**3GPP TSG CT WG3 Meeting #135 *C3-243154r2***

**Hyderabad, IN, 27 - 31 May, 2024**

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **29.122** | **CR** | **0840** | **rev** | **1** | **Current version:** | **18.5.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
|  |

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

|  |
| --- |
|  |
| ***Title:***  | Corrections to QosMonitoringInformation data type |
|  |  |
| ***Source to WG:*** | ZTE |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | XRM |  | ***Date:*** | 2024-05-20 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-18 |
|  | *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)* |
|  |  |
| ***Reason for change:*** | 1. Incorrect presense condition of repFreqs attribute:

The description of repPeriod attribute in QosMonitoringInformation data type definition says that it shall be present if the feature "PacketDelayFailureReport" is supported and the "repFreqs" attribute includes "PERIODIC" or "EVENT\_TRIGGERED".However, if the congestion monitoring is requested by the AF but not the packet dalay monitoring, "repFreqs" attribute shall not be present as the packet delay failure report is not applicable for congestion monitoring.1. "nullable: true" property is missing in the QosMonitoringInformationRm data type definition in openAPI file.
 |
|  |  |
| ***Summary of change:*** | Update the description to indicate that the "repFreqs" attribute is only applicable if the feature "PacketDelayFailureReport" is supported and the "repFreqs" attribute includes "PERIODIC" or "EVENT\_TRIGGERED".Add "nullable: true" property to the QosMonitoringInformationRm data type definition in openAPI file. |
|  |  |
| ***Consequences if not approved:*** | Incorrect presense condition may lead wrong implementation. |
|  |  |
| ***Clauses affected:*** | 5.14.2.1.1, 5.14.2.1.6, 5.14.2.1.7, A.14 |
|  |  |
|  | **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 a backwards compatible correction to the OpenAPI file of the AsSessionWithQoS API. |
|  |  |
| ***This CR's revision history:*** |  |

**Additional discussion(if needed):**

**Proposed changes:**

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

##### 5.14.2.1.1 Introduction

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

Table 5.14.2.1.1-1 specifies data types re-used by the AsSessionWithQoS API from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the AsSessionWithQoS API.

Table 5.14.2.1.1-1: AsSessionWithQoS API re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| AcceptableServiceInfo | 3GPP TS 29.514 [52] | Acceptable maximum requested bandwidth. |  |
| AlternativeServiceRequirementsData | 3GPP TS 29.514 [52] | Contains alternative QoS related parameters and a reference to them. |  |
| AverWindow | 3GPP TS 29.571 [45] | Averaging Window. | EnQoSMon |
| AverWindowRm | 3GPP TS 29.571 [45] | This data type is defined in the same way as the "AverWindow" data type, but with the OpenAPI "nullable: true" property. | EnQoSMon |
| BatOffsetInfo | 3GPP TS 29.514 [52] | Contains the offset of the BAT and the optionally adjusted periodicity. | EnTSCAC |
| BitRate | 3GPP TS 29.571 [45] | String representing a bit rate that shall be formatted as follows:Pattern: '^\d+(\.\d+)? (bps|Kbps|Mbps|Gbps|Tbps)$'Examples:"125 Mbps", "0.125 Gbps", "125000 Kbps" | EnQoSMon, ListUE\_5G |
| BitRateRm | 3GPP TS 29.571 [45] | This data type is defined in the same way as the "BitRate" data type, but with the OpenAPI "nullable: true" property. |  |
| Dnn | 3GPP TS 29.571 [45] | Identifies a DNN. |  |
| EthFlowDescription | 3GPP TS 29.514 [52] | Defines a packet filter for an Ethernet flow.(NOTE 1) | EthAsSessionQoS\_5G, GMEC\_5G |
| EventsSubscReqData | 3GPP TS 29.514 [52] | Identifies the events the application subscribes to. | EnQoSMon |
| EventsSubscReqDataRm | 3GPP TS 29.514 [52] | This data type is defined in the same way as the "EventsSubscReqData" data type, but with the OpenAPI "nullable: true" property | EnQoSMon |
| ExtMaxDataBurstVol | 3GPP TS 29.571 [45] | Unsigned integer indicating Maximum Data Burst Volume (see clauses 5.7.3.7 and 5.7.4 of 3GPP TS 23.501 [8]), expressed in Bytes.Minimum = 4096. Maximum = 2000000. |  |
| ExtMaxDataBurstVolRm | 3GPP TS 29.571 [45] | This data type is defined in the same way as the "ExtMaxDataBurstVol" data type, but with the OpenAPI "nullable: true" property. |  |
| ExternalGroupId | 5.2.1.3.2 | Represents an external group identifier. | GMEC\_5G |
| Gpsi | 3GPP TS 29.571 [45] | Represents a GPSI. | GMEC\_5G |
| IpAddr | 3GPP TS 29.571 [45] | UE IP Address. | ListUE\_5G |
| MacAddr48 | 3GPP TS 29.571 [45] | MAC Address. | EthAsSessionQoS\_5G, enNB |
| MediaType | 3GPP TS 29.514 [52] | Indicates the media type of a single-modal data flow of a multi-modal service. | MultiMedia |
| MultiModalId | 3GPP TS 29.514 [52] | Represents multi-modal service identifier.  | MultiMedia |
| PacketDelBudget | 3GPP TS 29.571 [45] | Unsigned integer indicating Packet Delay Budget (see clauses 5.7.3.4 and 5.7.4 of 3GPP TS 23.501 [8])), expressed in milliseconds.Minimum = 1. | TSC\_5G, XRM\_5G |
| PacketDelBudgetRm | 3GPP TS 29.571 [45] | This data type is defined in the same way as the "PacketDelBudget" data type, but with the OpenAPI "nullable: true" property. | TSC\_5G, MultiMedia |
| PacketErrRate | 3GPP TS 29.571 [45] | String representing Packet Error Rate (see clauses 5.7.3.5 and 5.7.4 of 3GPP TS 23.501 [8]), expressed as a "*scalar* x 10-k" where the scalar and the *exponent k are each encoded as one decimal digit*.Pattern: '^([0-9]E-[0-9])$'Examples:Packer Error Rate 4x10-6 shall be encoded as "4E-6".Packer Error Rate 10-2 shall be encoded as "1E-2". | ExtQoS\_5G |
| PacketErrRateRm | 3GPP TS 29.571 [45] | This data type is defined in the same way as the "PacketErrRate" data type, but with the OpenAPI "nullable: true" property. | ExtQoS\_5G |
| PdvMonitoringReport | 3GPP TS 29.514 [52] | Represents a PDV monitoring report. | EnQoSMon |
| PeriodicityInfo | 3GPP TS 29.514 [52] | Indicates the time period between the start of the two data bursts in Uplink and/or Downlink direction. | PowerSaving |
| PduSetQosPara | 3GPP TS 29.571 [45] | Represents the PDU Set level QoS parameters. | PDUSetHandling |
| PduSetQosParaRm | 3GPP TS 29.571 [45] | Represents the PDU Set level QoS parameters to be modified. | PDUSetHandling |
| PlmnIdNid | 3GPP TS 29.571 [45] | Identifies the network: the PLMN Identifier (the mobile country code and the mobile network code) or the SNPN Identifier (the PLMN Identifier and the NID). | enNB\_5G |
| Port | 5.2.1.3.2 | Unsigned integer with valid values between 0 and 65535 representing a port. | ListUE\_5G |
| ProblemDetails | 5.2.1.2.12 | Problem Details when returning an error response. |  |
| ProtocolDescription | 3GPP TS 29.571 [45] | Represents Protocol description of the media flow | PDUSetHandlingPowerSaving |
| RatType | 3GPP TS 29.571 [45] | Identifies the RAT Type. | enNB\_5G |
| ReportingFrequency | 3GPP TS 29.512 [8] | Indicates the frequency for the reporting, such as event triggeredand/or periodic. (NOTE 2) |  |
| RequestedQosMonitoringParameter | 3GPP TS 29.512 [8] | Indicates the QoS information to be measured, e.g.UL packet delay, DL packet delay or round trip packet delay between the UE and the UPF is to be monitored when the QoS Monitoring for packet delay is enabled for the service data flow. (NOTE 2) |  |
| ServAuthInfo | 3GPP TS 29.514 [52] | The authorization result of a request for QoS / QoS monitoring. | EnQoSMon |
| Snssai | 3GPP TS 29.571 [45] | Identifies the S-NSSAI. |  |
| SupportedFeatures | 3GPP TS 29.571 [45] | Used to negotiate the applicability of the optional features defined in table 5.14.4-1. |  |
| TemporalInValidity | 3GPP TS 29.565 [72] | Represents the temporal invalidity related information. | GMEC\_5G |
| TscaiInputContainer | 3GPP TS 29.514 [52] | TSCAI Input information container. | TSC\_5G, MultiMedia, GMEC\_5G |
| TscPriorityLevel | 3GPP TS 29.514 [52] | Represents priority of TSC Flows. | TSC\_5G, MultiMedia, GMEC\_5G |
| TscPriorityLevelRm | 3GPP TS 29.514 [52] | Represents the same as the TscPriorityLevel data type, but with the OpenAPI "nullable: true" property. | TSC\_5G, MultiMedia, GMEC\_5G |
| TsnQosContainer | 3GPP TS 29.514 [52] | Represents individual QoS parameters  | MultiMedia |
| TsnQosContainerRm | 3GPP TS 29.514 [52] | Represents the same as the TsnQosContainer data type, but with the OpenAPI "nullable: true" property. | MultiMedia |
| Uinteger | 3GPP TS 29.571 [45] | Unsigned Integer, i.e. only value 0 and integers above 0 are permissible.Minimum = 0. |  |
| UintegerRm | 3GPP TS 29.571 [45] | This data type is defined in the same way as the "Uinteger" data type, but with the OpenAPI "nullable: true" property. |  |
| UplinkDownlinkSupport | 3GPP TS 29.514 [52] | Provides L4S support information. | L4S, GMEC\_5G |
| NOTE 1: In order to support a set of MAC addresses with a specific range in the traffic filter, feature MacAddressRange\_5G as specified in clause 5.14.4 shall be supported.NOTE 2: In order to support QoS Monitoring, feature QoSMonitoring\_5G as specified in clause 5.14.4 shall be supported. |  |

Table 5.14.2.1.1-2 specifies the data types defined for the AsSessionWithQoS API.

Table 5.14.2.1.1-2: AsSessionWithQoS API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| AdditionalInfoAsSessionWithQos | 5.14.2.1.10 | Describes additional error information specific for this API. |  |
| AsSessionWithQoSSubscription | 5.14.2.1.2 | Represents an individual AS session with required QoS subscription resource. |  |
| AsSessionWithQoSSubscriptionPatch | 5.14.2.1.3 | Represents parameters to modify an AS session with specific QoS subscription. |  |
| AsSessionMediaComponent | 5.14.2.1.13 | Represents media component data for a multi-modal service. It contains service data flow information for a single modal data flow of a multi-modal service. | MultiMedia |
| AsSessionMediaComponentRm | 5.14.2.1.14 | Represents the same as the AsSessMediaComponent data type but with the "nullable: true" property. | MultiMedia |
| MultiModalFlows | 5.14.2.1.15 | Represents flow information within a single-modal data flow for a multi-modal service. | MultiMedia |
| ProblemDetailsAsSessionWithQos | 5.14.2.1.11 | ProblemDetails as defined in clause 5.2.12.12 extended with specific error information for this API, as described in AdditionalInfoAsSessionWithQos. |  |
| QosMonitoringInformation | 5.14.2.1.6 | Represents QoS monitoring information. | QoSMonitoring\_5G |
| QosMonitoringInformationRm | 5.14.2.1.7 | Represents the same as the QosMonitoringInformation data type but with the "nullable: true" property.The "nullable: true" property is applicable only if the "EnQoSMon" feature is supported. | QoSMonitoring\_5G |
| QosMonitoringReport | 5.14.2.1.8 | Represents a QoS monitoring report. | QoSMonitoring\_5G |
| TscQosRequirement | 5.14.2.1.9 | Represents QoS requirements for time sensitive communication. | TSC\_5G, XRM\_5G, GMEC\_5G |
| TscQosRequirementRm | 5.14.2.1.10 | Represents the same as the TscQosRequirement data type but with the "nullable: true" property. | TSC\_5G, XRM\_5G, GMEC\_5G |
| UserPlaneEvent | 5.14.2.2.3 | Represents the user plane event. | enNB, GMEC\_5G |
| UserPlaneEventReport | 5.14.2.1.5 | Represents an event report for user plane. | enNB, GMEC\_5G |
| UserPlaneNotificationData | 5.14.2.1.4 | Represents the parameters to be conveyed in a user plane event(s) notification. | enNB, GMEC\_5G |
| UeAddInfo | 5.14.2.1.16 | Represents the UE address information. | ListUE\_5G |

\*\*\* 2nd Change \*\*\*

##### 5.14.2.1.6 Type: QosMonitoringInformation

Table 5.14.2.1.6-1: Definition of type QosMonitoringInformation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description | Applicability |
| reqQosMonParams | array(RequestedQosMonitoringParameter) | 1..N | Indicates the QoS information to be measured, e.g.UL packet delay, DL packet delay and/or round trip packet delay between the UE and the UPF is to be monitored when the QoS Monitoring for packet delay is enabled for the service data flow.If the "EnQoSMon" feature is supported, the indication of QoS monitoring for congestion (e.g., the UL and/or the DL congestion indication) or data rate (e.g., the UL and/or the DL data rate indication) may also be provided.If the "EnQoSMon" feature is supported and the "PACK\_DELAY\_VAR" event is subscribed, it indicates whether PDV measurement is for the UL, DL and/or round trip packet delay.If the "EnQoSMon" feature is supported and the "RT\_DELAY\_TWO\_QOS\_FLOWS" event is subscribed, it indicates round trip packet delay. |  |
| repFreqs | array(ReportingFrequency) | 1..N | Indicates the frequency for the reporting, such as event triggeredand/or periodic. |  |
| repThreshDl | Uinteger | 0..1 | Unsigned integer identifying a threshold in units of milliseconds for DL packet delay measurement reports.If the "EnQoSMon" feature is supported and the "PACK\_DELAY\_VAR" event is subscribed, it indicates the threshold for DL PDV measurement reports.It shall be present when the "reqQosMonParams" attribute includes "DOWNLINK". |  |
| repThreshUl | Uinteger | 0..1 | Unsigned integer identifying a threshold in units of milliseconds for UL packet delaymeasurement reports.If the "EnQoSMon" feature is supported and the "PACK\_DELAY\_VAR" event is subscribed, it indicates the threshold for UL PDV measurement reports.It shall be present when the "reqQosMonParams" attribute includes "UPLINK". |  |
| repThreshRp | Uinteger | 0..1 | Unsigned integer identifying a threshold in units of milliseconds for round trip packet delay measurement reports.If the "EnQoSMon" feature is supported and the "PACK\_DELAY\_VAR" event is subscribed, it indicates the threshold for round trip PDV measurement reports.If the "EnQoSMon" feature is supported and the "RT\_DELAY\_TWO\_QOS\_FLOWS" event is subscribed, it indicates the threshold for round trip delay for two QoS flows (i.e. the UL traffic and DL traffic of the service data flow are separated into two QoS flows respectively) measurement reports. |  |
| conThreshDl | Uinteger | 0..1 | Indicates the downlink threshold for congestion reporting, i.e. for the reporting of the received ECN marking percentage for DL. Only applicable when the "repFreqs" attribute includes "EVENT\_TRIGGERED" and the "reqQosMonParams" attribute includes "DOWNLINK\_CONGESTION". | EnQoSMon, GMEC\_5G |
| conThreshUl | Uinteger | 0..1 | Indicates the uplink threshold for the congestion reporting, i.e. for the reporting of the received ECN marking percentage for UL. Only applicable when the "repFreqs" attribute includes "EVENT\_TRIGGERED" and the "reqQosMonParams" attribute includes "UPLINK\_CONGESTION". | EnQoSMon, GMEC\_5G |
| waitTime | DurationSec | 0..1 | Indicates the minimum waiting time between subsequent reports. It shall be present when the "repFreqs" attribute includes "EVENT\_TRIGGERED". |  |
| repPeriod | DurationSec | 0..1 | Indicates the time interval between successive reporting. It shall be present when the "repFreqs" attribute includes "PERIODIC". If the feature "PacketDelayFailureReport" is supported, it also indicates the time interval at which a packet delay measurement failure needs to be reported if no measurement result is provided. It shall be present when the requested QoS monitoring parameter is packet delay and when the "repFreqs" attribute includes "PERIODIC" or "EVENT\_TRIGGERED". |  |
| repThreshDatRateDl | BitRate | 0..1 | Indicates the bit rate threshold for the DL. Only applicable when the "repFreqs" attribute includes "EVENT\_TRIGGERED" and the "reqQosMonParams" attribute includes "DOWNLINK\_DATA\_RATE". | EnQoSMon, GMEC\_5G |
| repThreshDatRateUl | BitRate | 0..1 | Indicates the bit rate threshold for the UL. Only applicable when the "repFreqs" attribute includes "EVENT\_TRIGGERED" and the "reqQosMonParams" attribute includes "UPLINK\_DATA\_RATE". | EnQoSMon, GMEC\_5G |
| consDataRateThrDl | BitRate | 0..1 | Indicates the Downlink Consolidated Data Rate Threshold. | ListUE\_5G |
| consDataRateThrUl | BitRate | 0..1 | Indicates the Uplink Consolidated Data Rate Threshold. | ListUE\_5G |

\*\*\* 3rd Change \*\*\*

##### 5.14.2.1.7 Type: QosMonitoringInformationRm

This type represents a QoS Monitoring Information which is defined in clause 5.14.2.1.7 but, if the "EnQoSMon" feature is supported, defined with "nullable: true" property so it can be removed in "JSON Merge Patch", as defined in IETF RFC 7396 [39]. It shall comply with the provisions defined in table 5.14.2.1.7-1.

Duration and volume are also removable in "JSON Merge Patch".

Table 5.14.2.1.7-1: Definition of type QosMonitoringInformationRm

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description | Applicability |
| reqQosMonParams | array(RequestedQosMonitoringParameter) | 0..N | Indicates the QoS information to be measured, e.g.UL packet delay, DL packet delay and/or round trip packet delay between the UE and the UPF is to be monitored when the QoS Monitoring for packet delay is enabled for the service data flow.If the "EnQoSMon" feature is supported, the indication of QoS monitoring for congestion (e.g., the UL and/or the DL congestion indication) or data rate (e.g., the UL and/or the DL data rate indication) may also be provided.If the "EnQoSMon" feature is supported and the "PACK\_DELAY\_VAR" event is subscribed, it indicates whether PDV measurement is for the UL, DL and/or round trip packet delay.If the "EnQoSMon" feature is supported and the "RT\_DELAY\_TWO\_QOS\_FLOWS" event is subscribed, it indicates round trip packet delay. |  |
| repFreqs | array(ReportingFrequency) | 0..N | Indicates the frequency for the reporting, such as event triggeredand/or periodic. |  |
| repThreshDl | UintegerRm | 0..1 | Unsigned integer identifying a threshold in units of milliseconds for DL packet delay measurement reports. If the "EnQoSMon" feature is supported and the "PACK\_DELAY\_VAR" event is subscribed, it indicates the threshold for DL PDV measurement reports.It shall be present when the "reqQosMonParams" attribute includes "DOWNLINK". |  |
| repThreshUl | UintegerRm | 0..1 | Unsigned integer identifying a threshold in units of milliseconds for UL packet delay measurement reports. If the "EnQoSMon" feature is supported and the "PACK\_DELAY\_VAR" event is subscribed, it indicates the threshold for UL PDV measurement reports.It shall be present when the "reqQosMonParams" attribute includes "UPLINK". |  |
| repThreshRp | UintegerRm | 0..1 | Unsigned integer identifying a threshold in units of milliseconds for round trip packet delay measurement reports. If the "EnQoSMon" feature is supported and the "PACK\_DELAY\_VAR" event is subscribed, it indicates the threshold for round trip PDV measurement reports.If the "EnQoSMon" feature is supported and the "RT\_DELAY\_TWO\_QOS\_FLOWS" event is subscribed, it indicates the threshold for round trip delay for two QoS flows (i.e. the UL traffic and DL traffic of the service data flow are separated into two QoS flows respectively) measurement reports. |  |
| conThreshDl | UintegerRm | 0..1 | Indicates the downlink threshold for congestion reporting, i.e. for the reporting of the received ECN marking percentage for DL. Only applicable when the "repFreqs" attribute includes "EVENT\_TRIGGERED" and the "reqQosMonParams" attribute includes "DOWNLINK\_CONGESTION". | EnQoSMon, GMEC\_5G |
| conThreshUl | UintegerRm | 0..1 | Indicates the uplink threshold for congestion reporting, i.e. for the reporting of the received ECN marking percentage for UL. Only applicable when the "repFreqs" attribute includes "EVENT\_TRIGGERED" and the "reqQosMonParams" attribute includes "UPLINK\_CONGESTION". | EnQoSMon, GMEC\_5G |
| waitTime | DurationSecRm | 0..1 | Indicates the minimum waiting time between subsequent reports. It shall be present when the "repFreqs" attribute includes "EVENT\_TRIGGERED". |  |
| repPeriod | DurationSecRm | 0..1 | Indicates the time interval between successive reporting. It shall be present when the "repFreqs" attribute includes "PERIODIC".If the feature "PacketDelayFailureReport" is supported, it also indicates the time interval at which a packet delay measurement failure needs to be reported if no measurement result is provided. It shall be present when the requested QoS monitoring parameter is packet delay and when the "repFreqs" attribute includes "PERIODIC" or "EVENT\_TRIGGERED". |  |
| repThreshDatRateDl | BitRateRm | 0..1 | Indicates the bit rate threshold for the DL. Only applicable when the "repFreqs" attribute includes "EVENT\_TRIGGERED" and the "reqQosMonParams" attribute includes "DOWNLINK\_DATA\_RATE". | EnQoSMon, GMEC\_5G |
| repThreshDatRateUl | BitRateRm | 0..1 | Indicates the bit rate threshold for the UL. Only applicable when the "repFreqs" attribute includes "EVENT\_TRIGGERED" and the "reqQosMonParams" attribute includes "UPLINK\_DATA\_RATE". | EnQoSMon, GMEC\_5G |
| consDataRateThrDl | BitRateRm | 0..1 | Indicates the Downlink Consolidated Data Rate Threshold. | ListUE\_5G |
| consDataRateThrUl | BitRateRm | 0..1 | Indicates the Uplink Consolidated Data Rate Threshold. | ListUE\_5G |

\*\*\* 4th Change \*\*\*

# A.14 AsSessionWithQoS API

openapi: 3.0.0

info:

 title: 3gpp-as-session-with-qos

 version: 1.3.0-alpha.5

 description: |

 API for setting us an AS session with required QoS.

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externalDocs:

 description: 3GPP TS 29.122 V18.5.0 T8 reference point for Northbound APIs

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

security:

 - {}

 - oAuth2ClientCredentials: []

servers:

 - url: '{apiRoot}/3gpp-as-session-with-qos/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: FetchAllASSessionWithQoSSubscriptions

 tags:

 - AS Session with Required QoS 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.

 content:

 application/json:

 schema:

 type: array

 items:

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

 '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.

 operationId: CreateASSessionWithQoSSubscription

 tags:

 - AS Session with Required QoS Subscriptions

 parameters:

 - name: scsAsId

 in: path

 description: Identifier of the SCS/AS

 required: true

 schema:

 type: string

 requestBody:

 description: Request to create a new subscription resource

 required: true

 content:

 application/json:

 schema:

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

 callbacks:

 notificationDestination:

 '{request.body#/notificationDestination}':

 post:

 requestBody: # contents of the callback message

 required: true

 content:

 application/json:

 schema:

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

 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/AsSessionWithQoSSubscription'

 headers:

 Location:

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

 required: true

 schema:

 type: string

 '400':

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

 '401':

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

 '403':

 description: Forbidden

 content:

 application/problem+json:

 schema:

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

 headers:

 Retry-After:

 description: >

 Indicates the time the AF has to wait before making a new request. It can be a

 non-negative integer (decimal number) indicating the number of seconds the AF

 has to wait before making a new request or an HTTP-date after which the AF can

 retry a new request.

 schema:

 type: string

 '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: FetchIndASSessionWithQoSSubscription

 tags:

 - Individual AS Session with Required QoS 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/AsSessionWithQoSSubscription'

 '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: UpdateIndASSessionWithQoSSubscription

 tags:

 - Individual AS Session with Required QoS 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/AsSessionWithQoSSubscription'

 responses:

 '200':

 description: OK (Successful update of the subscription)

 content:

 application/json:

 schema:

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

 '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':

 description: Forbidden

 content:

 application/problem+json:

 schema:

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

 headers:

 Retry-After:

 description: >

 Indicates the time the AF has to wait before making a new request. It can be a

 non-negative integer (decimal number) indicating the number of seconds the AF

 has to wait before making a new request or an HTTP-date after which the AF can

 retry a new request.

 schema:

 type: string

 '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: Updates/replaces an existing subscription resource.

 operationId: ModifyIndASSessionWithQoSSubscription

 tags:

 - Individual AS Session with Required QoS 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:

 required: true

 content:

 application/merge-patch+json:

 schema:

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

 responses:

 '200':

 description: OK. The subscription was modified successfully.

 content:

 application/json:

 schema:

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

 '204':

 description: No Content. The subscription 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':

 description: Forbidden

 content:

 application/problem+json:

 schema:

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

 headers:

 Retry-After:

 description: >

 Indicates the time the AF has to wait before making a new request. It can be a

 non-negative integer (decimal number) indicating the number of seconds the AF

 has to wait before making a new request or an HTTP-date after which the AF can

 retry a new request.

 schema:

 type: string

 '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 subscription.

 operationId: DeleteIndASSessionWithQoSSubscription

 tags:

 - Individual AS Session with Required QoS 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:

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

 '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:

 AsSessionWithQoSSubscription:

 description: Represents an individual AS session with required QoS subscription resource.

 type: object

 properties:

 self:

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

 supportedFeatures:

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

 dnn:

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

 snssai:

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

 notificationDestination:

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

 exterAppId:

 type: string

 description: Identifies the external Application Identifier.

 extGroupId:

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

 gpsi:

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

 flowInfo:

 type: array

 items:

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

 minItems: 1

 description: Describe the data flow which requires QoS.

 ethFlowInfo:

 type: array

 items:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/EthFlowDescription'

 minItems: 1

 description: Identifies Ethernet packet flows.

 enEthFlowInfo:

 type: array

 items:

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

 minItems: 1

 description: >

 Identifies the Ethernet flows which require QoS. Each Ethernet flow consists of a flow

 idenifer and the corresponding UL and/or DL flows.

 listUeAddrs:

 type: array

 items:

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

 minItems: 1

 description: Identifies the list of UE address.

 multiModalId:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/MultiModalId'

 protoDescUl:

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

 protoDescDl:

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

 qosReference:

 type: string

 description: Identifies a pre-defined QoS information

 altQoSReferences:

 type: array

 items:

 type: string

 minItems: 1

 description: >

 Identifies an ordered list of pre-defined QoS information. The lower the index of the

 array for a given entry, the higher the priority.

 altQosReqs:

 type: array

 items:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/AlternativeServiceRequirementsData'

 minItems: 1

 description: >

 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.

 disUeNotif:

 description: >

 Indicates whether the QoS flow parameters signalling to the UE when the SMF is notified

 by the NG-RAN of changes in the fulfilled QoS situation is disabled (true) or

 not (false). Default value is false. The fulfilled situation is either the QoS profile

 or an Alternative QoS Profile.

 type: boolean

 ueIpv4Addr:

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

 ipDomain:

 type: string

 ueIpv6Addr:

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

 macAddr:

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

 usageThreshold:

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

 sponsorInfo:

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

 qosMonInfo:

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

 pdvMon:

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

 qosDuration:

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

 qosInactInt:

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

 directNotifInd:

 type: boolean

 description: >

 Indicates whether the direct event notification is requested (true) or not (false) for

 the provided and/or previously provided QoS monitoring parameter(s).

 tscQosReq:

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

 l4sInd:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/UplinkDownlinkSupport'

 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 or omitted otherwise.

 tempInValidity:

 $ref: 'TS29565\_Ntsctsf\_QoSandTSCAssistance.yaml#/components/schemas/TemporalInValidity'

 websockNotifConfig:

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

 events:

 description: >

 Represents the list of user plane event(s) to which the SCS/AS requests to subscribe to.

 type: array

 items:

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

 minItems: 1

 multiModDatFlows:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: >

 Contains media component data for a single-modal data flow(s).

 The key of the map is the medCompN attribute.

 pduSetQosDl:

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

 pduSetQosUl:

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

 rTLatencyInd:

 type: boolean

 description: >

 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.

 periodUl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/DurationMilliSec'

 periodDl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/DurationMilliSec'

 rttMon:

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

 qosMonDatRate:

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

 avrgWndw:

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

 servAuthInfo:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/ServAuthInfo'

 qosMonConReq:

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

 listUeConsDtRt:

 type: array

 items:

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

 minItems: 1

 description: >

 Identifies the list of UE addresses subject for Consolidated Data Rate monitoring.

 required:

 - notificationDestination

 AsSessionWithQoSSubscriptionPatch:

 description: Represents parameters to modify an AS session with specific QoS subscription.

 type: object

 properties:

 exterAppId:

 type: string

 description: Identifies the external Application Identifier.

 flowInfo:

 type: array

 items:

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

 minItems: 1

 description: Describe the IP data flow which requires QoS.

 ethFlowInfo:

 type: array

 items:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/EthFlowDescription'

 minItems: 1

 description: Identifies Ethernet packet flows.

 enEthFlowInfo:

 type: array

 items:

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

 minItems: 1

 description: >

 Identifies the Ethernet flows which require QoS. Each Ethernet flow consists of a flow

 idenifer and the corresponding UL and/or DL flows.

 listUeAddrs:

 type: array

 items:

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

 minItems: 1

 description: Identifies the list of UE address.

 qosReference:

 type: string

 description: Pre-defined QoS reference

 altQoSReferences:

 type: array

 items:

 type: string

 minItems: 1

 description: >

 Identifies an ordered list of pre-defined QoS information. The lower the index of the

 array for a given entry, the higher the priority.

 altQosReqs:

 type: array

 items:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/AlternativeServiceRequirementsData'

 minItems: 1

 description: >

 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.

 disUeNotif:

 type: boolean

 description: >

 Indicates whether the QoS flow parameters signalling to the UE when the SMF is notified

 by the NG-RAN of changes in the fulfilled QoS situation is disabled (true) or

 not (false). The fulfilled situation is either the QoS profile or an Alternative QoS

 Profile.

 usageThreshold:

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

 qosMonInfo:

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

 pdvMon:

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

 directNotifInd:

 type: boolean

 description: >

 Indicates whether the direct event notification is requested (true) or not (false) for

 the provided QoS monitoring parameter(s).

 notificationDestination:

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

 tscQosReq:

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

 l4sInd:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/UplinkDownlinkSupport'

 tempInValidity:

 $ref: 'TS29565\_Ntsctsf\_QoSandTSCAssistance.yaml#/components/schemas/TemporalInValidity'

 events:

 description: >

 Represents the updated list of user plane event(s) to which the SCS/AS requests to

 subscribe to.

 type: array

 items:

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

 minItems: 1

 multiModDatFlows:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: >

 Contains media component data for a single-modal data flow(s).

 The key of the map is the medCompN attribute.

 pduSetQosDl:

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

 pduSetQosUl:

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

 rTLatencyInd:

 type: boolean

 description: >

 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.

 protoDescUl:

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

 protoDescDl:

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

 periodUl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/DurationMilliSecRm'

 periodDl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/DurationMilliSecRm'

 qosDuration:

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

 qosInactInt:

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

 rttMon:

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

 qosMonDatRate:

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

 avrgWndw:

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

 qosMonConReq:

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

 listUeConsDtRt:

 type: array

 items:

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

 minItems: 1

 description: >

 Identifies the list of UE addresses subject for Consolidated Data Rate monitoring.

 QosMonitoringInformation:

 description: Represents QoS monitoring information.

 type: object

 properties:

 reqQosMonParams:

 type: array

 items:

 $ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/RequestedQosMonitoringParameter'

 minItems: 1

 repFreqs:

 type: array

 items:

 $ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/ReportingFrequency'

 minItems: 1

 repThreshDl:

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

 repThreshUl:

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

 repThreshRp:

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

 conThreshDl:

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

 conThreshUl:

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

 waitTime:

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

 repPeriod:

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

 repThreshDatRateDl:

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

 repThreshDatRateUl:

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

 consDataRateThrDl:

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

 consDataRateThrUl:

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

 required:

 - reqQosMonParams

 - repFreqs

 QosMonitoringInformationRm:

 description: >

 Represents the same as the QosMonitoringInformation data type but with

 the nullable:true property.

 type: object

 properties:

 reqQosMonParams:

 type: array

 items:

 $ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/RequestedQosMonitoringParameter'

 minItems: 1

 repFreqs:

 type: array

 items:

 $ref: 'TS29512\_Npcf\_SMPolicyControl.yaml#/components/schemas/ReportingFrequency'

 minItems: 1

 repThreshDl:

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

 repThreshUl:

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

 repThreshRp:

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

 conThreshDl:

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

 conThreshUl:

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

 waitTime:

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

 repPeriod:

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

 repThreshDatRateDl:

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

 repThreshDatRateUl:

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

 consDataRateThrDl:

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

 consDataRateThrUl:

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

 nullable: true

 QosMonitoringReport:

 description: Represents a QoS monitoring report.

 type: object

 properties:

 ulDelays:

 type: array

 items:

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

 minItems: 1

 dlDelays:

 type: array

 items:

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

 minItems: 1

 rtDelays:

 type: array

 items:

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

 minItems: 1

 pdmf:

 type: boolean

 description: Represents the packet delay measurement failure indicator.

 ulDataRate:

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

 dlDataRate:

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

 ulAggrDataRate:

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

 dlAggrDataRate:

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

 ulConInfo:

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

 dlConInfo:

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

 UserPlaneNotificationData:

 description: Represents the parameters to be conveyed in a user plane event(s) notification.

 type: object

 properties:

 transaction:

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

 eventReports:

 type: array

 items:

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

 minItems: 1

 description: Contains the reported event and applicable information

 required:

 - transaction

 - eventReports

 UserPlaneEventReport:

 description: Represents an event report for user plane.

 type: object

 properties:

 event:

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

 accumulatedUsage:

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

 flowIds:

 type: array

 items:

 type: integer

 minItems: 1

 description: >

 Identifies the affected flows that were sent during event subscription. It might be

 omitted when the reported event applies to all the flows sent during the subscription.

 multiModFlows:

 type: array

 items:

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

 minItems: 1

 description: >

 Identifies the the flow filters for the single-modal data flows thatwere sent

 during event subscription.

 It may be omitted when the reported event applies to all the

 single-modal data flows sent during the subscription.

 appliedQosRef:

 type: string

 description: >

 The currently applied QoS reference. Applicable for event QOS\_NOT\_GUARANTEED or

 SUCCESSFUL\_RESOURCES\_ALLOCATION.

 altQosNotSuppInd:

 type: boolean

 description: >

 When present and set to true it indicates that the Alternative QoS profiles are not

 supported by the access network. Applicable for event QOS\_NOT\_GUARANTEED.

 plmnId:

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

 qosMonReports:

 type: array

 items:

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

 minItems: 1

 description: Contains the QoS Monitoring Reporting information

 pdvMonReports:

 type: array

 items:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/PdvMonitoringReport'

 minItems: 1

 description: Contains the PDV Monitoring Reporting information

 ratType:

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

 batOffsetInfo:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/BatOffsetInfo'

 rttMonReports:

 type: array

 items:

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

 minItems: 1

 description: Contains the round trip delay over two SDFs reporting information

 qosMonDatRateReps:

 type: array

 items:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/QosMonitoringReport'

 minItems: 1

 description: >

 Contains QoS Monitoring for data rate information. It shall be present when the notified

 event is "QOS\_MONITORING" and data rate measurements are available.

 aggrDataRateRpts:

 type: array

 items:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/QosMonitoringReport'

 minItems: 1

 description: >

 Contains QoS Monitoring for aggregated data rate information. It shall be present when

 the notified event is "QOS\_MONITORING" and data rate measurements are available.

 qosMonConInfoReps:

 type: array

 items:

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

 minItems: 1

 description: >

 Contains QoS Monitoring for congestion information. It shall be present when the

 notified event is "QOS\_MONITORING" and congestion measurements are available.

 required:

 - event

 TscQosRequirement:

 description: Represents QoS requirements for time sensitive communication.

 type: object

 properties:

 reqGbrDl:

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

 reqGbrUl:

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

 reqMbrDl:

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

 reqMbrUl:

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

 maxTscBurstSize:

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

 req5Gsdelay:

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

 reqPer:

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

 priority:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscPriorityLevel'

 tscaiTimeDom:

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

 tscaiInputDl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

 tscaiInputUl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

 capBatAdaptation:

 type: boolean

 description: >

 Indicates the capability for AF to adjust the burst sending time, when it is supported

 and set to "true". The default value is "false" if omitted.

 TscQosRequirementRm:

 description: >

 Represents the same as the TscQosRequirement data type but with the nullable:true property.

 type: object

 properties:

 reqGbrDl:

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

 reqGbrUl:

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

 reqMbrDl:

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

 reqMbrUl:

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

 maxTscBurstSize:

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

 req5Gsdelay:

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

 reqPer:

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

 priority:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscPriorityLevelRm'

 tscaiTimeDom:

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

 tscaiInputDl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

 tscaiInputUl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

 capBatAdaptation:

 type: boolean

 description: >

 Indicates the capability for AF to adjust the burst sending time, when it is supported

 and set to "true". The default value is "false" if omitted.

 nullable: true

 AdditionInfoAsSessionWithQos:

 description: Describes additional error information specific for this API.

 type: object

 properties:

 acceptableServInfo:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/AcceptableServiceInfo'

 ProblemDetailsAsSessionWithQos:

 description: Extends ProblemDetails to also include the acceptable service info.

 allOf:

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

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

 AsSessionMediaComponent:

 description: >

 Representmedia component data for a single-modal data flow of a multi-modal service.

 type: object

 required:

 - medCompN

 allOf:

 - not:

 required: [altSerReqs,altSerReqsData]

 - not:

 required: [qosReference,altSerReqsData]

 properties:

 flowInfos:

 type: array

 items:

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

 minItems: 1

 nullable: true

 description: >

 Contains the IP data flow(s) description for a single-modal data flow.

 qosReference:

 type: string

 disUeNotif:

 type: boolean

 altSerReqs:

 type: array

 items:

 type: string

 minItems: 1

 altSerReqsData:

 type: array

 items:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/AlternativeServiceRequirementsData'

 minItems: 1

 description: >

 Contains alternative service requirements that include individual QoS parameter sets.

 marBwDl:

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

 marBwUl:

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

 medCompN:

 type: integer

 medType:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/MediaType'

 mirBwDl:

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

 mirBwUl:

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

 tsnQos:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TsnQosContainer'

 tscaiInputDl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

 tscaiInputUl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

 tscaiTimeDom:

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

 rTLatencyReq:

 type: boolean

 description: Round-Trip latency requirement of the service data flow.

 pduSetQosDl:

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

 pduSetQosUl:

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

 l4sInd:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/UplinkDownlinkSupport'

 protoDescDl:

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

 protoDescUl:

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

 periodUl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/DurationMilliSec'

 periodDl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/DurationMilliSec'

 evSubsc:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/EventsSubscReqData'

 AsSessionMediaComponentRm:

 description: >

 Represents the AsSessionMediaComponent data type with nullable information.

 type: object

 required:

 - medCompN

 not:

 required: [altSerReqs,altSerReqsData]

 properties:

 flowInfos:

 type: array

 items:

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

 minItems: 1

 nullable: true

 description: >

 Contains the IP data flow(s) description for a single-modal data flow.

 qosReference:

 type: string

 nullable: true

 altSerReqs:

 type: array

 items:

 type: string

 minItems: 1

 nullable: true

 altSerReqsData:

 type: array

 items:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/AlternativeServiceRequirementsData'

 minItems: 1

 description: >

 Contains removable alternative service requirements that include individual QoS

 parameter sets.

 nullable: true

 disUeNotif:

 type: boolean

 nullable: true

 marBwDl:

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

 marBwUl:

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

 medCompN:

 type: integer

 medType:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/MediaType'

 mirBwDl:

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

 mirBwUl:

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

 tsnQos:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TsnQosContainerRm'

 tscaiInputDl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

 tscaiInputUl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

 rTLatencyReq:

 type: boolean

 description: Round-Trip latency requirement of the service data flow.

 pduSetQosDl:

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

 pduSetQosUl:

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

 l4sInd:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/UplinkDownlinkSupport'

 protoDescDl:

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

 protoDescUl:

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

 periodUl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/DurationMilliSecRm'

 periodDl:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/DurationMilliSecRm'

 evSubsc:

 $ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/EventsSubscReqDataRm'

 nullable: true

 MultiModalFlows:

 description: Represents a flow information within a single-modal data flow.

 type: object

 properties:

 medCompN:

 type: integer

 description: >

 It contains the ordinal number of the single-modal data flow. Identifies the

 single-modal data flow.

 flowIds:

 type: array

 items:

 type: integer

 minItems: 1

 description: >

 Identifies the affected flow(s) within the single-modal data flow

 (identified by the medCompN attribute).

 It may be omitted when all flows are affected.

 required:

 - medCompN

 UeAddInfo:

 description: Represent the UE address information.

 properties:

 ueIpAddr:

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

 portNumber:

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

 UserPlaneEvent:

 anyOf:

 - type: string

 enum:

 - SESSION\_TERMINATION

 - LOSS\_OF\_BEARER

 - RECOVERY\_OF\_BEARER

 - RELEASE\_OF\_BEARER

 - USAGE\_REPORT

 - FAILED\_RESOURCES\_ALLOCATION

 - QOS\_GUARANTEED

 - QOS\_NOT\_GUARANTEED

 - QOS\_MONITORING

 - SUCCESSFUL\_RESOURCES\_ALLOCATION

 - ACCESS\_TYPE\_CHANGE

 - PLMN\_CHG

 - L4S\_NOT\_AVAILABLE

 - L4S\_AVAILABLE

 - BAT\_OFFSET\_INFO

 - RT\_DELAY\_TWO\_QOS\_FLOWS

 - PACK\_DELAY\_VAR

 - 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 user plane event.

 Possible values are:

 - SESSION\_TERMINATION: Indicates that Rx session is terminated.

 - LOSS\_OF\_BEARER : Indicates a loss of a bearer.

 - RECOVERY\_OF\_BEARER: Indicates a recovery of a bearer.

 - RELEASE\_OF\_BEARER: Indicates a release of a bearer.

 - USAGE\_REPORT: Indicates the usage report event.

 - FAILED\_RESOURCES\_ALLOCATION: Indicates the resource allocation is failed.

 - QOS\_GUARANTEED: The QoS targets of one or more SDFs are guaranteed again.

 - QOS\_NOT\_GUARANTEED: The QoS targets of one or more SDFs are not being guaranteed.

 - QOS\_MONITORING: Indicates a QoS monitoring event.

 - SUCCESSFUL\_RESOURCES\_ALLOCATION: Indicates the resource allocation is successful.

 - ACCESS\_TYPE\_CHANGE: Indicates an Access type change.

 - PLMN\_CHG: Indicates a PLMN change.

 - L4S\_NOT\_AVAILABLE: The ECN marking for L4S of one or more SDFs is not available.

 - L4S\_AVAILABLE: The ECN marking for L4S of one or more SDFs is available again.

 - BAT\_OFFSET\_INFO: Indicates the network provided BAT offset and the optionally adjusted periodicity.

 - RT\_DELAY\_TWO\_QOS\_FLOWS: Indicates round-trip delay on UL and DL flows over two QoS flows.

 - PACK\_DELAY\_VAR: Indicates Packet Delay Variation is enabled for the SDF.

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