**3GPP TSG CT WG3 Meeting #132e *C3-240219***

**Electronic, 22 - 24 January, 2024 (Revision of C3-240098)**

|  |
| --- |
| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  |  |
|  |  |
| ***Source to WG:*** | , Ericsson, Qualcomm Incorporated |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***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 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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | The protocol description has to be API developer friendly as a JSON format and aligned with TS 29.571 Clause 5.5.4.13 As per TS 23.501 clause 5.37.5 and TS 23.502 clause 4.15.6.6, the protocol description is added for the clear definition. The protocol header extension usage as per TS 26.522 is specified.The related update has to be reflected in stage 3. |
|  |  |
| ***Summary of change:*** | The definition and openAPI are updated for the common protocol description as per TS 29.571. |
|  |  |
| ***Consequences if not approved:*** | The stage 3.is not aligned with stage 2. |
|  |  |
| ***Clauses affected:*** | 5.14.2.1.1, 5.14.2.1.2, 5.14.2.1.3, 5.14.2.1.13, 5.14.2.1.14, 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 new backward compatible feature to the OpenAPI definition of the AsSessionWithQoS API. |
|  |  |
| ***This CR's revision history:*** |  |

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

##### 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. |  |
| 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" |  |
| 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) |  |
| 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 "EventsSubscReqDatal" 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. |  |
| MacAddr48 | 3GPP TS 29.571 [45] | MAC Address. |  |
| 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. |  |
| 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. |  |
| 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". |  |
| 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. |  |
| PdvMonitoringReport | 3GPP TS 29.514 [52] | Represents a PDV monitoring report. |  |
| PeriodicityInfo | 3GPP TS 29.514 [52] | Indicates the time period between the start of the two data bursts in Uplink and/or Downlink direction. |  |
| PduSetQosPara | 3GPP TS 29.571 [45] | Represents the PDU Set level QoS parameters. |  |
| PduSetQosParaRm | 3GPP TS 29.571 [45] | Represents the PDU Set level QoS parameters to be modified. |  |
| 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). |  |
| 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. |  |
| 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. |  |
| TscaiInputContainer | 3GPP TS 29.514 [52] | TSCAI Input information container. | TSC\_5G, MultiMedia |
| TscPriorityLevel | 3GPP TS 29.514 [52] | Represents priority of TSC Flows. | TSC\_5G, MultiMedia |
| TscPriorityLevelRm | 3GPP TS 29.514 [52] | Represents the same as the TscPriorityLevel data type, but with the OpenAPI "nullable: true" property. | TSC\_5G, MultiMedia |
| 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 |
| 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. | 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\_5GXRM\_5G |
| TscQosRequirementRm | 5.14.2.1.10 | Represents the same as the TscQosRequirement data type but with the "nullable: true" property. | TSC\_5GXRM\_5G |
| UserPlaneEvent | 5.14.2.2.3 | Represents the user plane event. | enNB |
| UserPlaneEventReport | 5.14.2.1.5 | Represents an event report for user plane. | enNB |
| UserPlaneNotificationData | 5.14.2.1.4 | Represents the parameters to be conveyed in a user plane event(s) notification. | enNB |
| UeAddInfo | 5.14.2.1.16 | Represents the UE address information. | ListUE\_5G |

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

##### 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 9) (NOTE 11) | AppIdListUE\_5GGMEC\_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 9) (NOTE 11) |  |
| ethFlowInfo | array(EthFlowDescription) | 0..N | Identifies Ethernet packet flows.(NOTE 2) (NOTE 6) (NOTE 11) | EthAsSessionQoS\_5GGMEC\_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 11) | EnEthAsSessionQoS\_5GGMEC\_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 |
| 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 |
| 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. It can be present when the event "QOS\_MONITORING" is subscribed. | 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. | ExposureToEAS |
| tscQosReq | TscQosRequirement | 0..1 | Contains the QoS requirements for time sensitive communication. (NOTE 5) | TSC\_5GXRM\_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 to. | enNB |
| 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) | MultiMedia |
| l4sInfo | UplinkDownlinkSupport | 0..1 | Provides L4S support information. | L4S |
| pduSetQos | PduSetQosPara | 0..1 | Contains the PDU Set QoS Parameters which are used to support PDU Set based QoS handling. | 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 |
| protoDesc | ProtocolDescription | 0..1 | Protocol description for PDU Set identification and end of Data burst indication in UPF | PDUSetHandlingPowerSaving |
| periodInfo | PeriodicityInfo | 0..1 | Indicates the time period between the start of the two data bursts in Uplink and/or 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. | EnQoSMon |
| 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 service data flow information for the subscribed report.It shall be provided for "RT\_DELAY\_TWO\_QOS\_FLOWS" event. | EnQoSMon |
| 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) | EnQoSMonListUE\_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. | XRM\_5G |
| servAuthInfo | ServAuthInfo | 0..1 | Indicates the authorization result for the QoS monitoring request.Supplied by the NEF. | EnQoSMon |
| 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. | EnQoSMon |
| 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 feature is 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) ("ueIpv4Addr", "ueIpv6Addr", "macAddr", or "listUEAddrs"), the "extGroupId" attribute and the "gpsi" attribute are mutually exclusive. 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 nor the "macAddr" attribute shall be included.NOTE 11: When the GMEC\_5G feature is supported, either the "exterAppId" attribute, "flowInfo" attribute or Ethernet flow information (either "ethFlowInfo" attribute or "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. |

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: It is FFS whether the port number requires the transport protocol (like UDP, TCP) for completion or not.

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

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

Editor’s Note: It is FFS whether the QoS monitoring requirements for congestion measurements are different than the ones for packet delay, i.e., it is FFS whether reporting period and reporting frequency apply, or different criteria needs to be applied.

Editor’s Note: Whether it is needed to define separate attributes "protoDescUl" and/or "protoDescDl" for the UL and/or DL protocol description is FFS.

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

##### 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) | AppIdListUE\_5G |
| flowInfo | array(FlowInfo) | 0..N | Describe the data flow which requires QoS. (NOTE 2)(NOTE 5) (NOTE 8) |  |
| ethFlowInfo | array(EthFlowDescription) | 0..N | Describes Ethernet packet flows. (NOTE 2) | EthAsSessionQoS\_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) | EnEthAsSessionQoS\_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 |
| altQosReqs | array(AlternativeServiceRequirementsData) | 1..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 |
| 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. It can be present when the event "QOS\_MONITORING" is subscribed. | QoSMonitoring\_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. | ExposureToEAS |
| tscQosReq | TscQosRequirementRm | 0..1 | Contains the QoS requirements for time sensitive communication. (NOTE 4) | TSC\_5GMultiMedia |
| 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 to. | enNB |
| 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) | MultiMedia |
| l4sInfo | UplinkDownlinkSupport | 0..1 | Provides L4S support information. | L4S |
| pduSetQos | PduSetQosParaRm | 0..1 | Contains the PDU Set QoS Parameters which are used to support PDU Set based QoS handling. | 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 |
| protoDesc | ProtocolDescription | 0..1 | Protocol description for PDU Set identification and end of Data burst indication in UPF | PDUSetHandlingPowerSaving |
| periodInfo | PeriodicityInfo | 0..1 | Indicates the time period between the start of the two data bursts in Uplink and/or Downlink direction. | PowerSaving |
| pdvMon | QosMonitoringInformationRm | 0..1 | Packet Delay Variation information for the subscribed report. | EnQoSMon |
| 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 information for the subscribed report.It shall be provided for "RT\_DELAY\_TWO\_QOS\_FLOWS" event. | EnQoSMon |
| qosMonDatRate | QosMonitoringInformationRm | 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 modified.(NOTE 9) | EnQoSMonListUE\_5G |
| avrgWndw | AverWindowRm | 0..1 | Averaging window for the calculation of the data rate for the service data flow. | XRM\_5G |
| qosMonConReq | QosMonitoringInformationRm | 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. | EnQoSMon |
| 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 feature 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. |

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.

Editor’s Note: It is FFS whether the QoS monitoring requirements for congestion measurements are different than the ones for packet delay, i.e., it is FFS whether reporting period and reporting frequency apply, or different criteria needs to be applied.

Editor’s Note: Whether it is needed to define separate attributes "protoDescUl" and/or "protoDescDl" for the UL and/or DL protocol description is FFS.

\* \* \* \* Next change \* \* \* \*

##### 5.14.2.1.13 Type AsSessionMediaComponent

This type represents media component data for a single-modal data flow of a multi-modal service. It shall comply with the provisions defined in table 5.14.2.1.13-1.

Table 5.14.2.1.13-1: Definition of type AsSessionMediaComponent

| Attribute name | Data type | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- |
| flowInfos | array(FlowInfo) | 0..N | Contains the IP data flow(s) description for a single-modal data flow. |  |
| qosReference | string | 0..1 | Identifies a pre-defined QoS information. |  |
| altSerReqs | array(string) | 0..N | Ordered list of alternative service requirements that include a set of QoS references. The lower the index of the array for a given entry, the higher the priority.(NOTE) |  |
| altSerReqsData | array(AlternativeServiceRequirementsData) | 0..N | 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) |  |
| disUeNotif | boolean | 0..1 | Indicates 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 when it is included and set to "true". The fulfilled situation is either the QoS profile or an Alternative QoS Profile. The default value "false" shall apply, if the attribute is not present and has not been supplied previously. |  |
| medCompN | integer | 1 | Identifies the media component number, and it contains the ordinal number of the media component. |  |
| medType | MediaType | 0..1 | Indicates the media type of the service. |  |
| marBwUl | BitRate | 0..1 | Maximum requested bandwidth for the Uplink. |  |
| marBwDl | BitRate | 0..1 | Maximum requested bandwidth for the Downlink. |  |
| mirBwUl | BitRate | 0..1 | Minimum requested bandwidth for the Uplink. |  |
| mirBwDl | BitRate | 0..1 | Minimum requested bandwidth for the Downlink. |  |
| tsnQos | TsnQoSContainer | 0..1 | Transports QoS parameters for TSC traffic. |  |
| tscaiInputUl | TscaiInputContainer | 0..1 | Transports TSCAI input parameters for TSC traffic at the ingress interface of the DS-TT/UE (uplink flow direction).  |  |
| tscaiInputDl | TscaiInputContainer | 0..1 | Transports TSCAI input parameters for TSC traffic at the ingress of the NW-TT (downlink flow direction). |  |
| rTLatencyReq | 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. |  |
| pduSetQos | PduSetQosPara | 0..1 | PDU Set QoS parameters for XRM traffic. |  |
| protoDesc | ProtocolDescription | 0..1 | Protocol description for PDU Set identification and end of Data burst indication in UPF | PDUSetHandlingPowerSaving |
| evSubsc | EventsSubscReqData | 0..1 | Identifies the events the application subscribes to at creation of a media component. (NOTE) | EnQoSMon |
| NOTE: If attribute "evSubsc" is present, one or more of the following IEs may be included: "events", "notifUri", "reqQosMonParams", "qosMon", "qosMonDatRate", "pdvReqMonParams", "pdvMon", "congestMon", "notifCorreId", "afAppIds", "directNotifInd", "avrgWndw". In addition, when present the attribute "events", one or more of the following Enumeration "AfEvent" may be included: "QOS\_MONITORING", "PACK\_DEL\_VAR", "RT\_DELAY\_TWO\_QOS\_FLOWS". |

Editor’s Note: the list of IEs of a AsSessionMediaComponent to complete the QoS parameters developed for the MediaComponent data defined in TS 29.514 and applicable to external AFs is FFS.

Editor’s Note: It is FFS whether the notifUri and notifCorreId attributes may be required for the evSubsc attribute.

Editor’s Note: Whether it is needed to define separate attributes "protoDescUl" and/or "protoDescDl" for the UL and/or DL protocol description is FFS.

\* \* \* \* Next change \* \* \* \*

##### 5.14.2.1.14 Type AsSessionMediaComponentRm

This type represents the AsSessionMediaComponent with the "nullable: true" property. It shall comply with the provisions defined in table 5.14.2.1.14-1

Table 5.14.2.1.14-1: Definition of type AsSessionMediaComponentRm

| Attribute name | Data type | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- |
| flowInfos | array(FlowInfo) | 0..N | Contains the IP data flow(s) description for a single-modal data flow. |  |
| qosReference | string | 0..1 | Identifies a pre-defined QoS information. |  |
| altSerReqs | array(string) | 0..N | Ordered list of alternative service requirements that include a set of QoS references. The lower the index of the array for a given entry, the higher the priority.(NOTE) |  |
| altSerReqsData | array(AlternativeServiceRequirementsData) | 0..N | 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) |  |
| disUeNotif | boolean | 0..1 | Indicates 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 when it is included and set to "true". The fulfilled situation is either the QoS profile or an Alternative QoS Profile. The default value "false" shall apply, if the attribute is not present and has not been supplied previously. |  |
| medCompN | integer | 1 | Identifies the media component number, and it contains the ordinal number of the media component. |  |
| medType | MediaType | 0..1 | Indicates the media type of the service. |  |
| marBwUl | BitRateRm | 0..1 | Maximum requested bandwidth for the Uplink. |  |
| marBwDl | BitRateRm | 0..1 | Maximum requested bandwidth for the Downlink. |  |
| mirBwUl | BitRateRm | 0..1 | Minimum requested bandwidth for the Uplink. |  |
| mirBwDl | BitRateRm | 0..1 | Minimum requested bandwidth for the Downlink. |  |
| tsnQos | TsnQoSContainerRm | 0..1 | Transports QoS parameters for TSC traffic. |  |
| tscaiInputUl | TscaiInputContainer | 0..1 | Transports TSCAI input parameters for TSC traffic at the ingress interface of the DS-TT/UE (uplink flow direction).  |  |
| tscaiInputDl | TscaiInputContainer | 0..1 | Transports TSCAI input parameters for TSC traffic at the ingress of the NW-TT (downlink flow direction). |  |
| rTLatencyReq | 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". |  |
| pduSetQos | PduSetQosPara | 0..1 | PDU Set QoS parameters for XRM traffic. |  |
| protoDesc | ProtocolDescription | 0..1 | Protocol description for PDU Set identification and end of Data burst indication in UPF | PDUSetHandlingPowerSaving |
| evSubsc | EventsSubscReqDataRm | 0..1 | Identifies the events the application subscribes to at creation of a media component. (NOTE) | EnQoSMon |
| NOTE: If attribute "evSubsc" is present, one or more of the following IEs may be included: "events", "notifUri", "reqQosMonParams", "qosMon", "qosMonDatRate", "pdvReqMonParams", "pdvMon", "congestMon", "notifCorreId", "afAppIds", "directNotifInd", "avrgWndw". In addition, when present the attribute "events", one or more of the following Enumeration "AfEvent" may be included: "QOS\_MONITORING", "PACK\_DEL\_VAR", "RT\_DELAY\_TWO\_QOS\_FLOWS". |

Editor’s Note: It is FFS whether the notifUri and notifCorreId attributes may be required for the evSubsc attribute.

Editor’s Note: Whether it is needed to define separate attributes "protoDescUl" and/or "protoDescDl" for the UL and/or DL protocol description is FFS.

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

# A.14 AsSessionWithQoS API

openapi: 3.0.0

info:

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

 version: 1.3.0-alpha.4

 description: |

 API for setting us an AS session with required QoS.

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externalDocs:

 description: 3GPP TS 29.122 V18.4.0 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'

 protoDesc:

 $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).

 Default value is false.

 tscQosReq:

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

 l4sInfo:

 $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.

 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.

 pduSetQos:

 $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. periodInfo:

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

 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).

 notificationDestination:

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

 tscQosReq:

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

 l4sInfo:

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

 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.

 pduSetQos:

 $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.

 protoDesc:

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

 periodInfo:

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

 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'

 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'

 cimf:

 type: boolean

 description: >

 Represents the congestion information measurement failure indicator. When set to "true",

 it indicates that a congestion information failure has occurred. Default value is false

 if omitted.

 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.

 pduSetQos:

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

 protoDesc:

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

 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.

 pduSetQos:

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

 protoDesc:

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

 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 \* \* \* \*