain a specific value (e.g., 6) for the "maximumNumberOfReports" attribute, then it can send a GET request using the following vendor-specific query parameter:

GET {apiRoot}/3gpp-monitoring-event/v1/{scsAsId}/subscriptions?**vend-spec-max-reports={"target": "/maximumNumberOfReports", value: "6"}**

EXAMPLE 2: Assuming that vendor-specific query parameters are supported for the MonitoringEvent API, if within the representations of the "Individual Monitoring Event Subscription" resources, a vendor-specific extension to the data model is provided by an AF via the "vendorSpecific-010415" attribute as specified in clause 5.2.13.1 and contains additional/alternative target location accuracy values within the "addAccuracy" attribute, and an authorized service consumer wants to retrieve the representations of those "Individual Monitoring Event Subscription" resources that contain a specific value for the "addAccuracy" attribute, then it can send a GET request using the following vendor-specific query parameter:

GET {apiRoot}/3gpp-monitoring-event/v1/{scsAsId}/subscriptions?**vend-spec-accuracy={"target": "/vendorSpecific-010415/addAccuracy", value: "CELL\_OR\_TA"}**

\* \* \* \* Next changes \* \* \* \*

##### 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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 | Identifies 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 |
| 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. (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 notification  Default "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 (or 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 (or 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 (or 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 (or 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 (or 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 (or 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 (or 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 (or 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 (or 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 notify  Default: "false" if omitted. | Ue-reachability\_notification,  Availability\_after\_DDN\_failure\_notification,  Availability\_after\_DDN\_failure\_notification\_enhancement |
| locationType | LocationType | 0..1 | If "monitoringType" attribute (or 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 (or 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 (or 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 (or 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 (or 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 (or 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 (or 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 (or 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 (or 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 (or 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 (or 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 (or 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 (or 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 or 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 (or 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 (or 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 (or 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 (or 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 UAV. | Number\_of\_UEs\_in\_an\_area\_notification, UAV |
| locationArea5G | LocationArea5G | 0..1 | If "monitoringType" attribute (or 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 (or 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 (or 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 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 (or 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 (or 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 (or 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 (or 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 (or 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 (or the "addnMonTypes" attribute) is set to "PDN\_CONNECTIVITY\_STATUS" or "DOWNLINK\_DATA\_DELIVERY\_STATUS".  (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 (or 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 (or 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 (or 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 (or 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".  The property "externalGroupId" shall be included for the "GMEC" feature to subscribe to the group member 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: For the "AppDetection\_5G" feature, AF shall provide the "appIds" attribute along with "snssai" and "dnn" attributes for subscription of application traffic detection event notification. the subscription request applies to all the UEs associated with the "snssai" and the "dnn" provided in the request.  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 changes \* \* \* \*

##### 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, such as located UE, reference UE, etc. | 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 |
| 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 changes \* \* \* \*

###### 5.3.3.2.3.1 GET

The GET method allows to read all or queried active subscriptions for a given SCS/AS. The SCS/AS shall initiate the HTTP GET request message and the SCEF shall respond to the message.

This method shall support the URI query parameters, request and response data structures, and response codes, as specified in the table 5.3.3.2.3.1-1 and table 5.3.3.2.3.1-2.

Table 5.3.3.2.3.1-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | Cardinality | Remarks | Applicability |
| ip-addrs | array(IpAddr) | 0..N | Contains the IP address(es) of the requested UE(s).  (NOTE 1, NOTE 2) | enNB |
| ip-domain | string | 0..1 | Contains the IPv4 address domain identifier.  This query parameter may be present only if the "ip-addrs" query parameter is also present and contains at least one array element including an IPv4 address. | enNB |
| mac-addrs | array(MacAddr48) | 0..N | Contains the MAC address(es) of the requested UE(s).  (NOTE 1, NOTE 2) | enNB |
| NOTE 1: Either the "ip-addrs" query parameter or the "mac-addrs" query parameter may be provided at the same time.  NOTE 2: If multiple array elements are provided within this query parameter, then each array element shall be treated as a separate query parameter. | | | | |

Table 5.3.3.2.3.1-2: Data structures supported by the GET request/response by the resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Request body | Data type | Cardinality | Remarks | |
| none |  |  | |
| Response body | Data type | Cardinality | Response  codes | Remarks |
| array(MonitoringEventSubscription) | 0..N | 200 OK | The subscription information for the SCS/AS in the request URI are returned. |
| none |  | 307 Temporary Redirect | Temporary redirection, during subscription retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative SCEF.  Redirection handling is described in clause 5.2.10. |
| none |  | 308 Permanent Redirect | Permanent redirection, during subscription retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative SCEF.  Redirection handling is described in clause 5.2.10. |
| NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.6-1 also apply. | | | | |

Table 5.3.3.2.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative SCEF. |

Table 5.3.3.2.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative SCEF. |

\* \* \* \* Next changes \* \* \* \*

###### 5.3.3.2.3.4 POST

The POST method creates a new subscription resource to monitor an event for a given SCS/AS. The SCS/AS shall initiate the HTTP POST request message and the SCEF shall respond to the message. The SCEF shall construct the URI of the created resource.

This method shall support the URI query parameters, request and response data structures, and response codes, as specified in the table 5.3.3.2.3.4-1 and table 5.3.3.2.3.4-2.

Table 5.3.3.2.3.4-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Data type | Cardinality | Remarks |
| none specified |  |  |  |

Table 5.3.3.2.3.4-2: Data structures supported by the POST request/response by the resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Request body | Data type | Cardinality | Remarks | |
| MonitoringEventSubscription | 1 | Parameters to register a subscription to notifications about monitoring event with the SCEF. | |
| Response body | Data type | Cardinality | Response  codes | Remarks |
| MonitoringEventSubscription | 1 | 201 Created | The subscription resource was created successfully.  The URI of the created resource shall be returned in the "Location" HTTP header. |
| MonitoringEventReport | 1 | 200 OK | The operation is successful, and corresponding monitoring event report is included.  This is only applicable for the one-time monitoring request if report is available in the response. |
| MonitoringEventReports | 1 | 200 OK | The operation is successful and the corresponding monitoring event report(s) are included in the response body.  This response option is applicable only when the "enNB" feature is supported, the monitoring request is a one-time reporting request and the event reports are available at the SCEF. |
| ProblemDetails | 0..1 | 400 Bad Request | (NOTE 2) |
| ProblemDetails | 0..1 | 403 Forbidden | (NOTE 2) |
| ProblemDetails | 0..1 | 404 Not Found | (NOTE 2) |
| ProblemDetails | 0..1 | 500 Internal Server Error | (NOTE 2) |
| NOTE 1: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 also apply.  NOTE 2: Failure cases are described in clause 5.3.5.3. | | | | |

Table 5.3.3.2.3.4-3: Headers supported by the 201 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure:  {apiRoot}/3gpp-monitoring-event/v1/{scsAsId}/subscriptions/{subscriptionId} |

\* \* \* \* Next changes \* \* \* \*

##### 5.4.2.1.3 Type: BdtPatch

This type represents a BDT request for the service provided by the SCS/AS to the SCEF via T8 interface. The structure is used for PATCH request.

Table 5.4.2.1.3-1: Definition of type BdtPatch

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description | Applicability |
| selectedPolicy | integer | 1 | Identity of the selected background data transfer policy. |  |
| warnNotifEnabled | boolean | 0..1 | Indicates whether the BDT warning notification is enabled.  - true: the BDT warning notification is enabled;  - false: the BDT warning notification is not enabled. | BdtNotification\_5G |
| notificationDestination | Link | 0..1 | Contains the URI to receive the BDT notifications from the NEF. | enNB |

\* \* \* \* Next changes \* \* \* \*

##### 5.5.2.1.3 Type: ChargeablePartyPatch

This type represents the configuration of a chargeable party. The structure is used for PATCH request.

Table 5.5.2.1.3-1: Definition of type ChargeablePartyPatch

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description | Applicability (NOTE) |
| flowInfo | array(FlowInfo) | 0..N | Describes the IP flows. (NOTE 2)(NOTE 3) |  |
| exterAppId | string | 0..1 | Identifies the AF Application Identifier. (NOTE 2) | AppId |
| ethFlowInfo | array(EthFlowDescription) | 0..N | Describes Ethernet packet flows. (NOTE 2) | EthChgParty\_5G |
| sponsoringEnabled | boolean | 0..1 | Indicates whether the sponsoring data connectivity is enabled.  - true: the sponsoring data connectivity is enabled;  - false: the sponsoring data connectivity is not enabled. |  |
| referenceId | BdtReferenceId | 0..1 | The reference ID for a previously selected policy of background data transfer. |  |
| usageThreshold | UsageThresholdRm | 0..1 | Time period and/or traffic volume. |  |
| notificationDestination | Link | 0..1 | Contains the URL to receive the notification event(s) from the SCEF. |  |
| events | array(Event) | 0..N | Corresponds to the event(s) to which the SCS/AS requests to subscribe. | enNB |
| NOTE 1: Properties marked with a feature as defined in clause 5.5.4 are applicable as described in clause 5.2.7. If no features are indicated, the related property applies for all the features.  NOTE 2: One of "flowInfo", "exterAppId" or "ethFlowInfo" may be provided.  NOTE 3: The "tosTC" attribute of the "flowInfo" attribute may only be present if the "ToSTC\_5G" feature is supported. | | | | |

\* \* \* \* Next changes \* \* \* \*

###### 5.5.3.2.3.1 GET

The GET method allows to read all or queried active chargeable party transactions for a given SCS/AS. The SCS/AS shall initiate the HTTP GET request message and the SCEF shall respond to the message.

This method shall support the URI query parameters, request and response data structures, and response codes, as specified in the table 5.5.3.2.3.1-1 and table 5.5.3.2.3.1-2.

Table 5.5.3.2.3.1-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | Cardinality | Remarks | Applicability |
| ip-addrs | array(IpAddr) | 0..N | Contains the IP address(es) of the requested UE(s).  (NOTE 1, NOTE 2) | enNB |
| ip-domain | string | 0..1 | Contains the IPv4 address domain identifier.  This query parameter may be present only if the "ip-addrs" query parameter is also present and contains at least one array element including an IPv4 address. | enNB |
| mac-addrs | array(MacAddr48) | 0..N | Contains the MAC address(es) of the requested UE(s).  (NOTE 1, NOTE 2) | enNB |
| NOTE 1: Either the "ip-addrs" query parameter or the "mac-addrs" query parameter may be provided at the same time.  NOTE 2: If multiple array elements are provided within this query parameter, then each array element shall be treated as a separate query parameter. | | | | |

Table 5.5.3.2.3.1-2: Data structures supported by the GET request/response by the resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Request body | Data type | Cardinality | Remarks | |
| none |  |  | |
| Response body | Data type | Cardinality | Response  codes | Remarks |
| array(ChargeableParty) | 0..N | 200 OK | The chargeable party transactions information for the SCS/AS in the request URI are returned. |
| none |  | 307 Temporary Redirect | Temporary redirection, during transaction retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative SCEF.  Redirection handling is described in clause 5.2.10. |
| none |  | 308 Permanent Redirect | Permanent redirection, during transaction retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative SCEF.  Redirection handling is described in clause 5.2.10. |
| NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.6-1 also apply. | | | | |

Table 5.5.3.2.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative SCEF. |

Table 5.5.3.2.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative SCEF. |

\* \* \* \* Next changes \* \* \* \*

###### 5.11.3.2.3.1 GET

The GET method allows to read all or queried active PFDs for a given SCS/AS. It is initiated by the SCS/AS and answered by the SCEF.

This method shall support the URI query parameters as specified in the table 5.11.3.2.3.1-0.

Table 5.11.3.2.3.1-0: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | Cardinality | Remarks | Applicability |
| external-app-ids | array(string) | 0..N | Contains the external application identifier(s) of the requested PFD data.  (NOTE) | enNB |
| NOTE: If multiple array elements are provided within this query parameter, then each array element shall be treated as a separate query parameter. | | | | |

This method shall support the request and response data structures, and response codes, as specified in the table 5.11.3.2.3.1-1.

Table 5.11.3.2.3.1-1: Data structures supported by the GET request/response by the resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Request body | Data type | Cardinality | Remarks | |
| none |  |  | |
| Response body | Data type | Cardinality | Response  codes | Remarks |
| array(PfdManagement) | 0..N | 200 OK | All or queried transactions including the PFDs for the SCS/AS in the request URI are returned. |
| none |  | 307 Temporary Redirect | Temporary redirection, during transaction retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative SCEF.  Redirection handling is described in clause 5.2.10. |
| none |  | 308 Permanent Redirect | Permanent redirection, during transaction retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative SCEF.  Redirection handling is described in clause 5.2.10. |
| NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.6-1 also apply. | | | | |

Table 5.11.3.2.3.1-2: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative SCEF. |

Table 5.11.3.2.3.1-3: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative SCEF. |

\* \* \* \* Next changes \* \* \* \*

##### 5.14.2.1.2 Type: AsSessionWithQoSSubscription

This type represents an AS session request with specific QoS for the service provided by the SCS/AS to the SCEF via T8 interface. The structure is used for subscription request and response.

Table 5.14.2.1.2-1: Definition of type AsSessionWithQoSSubscription

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description | Applicability (NOTE 1) |
| self | Link | 0..1 | Link to the resource "Individual AS Session with Required QoS Subscription".  This parameter shall be supplied by the SCEF in HTTP responses. |  |
| 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. (NOTE 3) |  |
| snssai | Snssai | 0..1 | Identifies an S-NSSAI. (NOTE 3) |  |
| 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. |  |
| notificationDestination | Link | 1 | Contains the URL to receive the notification bearer level event(s) from the SCEF. |  |
| exterAppId | string | 0..1 | Identifies the external Application Identifier. (NOTE 2) (NOTE 8) (NOTE 9) (NOTE 11) | AppId  ListUE\_5G  GMEC\_5G |
| extGroupId | ExternalGroupId | 0..1 | Identifies a group of UE(s).  (NOTE 10) | GMEC\_5G |
| gpsi | Gpsi | 0..1 | Identifies a UE using its GPSI.  (NOTE 10) | GMEC\_5G |
| flowInfo | array(FlowInfo) | 0..N | Describe the IP data flow which requires QoS.  (NOTE 2) (NOTE 7) (NOTE 8) (NOTE 9) (NOTE 10) (NOTE 11) (NOTE 17) |  |
| ethFlowInfo | array(EthFlowDescription) | 0..N | Identifies Ethernet packet flows.  (NOTE 2) (NOTE 6) (NOTE 8) (NOTE 10) (NOTE 11) | EthAsSessionQoS\_5G  GMEC\_5G |
| enEthFlowInfo | array(EthFlowInfo) | 0..N | Identifies the Ethernet flows which require QoS. Each Ethernet flow consists of a flow identifier and the corresponding UL and/or DL flows.  (NOTE 2) (NOTE 6) (NOTE 8) (NOTE 10) (NOTE 11) | EnEthAsSessionQoS\_5G  GMEC\_5G |
| qosReference | string | 0..1 | Identifies a pre-defined QoS information. (NOTE 4) (NOTE 5) |  |
| altQoSReferences | array(string) | 0..N | Identifies an ordered list of pre-defined QoS information. The lower the index of the array for a given entry, the higher the priority. (NOTE 4) | AlternativeQoS\_5G  GMEC\_5G |
| altQosReqs | array(AlternativeServiceRequirementsData) | 0..N | Identifies an ordered list of alternative service requirements that include individual QoS parameter sets. The lower the index of the array for a given entry, the higher the priority. (NOTE 4) | AltQosWithIndParams\_5G |
| disUeNotif | boolean | 0..1 | Indicates whether to disable QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation. The fulfilled situation is either the QoS profile or an Alternative QoS Profile.  - true: the QoS flow parameters signalling to the UE is disabled;  - false (default): the QoS flow parameters signalling to the UE is not disabled. | DisableUENotification\_5G  GMEC\_5G |
| ueIpv4Addr | Ipv4Addr | 0..1 | The Ipv4 address of the UE.  (NOTE 2) |  |
| ipDomain | string | 0..1 | The IPv4 address domain identifier.  The attribute may only be provided if the ueIpv4Addr attribute is present. |  |
| ueIpv6Addr | Ipv6Addr | 0..1 | The Ipv6 address of the UE.  (NOTE 2) |  |
| macAddr | MacAddr48 | 0..1 | Identifies the MAC address.  (NOTE 2) | EthAsSessionQoS\_5G |
| listUeAddrs | array(UeAddInfo) | 0..N | Identifies the list of UE address(es).  (NOTE 9) (NOTE 12) | ListUE\_5G |
| usageThreshold | UsageThreshold | 0..1 | Time period and/or traffic volume in which the QoS is to be applied. |  |
| sponsorInfo | SponsorInformation | 0..1 | Indicates a sponsor information |  |
| qosMonInfo | QosMonitoringInformation | 0..1 | Qos Monitoring information for packet delay measurements. It shall be present when the event "QOS\_MONITORING" is subscribed and packet delay measurements are required.  (NOTE 13) | QoSMonitoring\_5G |
| directNotifInd | boolean | 0..1 | Indicates whether the direct event notification is requested.  - true: the direct event notification is requested;  - false (default): the direct event notification is not requested.  (NOTE 13, NOTE 14) | ExposureToEAS  GMEC\_5G |
| tscQosReq | TscQosRequirement | 0..1 | Contains the QoS requirements for time sensitive communication.  This attribute applies also to an AF request QoS for a UE or group of UE(s) not identified by the UE address(es) defined in clause 4.4.9.3 of 3GPP TS 29.522 [62].  (NOTE 5) | TSC\_5G  XRM\_5G  GMEC\_5G |
| tempInValidity | TemporalInValidity | 0..1 | Indicates the time interval during which the AF request is not to be applied. | GMEC\_5G |
| 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 or omitted otherwise. | 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 |
| events | array(UserPlaneEvent) | 0..N | Corresponds to the list of user plane event(s) to which the SCS/AS requests to subscribe. | enNB  GMEC\_5G |
| multiModalId | MultiModalId | 0..1 | Multi-modal Service Identifier, as defined in 3GPP TS 29.514 [52]. | MultiMedia |
| multiModDatFlows | map(AsSessionMediaComponent) | 0..N | Each element of the map represents Media Component data for a single-modal data flow(s) of a multi-modal service. The key of the map is the attribute "medCompN". (NOTE 8) (NOTE 13) | MultiMedia |
| l4sInd | UplinkDownlinkSupport | 0..1 | Provides L4S support information.  (NOTE 16) | L4S  GMEC\_5G |
| pduSetQosDl | PduSetQosPara | 0..1 | Contains the PDU Set QoS Parameter(s) which are used to support PDU Set based QoS handling in the downlink direction. | PDUSetHandling |
| pduSetQosUl | PduSetQosPara | 0..1 | Contains the PDU Set QoS Parameter(s) which are used to support PDU Set based QoS handling in the uplink direction. | PDUSetHandling |
| rTLatencyInd | boolean | 0..1 | Indicates the service data flow needs to meet the Round-Trip (RT) latency requirement of the service, when it is included and set to "true". The default value is "false" if omitted. | RTLatency  GMEC\_5G |
| protoDescDl | ProtocolDescription | 0..1 | Downlink Protocol description for PDU Set identification and end of Data burst indication in UPF. | PDUSetHandling  PowerSaving |
| protoDescUl | ProtocolDescription | 0..1 | Uplink Protocol description for PDU Set identification in UE. | PDUSetHandling |
| periodUl | DurationMilliSec | 0..1 | Indicates the time period between the start of the two data bursts in units of milliseconds in Uplink direction. | PowerSaving |
| periodDl | DurationMilliSec | 0..1 | Indicates the time period between the start of the two data bursts in units of milliseconds in Downlink direction. | PowerSaving |
| pdvMon | QosMonitoringInformation | 0..1 | Contains the Packet Delay Variation information for the subscribed report. It shall be present when the event "PACK\_DELAY\_VAR" is subscribed.  (NOTE 13) | EnQoSMon  GMEC\_5G |
| qosDuration | DurationSec | 0..1 | Contains the QoS duration to transfer data traffic transmission (e.g., AI/ML transmission). The minimum value of the QoS duration shall be 60 sec. | QoSTiming\_5G |
| qosInactInt | DurationSec | 0..1 | Contains the QoS inactivity interval for the given data traffic transmission (e.g., AI/ML transmission). The minimum value of the QoS inactivity interval shall be 60 sec. | QoSTiming\_5G |
| rttMon | QosMonitoringInformation | 0..1 | Contains the round-trip delay over two QoS flows (i.e. the UL traffic and DL traffic of the service data flow are separated into two QoS flows respectively) information for the subscribed report.  It shall be provided for "RT\_DELAY\_TWO\_QOS\_FLOWS" event.  (NOTE 13) | EnQoSMon  GMEC\_5G |
| qosMonDatRate | QosMonitoringInformation | 0..1 | Contains the data rate measurements information for the subscribed report. It shall be present when the event "QOS\_MONITORING" is subscribed and data rate measurements are required.  (NOTE 12) (NOTE 13) | EnQoSMon  ListUE\_5G  GMEC\_5G |
| avrgWndw | AverWindow | 0..1 | Averaging window for the calculation of the data rate for the service data flow. It may be present when the "qosMonDatRate" attribute is present.  (NOTE 13) | EnQoSMon |
| servAuthInfo | ServAuthInfo | 0..1 | Indicates the authorization result for the QoS monitoring request.  Supplied by the NEF. | EnQoSMon  GMEC\_5G |
| qosMonConReq | QosMonitoringInformation | 0..1 | Contains the requirements of the congestion information (ECN marking percentage) monitoring and reporting. It shall be present when the event "QOS\_MONITORING" is subscribed and congestion information measurements are required.  (NOTE 13) (NOTE 15) (NOTE 16) | EnQoSMon  GMEC\_5G |
| listUeConsDtRt | array(IpAddr) | 0..N | Identifies the list of UE addresses subject for Consolidated Data Rate monitoring.  (NOTE 12) | ListUE\_5G |
| NOTE 1: Properties marked with a feature as defined in clause 5.14.4 are applicable as described in clause 5.2.7. If no features are indicated, the related property applies for all the features.  NOTE 2: When the GMEC\_5G feature is not supported, one of "ueIpv4Addr", "ueIpv6Addr" or "macAddr" or "listUeAddrs" shall be included. If ipv4 or ipv6 address is provided, IP flow information shall be provided. If MAC address is provided and the AppId feature is not supported, Ethernet flow information (either "ethFlowInfo", or if the feature EnEthAsSessionQoS\_5G is supported, "enEthFlowInfo") shall be provided. If the AppId feature is supported, one of IP flow information, Ethernet flow information (if EthAsSessionQoS\_5G and/or EnEthAsSessionQoS\_5G is supported) or External Application Identifier shall be provided.  NOTE 3: The property is only applicable for the NEF.  NOTE 4: The attributes "altQoSReferences" and "altQosReqs" are mutually exclusive. The attributes "qosReference" and "altQosReqs" are also mutually exclusive.  NOTE 5: The attributes "reqGbrDl", "reqGbrUl", "reqMbrDl", "reqMbrUl", "maxTscBurstSize", "req5Gsdelay", "reqPer" (if the ExtQoS\_5G and/or "GMEC" feature(s) is/are supported), and "priority" within the "tscQosReq" attribute may be provided only if the "qosReference" attribute is not provided.  NOTE 6: When the Ethernet flow information is provided and, the EthAsSessionQoS\_5G and EnEthAsSessionQoS\_5G features are supported, either the "ethFlowInfo" or the "enEthFlowInfo" shall be provided, but not both simultenously.  NOTE 7: The "tosTC" attribute of the "flowInfo" attribute may only be present if the "ToSTC\_5G" feature is supported.  NOTE 8: The attributes "exterAppId", "flowInfo", "ethFlowInfo", "enEthFlowInfo", "qosReference", "altQoSReferences", "altQosReqs", "tscQosReq", "qosMonInfo" may be provided only if the "multiModDatFlows" attribute is not provided.  NOTE 9: When the "ListUE\_5G" feature is supported, the "listUeAddrs" attribute shall be provided, and either "exterAppId" attribute or "flowInfo" attribute shall be provided.  NOTE 10: When the GMEC\_5G feature is supported and the target UE(s) are not identified by UE address(es) (i.e., the "ueIpv4Addr", "ueIpv6Addr", "macAddr" or "listUEAddrs" attribute is not applicable to identify the UE(s)), the "extGroupId" attribute and the "gpsi" attributes are mutually exclusive And either one of them shall be provided. If either the "gpsi" attribute or the "extGroupId" attribute are present, then neither the "ueIpv4Addr" attribute, the "ueIpv6Addr" attribute, the "macAddr" attribute nor the "listUEAddrs" attribute shall be included.  NOTE 11: When the GMEC\_5G feature is supported, either the "exterAppId" attribute, "flowInfo" attribute or Ethernet flow information (either within the "ethFlowInfo" attribute or the "enEthFlowInfo" attribute) shall be provided.  NOTE 12: When the "ListUE\_5G" feature is supported and the "qosMonDatRate" attribute is provided, the "consDataRateThrDl" and "consDataRateThrUl" attributes contained in "qosMonDatRate" attribute indicate the upper bound of the aggregated DL/UL data rate and by default, are applicable to the list of UEs specified by the "listUeAddrs" attribute. If the "listUeConsDtRt" attribute is also provided, then it has to be the subset of "listUeAddrs" attribute.  NOTE 13: When the "MultiMedia" feature is supported, the "qosMonInfo", "directNotifInd", "pdvMon", "rttMon", "qosMonDatRate", "avrgWndw" and "qosMonConReq" attributes may be present only when the "multiModDatFlows" attribute is not present.  NOTE 14: When the "ExposureToEAS" feature is supported, the "directNotifInd" attribute indicates whether direct event notification is requested for the packet delay measurements provided in the "qosMonInfo" attribute. When the "EnQoSMon" feature is supported, the "directNotifInd" attribute indicates whether direct event notification is requested for the QoS measurement(s) provided in the "qosMonInfo", "qosMonDatRate" and/or "qosMonConReq" attribute(s).  NOTE 15: Only the "EVENT\_TRIGGERED" reporting frequency in "repFreqs" attribute contained in QosMonitoringInformation data type is applicable.  NOTE 16: When both, the "L4S" and "EnQoSMon" features are supported, the AF request may include either the indication of L4S support within the "l4sInd" attribute or the request for congestion measurements within the "qosMonConReq" attribute, but shall not include both attributes simultaneously.  NOTE 17: When the "ListUE\_5G" feature is supported and the "flowInfo" attribute is present, the flow description information shall be common for the list of UE(es) with the application server side IP address, port number and protocol. | | | | |

Editor’s Note: It is FFS whether other IEs within the "tscQosReq" attribute than "req5Gsdealy" attribute can apply for multi-modal communication services.

Editor’s Note: Whether the applicable reporting frequency for the Data Rate QoS monitoring can be event triggered and/or periodic is FFS.

\* \* \* \* Next changes \* \* \* \*

##### 5.14.2.1.3 Type: AsSessionWithQoSSubscriptionPatch

This type represents an AS session request with specific QoS for the service provided by the SCS/AS to the SCEF via T8 interface. The structure is used for PATCH request.

Table 5.14.2.1.3-1: Definition of type AsSessionWithQoSSubscriptionPatch

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description | Applicability (NOTE 1) |
| exterAppId | string | 0..1 | Identifies the external Application Identifier. (NOTE 2) (NOTE 8) | AppId  ListUE\_5G  GMEC\_5G |
| flowInfo | array(FlowInfo) | 0..N | Describe the data flow which requires QoS.  (NOTE 2) (NOTE 5) (NOTE 6) (NOTE 8) (NOTE 14) |  |
| ethFlowInfo | array(EthFlowDescription) | 0..N | Describes Ethernet packet flows.  (NOTE 2) (NOTE 6) | EthAsSessionQoS\_5G  GMEC\_5G |
| enEthFlowInfo | array(EthFlowInfo) | 0..N | Identifies the Ethernet flows which require QoS. Each Ethernet flow consists of a flow identifier and the corresponding UL and/or DL flows.  (NOTE 2) (NOTE 6) | EnEthAsSessionQoS\_5G  GMEC\_5G |
| listUeAddrs | array(UeAddInfo) | 0..N | Identifies the list of UE address(es).  (NOTE 8) (NOTE 9) | ListUE\_5G |
| qosReference | string | 0..1 | Pre-defined QoS reference. (NOTE 3) (NOTE 4) |  |
| altQoSReferences | array(string) | 0..N | Identifiers an ordered list of pre-defined QoS information. The lower the index of the array for a given entry, the higher the priority. (NOTE 3) | AlternativeQoS\_5G  GMEC\_5G |
| altQosReqs | array(AlternativeServiceRequirementsData) | 0..N | Identifies an ordered list of alternative service requirements that include individual QoS parameter sets. The lower the index of the array for a given entry, the higher the priority. (NOTE 3) | AltQosWithIndParams\_5G |
| disUeNotif | boolean | 0..1 | Indicates whether to disable QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation. The fulfilled situation is either the QoS profile or an Alternative QoS Profile.  - true: the QoS flow parameters signalling to the UE is disabled;  - false: the QoS flow parameters signalling to the UE is not disabled. | DisableUENotification\_5G  GMEC\_5G |
| usageThreshold | UsageThresholdRm | 0..1 | Time period and/or traffic volume in which the QoS is to be applied. |  |
| qosMonInfo | QosMonitoringInformationRm | 0..1 | Qos Monitoring information for packet delay measurements. It may be present when the event "QOS\_MONITORING" is subscribed.  (NOTE 10) | QoSMonitoring\_5G  GMEC\_5G |
| directNotifInd | boolean | 0..1 | Indicates whether the direct event notification is requested.  - true: the direct event notification is requested;  - false: the direct event notification is not requested.  (NOTE 10, NOTE 11) | ExposureToEAS  GMEC\_5G |
| tscQosReq | TscQosRequirementRm | 0..1 | Contains the QoS requirements for time sensitive communication. (NOTE 4) | TSC\_5G  MultiMedia  GMEC\_5G |
| tempInValidity | TemporalInValidity | 0..1 | Indicates the time interval during which the AF request is not to be applied. | GMEC\_5G |
| notificationDestination | Link | 0..1 | Contains the URL to receive the notification event(s) from the SCEF. |  |
| events | array(UserPlaneEvent) | 0..N | Corresponds to the list of user plane event(s) to which the SCS/AS requests to subscribe. | enNB  GMEC\_5G |
| multiModDatFlows | map(AsSessionMediaComponentRm) | 0..N | Each element of the map represents Media Component data for a single-modal data flow(s) of a multi-modal service. The key of the map is the attribute "medCompN". (NOTE 6, NOTE 10) | MultiMedia |
| l4sInd | UplinkDownlinkSupport | 0..1 | Provides L4S support information.  (NOTE 13) | L4S  GMEC\_5G |
| pduSetQosDl | PduSetQosParaRm | 0..1 | Contains the PDU Set QoS Parameter(s) which are used to support PDU Set based QoS handling in the downlink direction. | PDUSetHandling |
| pduSetQosUl | PduSetQosParaRm | 0..1 | Contains the PDU Set QoS Parameter(s) which are used to support PDU Set based QoS handling in the uplink direction. | PDUSetHandling |
| rTLatencyInd | boolean | 0..1 | Indicates the service data flow needs to meet the Round-Trip (RT) latency requirement of the service, when it is included and set to "true". The default value is "false" if omitted. | RTLatency  GMEC\_5G |
| protoDescDl | ProtocolDescription | 0..1 | Downlink Protocol description for PDU Set identification and end of Data burst indication in UPF | PDUSetHandling  PowerSaving |
| protoDescUl | ProtocolDescription | 0..1 | Uplink Protocol description for PDU Set identification in UE | PDUSetHandling |
| periodUl | DurationMilliSecRm | 0..1 | Indicates the time period between the start of the two data bursts in units of milliseconds in Uplink direction. | PowerSaving |
| periodDl | DurationMilliSecRm | 0..1 | Indicates the time period between the start of the two data bursts in units of milliseconds in Downlink direction. | PowerSaving |
| pdvMon | QosMonitoringInformationRm | 0..1 | Packet Delay Variation information for the subscribed report. It may be present when the event "PACK\_DELAY\_VAR" is subscribed.  (NOTE 10) | EnQoSMon  GMEC\_5G |
| qosDuration | DurationSecRm | 0..1 | Contains the QoS duration to transfer data transmission (e.g., AI/ML transmission). The minimum value of the QoS duration shall be 60 sec.. | QoSTiming\_5G |
| qosInactInt | DurationSecRm | 0..1 | Contains the QoS inactivity interval for the given data transfer transmission (e.g., AI/ML transmission). The minimum value of the QoS inactivity interval shall be 60 sec. | QoSTiming\_5G |
| rttMon | QosMonitoringInformationRm | 0..1 | Contains the round-trip delay over two QoS flows (i.e. the UL traffic and DL traffic of the service data flow are separated into two QoS flows respectively) information for the subscribed report.  It shall be provided for "RT\_DELAY\_TWO\_QOS\_FLOWS" event. (NOTE 10) | EnQoSMon  GMEC\_5G |
| qosMonDatRate | QosMonitoringInformationRm | 0..1 | Contains the data rate measurements information for the subscribed report. It may be present when the event "QOS\_MONITORING" is subscribed and data rate measurements apply.  (NOTE 9, NOTE 10) | EnQoSMon  ListUE\_5G  GMEC\_5G |
| avrgWndw | AverWindowRm | 0..1 | Averaging window for the calculation of the data rate for the service data flow.  (NOTE 10) | EnQoSMon |
| qosMonConReq | QosMonitoringInformationRm | 0..1 | Contains the requirements of the congestion information (ECN marking percentage) monitoring and reporting. It may be present when the event "QOS\_MONITORING" is subscribed and congestion information measurements apply.  (NOTE 10) (NOTE 12) (NOTE 13) | EnQoSMon  GMEC\_5G |
| listUeConsDtRt | array(IpAddr) | 0..N | Identifies the list of UE addresses subject for Consolidated Data Rate monitoring.  (NOTE 9) | ListUE\_5G |
| NOTE 1: Properties marked with a feature as defined in clause 5.14.4 are applicable as described in clause 5.2.7. If no features are indicated, the related property applies for all the features.  NOTE 2: One of "exterAppId", "flowInfo" or either "ethFlowInfo" or "enEthFlowInfo" may be provided.  NOTE 3 The attributes "altQoSReferences" and "altQosReqs" are mutually exclusive. The attributes "qosReference" and "altQosReqs" are also mutually exclusive.  NOTE 4: The attributes "reqGbrDl", "reqGbrUl", "reqMbrDl", "reqMbrUl", "maxTscBurstSize", "req5Gsdelay", "reqPer" (if the ExtQoS\_5G and/or "GMEC\_5G" feature(s) is supported), and "priority" within the "tscQosReq" attribute may be provided only if the "qosReference" attribute is not provided.  NOTE 5: The "tosTC" attribute of the "flowInfo" attribute may only be present if the "ToSTC\_5G" feature is supported.  NOTE 6: The attributes "exterAppId", "flowInfo", "ethFlowInfo", "enEthFlowInfo", "qosReference", "altQoSReferences", "altQosReqs", "tscQosReq", "qosMonInfo" may be provided only if the "multiModDatFlows" attribute is not provided.  NOTE 8: When the "ListUE\_5G" feature is supported, the "listUeAddrs" attribute may be provided, and/or either "exterAppId" attribute or "flowInfo" attribute may be provided.  NOTE 9: When the "ListUE\_5G" feature is supported and the "qosMonDatRate" attribute is provided, the "consDataRateThrDl" and "consDataRateThrUl" attributes contained in "qosMonDatRate" attribute indicate the upper bound of the aggregated DL/UL data rate and by default, are applicable to the list of UEs specified by the "listUeAddrs" attribute. If the "listUeConsDtRt" attribute is also provided, then it has to be the subset of "listUeAddrs" attribute.  NOTE 10: When the "MultiMedia" feature is supported, the "qosMonInfo", "directNotifInd", "pdvMon", "rttMon", "qosMonDatRate", "avrgWndw" and "qosMonConReq" attributes may be present only when the "multiModDatFlows" attribute is not present.  NOTE 11: When the "ExposureToEAS" feature is supported, the "directNotifInd" attribute indicates whether direct event notification is requested for the packet delay measurements provided in the "qosMonInfo" attribute. When the "EnQoSMon" feature is supported, the "directNotifInd" attribute indicates whether direct event notification is requested for the QoS measurement(s) indicated in the provided and/or previously provided "qosMonInfo", "qosMonDatRate" and "qosMonConReq" attribute(s).  NOTE 12: Only the "EVENT\_TRIGGERED" reporting frequency in "repFreqs" attribute contained in QosMonitoringInformationRm data type is applicable.  NOTE 13: When both, the "L4S" and "EnQoSMon" features are supported, the AF request may include either the indication of L4S support within the "l4sInd" attribute or the request for congestion measurements within the "qosMonConReq" attribute but shall not include both attributes simultaneously. As result of the PATCH operation, the Individual AS Session with Required QoS Subscription resource shall not contain simultaneously both, the indication of L4S support and the subscription to congestion monitoring.  NOTE 14: When the "ListUE\_5G" feature is supported and the "flowInfo" attribute is present, the flow description information shall be common for the list of UE(es) with the application server side IP address, port number and protocol. | | | | |

Editor’s Note: Whether the applicable reporting frequency for the Data Rate QoS monitoring can be event triggered and/or periodic is FFS.

\* \* \* \* Next changes \* \* \* \*

##### 5.14.2.1.5 Type: UserPlaneEventReport

This type represents an event report for user plane. It shall comply with the provisions defined in table 5.14.2.1.5-1.

Table 5.14.2.1.5-1: Definition of the UserPlaneEventReport data type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description | Applicability (NOTE 1) |
| event | UserPlaneEvent | 1 | Indicates the event reported by the SCEF. |  |
| accumulatedUsage | AccumulatedUsage | 0..1 | Contains the applicable information corresponding to the event. |  |
| flowIds | array(integer) | 0..N | Identifies the affected flows that were sent during event subscription. It may be omitted when the reported event applies to all the flows sent during the subscription.  (NOTE 2) |  |
| multiModFlows | array(MultiModalFlows) | 0..N | Each element of the array identifies the flow filters for the multi-modal data flows that were sent during event subscription and that are affected by the reported event. It may be omitted when the reported event applies to all the multi-modal data flows sent during the subscription.  (NOTE 2) | MultiMedia |
| appliedQosRef | string | 0..1 | The currently applied QoS reference (or applied individual QoS parameter set, if AltQosWithIndParams\_5G is supported). Applicable for event QOS\_NOT\_GUARANTEED or SUCCESSFUL\_RESOURCES\_ALLOCATION.  When it is omitted and the "event" attribute is QOS\_NOT\_GUARANTEED, the event report indicates that the lowest priority alternative QoS profile could not be fulfilled either. | AlternativeQoS\_5G, AltQosWithIndParams\_5G |
| altQosNotSuppInd | boolean | 0..1 | It may be set to true when the "event" attribute is QOS\_NOT\_GUARANTEED to indicate that alternative service requirements are not supported by the access network. The default value false shall apply if the attribute is not present. | AltQoSProfilesSupportReport, GMEC\_5G |
| plmnId | PlmnIdNid | 0..1 | Contains the PLMN Identifier or the SNPN Identifier.  This attribute may be present when the reported event is "PLMN\_CHG" and it is allowed to be exposed to the AF based on the local policy or local configuration. | enNB\_5G, GMEC\_5G |
| qosMonReports | array(QosMonitoringReport) | 0..N | Contains the QoS Monitoring Reporting information. | QoSMonitoring\_5G, GMEC\_5G |
| pdvMonReports | array(PdvMonitoringReport) | 0..N | Contains the PDV Monitoring Reporting information.  (NOTE 3) | EnQoSMon, GMEC\_5G |
| ratType | RatType | 0..1 | Contains the RAT type.  This attribute may be present if applicable, the notified event is "ACCESS\_TYPE\_CHANGE" and it is allowed to be exposed to the AF based on the local policy or local configuration. | enNB\_5G, GMEC\_5G |
| batOffsetInfo | BatOffsetInfo | 0..1 | The BAT offset and the optionally adjusted periodicity. | EnTSCAC |
| aggrDataRateRpts | array(QosMonitoringReport) | 0..1 | Contains QoS Monitoring for aggregated data rate reporting information. It shall be present when the notified event is "QOS\_MONITORING" and data rate measurements are available. | ListUE\_5G, GMEC\_5G |
| rttMonReports | array(QosMonitoringReport) | 0..N | Round-Trip delay for the indicated UL and DL QoS flows. It shall be present when the notified event is "RT\_DELAY\_TWO\_QOS\_FLOWS". | EnQoSMon, GMEC\_5G |
| qosMonDatRateReps | array(QosMonitoringReport) | 0..1 | Contains QoS Monitoring for data rate reporting information. It shall be present when the notified event is "QOS\_MONITORING" and data rate measurements are available. | EnQoSMon, GMEC\_5G |
| qosMonConInfoReps | array(QosMonitoringReport) | 0..N | Contains QoS Monitoring for congestion information (ECN marking percentage). It shall be present when the notified event is "QOS\_MONITORING" and congestion measurements are available. | EnQoSMon, GMEC\_5G |
| NOTE 1: Properties marked with a feature as defined in clause 5.14.4 are applicable as described in clause 5.2.7. If no features are indicated, the related property applies for all the features.  NOTE 2: The attributes "flowIds" and "multiModFlows" are mutually exclusive.  NOTE 3: The PdvMonitoringReport data type does not include the "flows" attribute in this API. | | | | |

Editor’s Note: Whether the rttMonReports attribute is needed or the qosMonReports attribute can be used instead to convey both, packet delay and RTT measurements reports requires further discussion.

\* \* \* \* Next changes \* \* \* \*

###### 5.14.3.2.3.1 GET

The GET method allows to read all or queried active subscriptions for a given SCS/AS. The SCS/AS shall initiate the HTTP GET request message and the SCEF shall respond to the message.

This method shall support the URI query parameters, request and response data structures, and response codes, as specified in the table 5.14.3.2.3.1-1 and table 5.14.3.2.3.1-2.

Table 5.14.3.2.3.1-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | Cardinality | Remarks | Applicability |
| ip-addrs | array(IpAddr) | 0..N | Contains the IP address(es) of the requested UE(s).  (NOTE 1, NOTE 2) | enNB |
| ip-domain | string | 0..1 | Contains the IPv4 address domain identifier.  This query parameter may be present only if the "ip-addrs" query parameter is also present and contains at least one array element including an IPv4 address. | enNB |
| mac-addrs | array(MacAddr48) | 0..N | Contains the MAC address(es) of the requested UE(s).  (NOTE 1, NOTE 2) | enNB |
| NOTE 1: Either the "ip-addrs" query parameter or the "mac-addrs" query parameter may be provided at the same time.  NOTE 2: If multiple array elements are provided within this query parameter, then each array element shall be treated as a separate query parameter. | | | | |

Table 5.14.3.2.3.1-2: Data structures supported by the GET request/response by the resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Request body | Data type | Cardinality | Remarks | |
| none |  |  | |
| Response body | Data type | Cardinality | Response  codes | Remarks |
| array(AsSessionWithQoSSubscription) | 0..N | 200 OK | The subscription information related to the request URI is returned. |
| none |  | 307 Temporary Redirect | Temporary redirection, during subscription retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative SCEF.  Redirection handling is described in clause 5.2.10. |
| none |  | 308 Permanent Redirect | Permanent redirection, during subscription retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative SCEF.  Redirection handling is described in clause 5.2.10. |
| NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.6-1 also apply. | | | | |

Table 5.14.3.2.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative SCEF. |

Table 5.14.3.2.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative SCEF. |

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