**3GPP TSG- WG3 Meeting #**

**Xiamen, China, 9 - 13 October, 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** |  | **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:*** | Feature granularity and definition for MultiModal & PowerSaving | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | |  |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | XRM\_5G is the common feature name for all key issues of Rel-18 XRM WID as of now. As per CT3 offline XRM meeting in September, it was agreed to split the Feature granularity in the level of key issues.  As part of this agreement, MultiModal and PowerSaving feature and its corresponding definition needs to be updated instead of XRM\_5G. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Feature granularity and definition for MultiModal & PowerSaving is updated | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | XRM feature granularity will be missed in the stage 3. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.14.2.1.1, 5.14.2.1.2, 5.14.2.1.3, 5.14.2.1.5, 5.14.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This CR does not impact the OpenAPI descriptions defined in this specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***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. | XRM\_5G |
| 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. | XRM\_5G |
| 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)$'  Examples:  "125 Mbps", "0.125 Gbps", "125000 Kbps" |  |
| BitRateRm | 3GPP TS 29.571 [45] | This data type is defined in the same way as the "BitRate" data type, but with the OpenAPI "nullable: true" property. |  |
| Dnn | 3GPP TS 29.571 [45] | Identifies a DNN. |  |
| EthFlowDescription | 3GPP TS 29.514 [52] | Defines a packet filter for an Ethernet flow.(NOTE 1) |  |
| ExtMaxDataBurstVol | 3GPP TS 29.571 [45] | Unsigned integer indicating Maximum Data Burst Volume (see clauses 5.7.3.7 and 5.7.4 of 3GPP TS 23.501 [8]), expressed in Bytes.  Minimum = 4096. Maximum = 2000000. |  |
| ExtMaxDataBurstVolRm | 3GPP TS 29.571 [45] | This data type is defined in the same way as the "ExtMaxDataBurstVol" data type, but with the OpenAPI "nullable: true" property. |  |
| ExternalGroupId | Clause 5.2.1.3.2 | Represents an external group identifier. | GMEC\_5G |
| Gpsi | 3GPP TS 29.571 [45] | Represents a GPSI. | GMEC\_5G |
| IpAddr | 3GPP TS 29.571 [45] | UE IP Address. |  |
| MacAddr48 | 3GPP TS 29.571 [45] | MAC Address. |  |
| MediaType | 3GPP TS 29.514 [52] | Indicates the media type of a single-modal data flow of a multimodal service. | MultiMedia |
| MultiModalId | 3GPP TS 29.514 [52] | Represents multi-modal service identifier. | MultiMedia |
| PacketDelBudget | 3GPP TS 29.571 [45] | Unsigned integer indicating Packet Delay Budget (see clauses 5.7.3.4 and 5.7.4 of 3GPP TS 23.501 [8])), expressed in milliseconds.  Minimum = 1. |  |
| PacketDelBudgetRm | 3GPP TS 29.571 [45] | This data type is defined in the same way as the "PacketDelBudget" data type, but with the OpenAPI "nullable: true" property. |  |
| PacketErrRate | 3GPP TS 29.571 [45] | String representing Packet Error Rate (see clauses 5.7.3.5 and 5.7.4 of 3GPP TS 23.501 [8]), expressed as a "*scalar* x 10-k" where the scalar and the *exponent k are each encoded as one decimal digit*.  Pattern: '^([0-9]E-[0-9])$'  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). |  |
| ProblemDetails | 5.2.1.2.12 | Problem Details when returning an error response. |  |
| ProtoDesc | 3GPP TS 29.514 [52] | Represents Protocol description of the media flow |  |
| 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. | XRM\_5G |
| 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. |  |
| 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 multimodal service. It contains service data flow information for a single modal data flow of a multimodal 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 multimodal 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\_5G  MultiMedia |
| TscQosRequirementRm | 5.14.2.1.10 | Represents the same as the TscQosRequirement data type but with the "nullable: true" property. | TSC\_5G  MultiMedia |
| 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 |

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

##### 5.14.2.1.2 Type: AsSessionWithQoSSubscription

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

Table 5.14.2.1.2-1: Definition of type AsSessionWithQoSSubscription

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description | Applicability (NOTE 1) |
| self | Link | 0..1 | Link to the resource "Individual AS Session with Required QoS Subscription".  This parameter shall be supplied by the SCEF in HTTP responses. |  |
| dnn | Dnn | 0..1 | Identifies a DNN, a full DNN with both the Network Identifier and Operator Identifier, or a DNN with the Network Identifier only. (NOTE 3) |  |
| snssai | Snssai | 0..1 | Identifies an S-NSSAI. (NOTE 3) |  |
| supportedFeatures | SupportedFeatures | 0..1 | Used to negotiate the supported optional features of the API as described in clause 5.2.7.  This attribute shall be provided in the POST request and in the response of successful resource creation. |  |
| notificationDestination | Link | 1 | Contains the URL to receive the notification bearer level event(s) from the SCEF. |  |
| exterAppId | string | 0..1 | Identifies the external Application Identifier. (NOTE 2) (NOTE 10) (NOTE 11) | AppId  ListUE\_5G  GMEC\_5G |
| extGroupId | ExternalGroupId | 0..1 | Identifies a group of UE(s).  (NOTE 10) | GMEC\_5G |
| gpsi | Gpsi | 0..1 | Identifies a UE using its GPSI.  (NOTE 10) | GMEC\_5G |
| flowInfo | array(FlowInfo) | 0..N | Describe the IP data flow which requires QoS.  (NOTE 2) (NOTE 7) (NOTE 10) (NOTE 11) |  |
| ethFlowInfo | array(EthFlowDescription) | 0..N | Identifies Ethernet packet flows.  (NOTE 2) (NOTE 6) (NOTE 11) | EthAsSessionQoS\_5G  GMEC\_5G |
| enEthFlowInfo | array(EthFlowInfo) | 0..N | Identifies the Ethernet flows which require QoS. Each Ethernet flow consists of a flow identifier and the corresponding UL and/or DL flows.  (NOTE 2) (NOTE 6) (NOTE 11) | EnEthAsSessionQoS\_5G  GMEC\_5G |
| qosReference | string | 0..1 | Identifies a pre-defined QoS information. (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(IpAddr) | 1..N | Identifies the list of UE address.  (NOTE 9) | 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\_5G  MultiMedia |
| 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 multimodal service. The key of the map is the attribute "medCompN". (NOTE 8) | MultiMedia |
| l4sInfo | UplinkDownlinkSupport | 0..1 | Provides L4S support information. | XRM\_5G |
| pduSetQos | PduSetQosPara | 0..1 | Contains the PDU Set QoS Parameters which are used to support PDU Set based QoS handling. | XRM\_5G |
| 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. | XRM\_5G |
| pduSetProtDesc | ProtoDesc | 0..1 | Protocol description for PDU Set identification in UPF | XRM\_5G |
| 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. | XRM\_5G |
| qosDuration | DurationSec | 0..1 | Contains the QoS duration to transfer data traffic transmission (e.g., AI/ML transmission). The minimum value of the QoS duration shall be 60 sec. | QoSTiming\_5G |
| qosInactInt | DurationSec | 0..1 | Contains the QoS inactivity interval for the given data traffic transmission (e.g., AI/ML transmission). The minimum value of the QoS inactivity interval shall be 60 sec. | QoSTiming\_5G |
| rttMon | QosMonitoringInformation | 0..1 | Contains the round-trip delay over two service data flow information for the subscribed report.  It shall be provided for "RT\_DELAY\_TWO\_QOS\_FLOWS" event. | XRM\_5G |
| qosMonDatRate | QosMonitoringInformation | 0..1 | Qos Monitoring information. It shall be present when the event "QOS\_MONITORING" is subscribed and data rate measurements are required. | XRM\_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. | XRM\_5G |
| qosMonConReq | QosMonitoringInformation | 0..1 | Contains the requirements of the congestion information (ECN marking percentage) monitoring and reporting. It shall be present when the event "QOS\_MONITORING" is subscribed and congestion information measurements are required. | XRM\_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, 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. | | | | |

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 a new data structure for list of UE is needed or not is FFS.

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.

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

##### 5.14.2.1.3 Type: AsSessionWithQoSSubscriptionPatch

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

Table 5.14.2.1.3-1: Definition of type AsSessionWithQoSSubscriptionPatch

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description | Applicability (NOTE 1) |
| exterAppId | string | 0..1 | Identifies the external Application Identifier. (NOTE 2) | AppId  ListUE\_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(IpAddr) | 0..N | Identifies the list of UE address (NOTE 8) | 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\_5G  MultiMedia |
| 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 |
| multiModalId | MultiModalId | 0..1 | Multi-modal Service Identifier, as defined in 3GPP TS 29.514 [52]. | MultiMedia |
| multiModDatFlows | map(AsSessionMediaComponentRm) | 0..N | Each element of the map represents Media Component data for a single-modal data flow(s) of a multimodal service. The key of the map is the attribute "medCompN". (NOTE 6) | MultiMedia |
| l4sInfo | UplinkDownlinkSupport | 0..1 | Provides L4S support information. | XRM\_5G |
| pduSetQos | PduSetQosParaRm | 0..1 | Contains the PDU Set QoS Parameters which are used to support PDU Set based QoS handling. | XRM\_5G |
| 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. | XRM\_5G |
| pduSetProtDesc | ProtoDesc | 0..1 | Protocol description for PDU Set identification in UPF | XRM\_5G |
| 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. | XRM\_5G |
| qosDuration | DurationSecRm | 0..1 | Contains the QoS duration to transfer data transmission (e.g., AI/ML transmission). The minimum value of the QoS duration shall be 60 sec.. | QoSTiming\_5G |
| qosInactInt | DurationSecRm | 0..1 | Contains the QoS inactivity interval for the given data transfer transmission (e.g., AI/ML transmission). The minimum value of the QoS inactivity interval shall be 60 sec. | QoSTiming\_5G |
| rttMon | QosMonitoringInformationRm | 0..1 | Contains the round-trip delay over two QoS flows information for the subscribed report.  It shall be provided for "RT\_DELAY\_TWO\_QOS\_FLOWS" event. | XRM\_5G |
| qosMonDatRate | QosMonitoringInformationRm | 0..1 | Qos Monitoring information. It shall be present when the event "QOS\_MONITORING" is subscribed and data rate measurements are modified. | XRM\_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. | XRM\_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. | | | | |

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 a new data structure for list of UE is needed or not is FFS.

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.

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

##### 5.14.2.1.5 Type: UserPlaneEventReport

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

Table 5.14.2.1.5-1: Definition of the UserPlaneEventReport data type

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

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

Editor’s note: If the pdvReport can include maximum and minimu UL delay variation and pdmf indication it is FFS whether the QosMonitoringReport can be used instead.

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

### 5.14.4 Used Features

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

**Table 5.14.4-1: Features used by AsSessionWithQoS API**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Feature Number** | **Feature** | | **Description** | |
| 1 | Notification\_websocket | | The delivery of notifications over Websocket is supported according to clause 5.2.5.4. This feature requires that the Notification\_test\_event featute is also supported. | |
| 2 | Notification\_test\_event | | The testing of notifications connections is supported according to clause 5.2.5.3. | |
| 3 | EthAsSessionQoS\_5G | | Setting up required QoS for Ethernet UE. This feature may only be supported in 5G. | |
| 4 | MacAddressRange\_5G | | Indicates the support of a set of MAC addresses with a specific range in the traffic filter. This feature may only be supported in 5G. | |
| 5 | AlternativeQoS\_5G | | Indicates the support of alternative QoS requirements and the QoS notification (i.e. whether the QoS targets for SDF(s) are not guaranteed or guaranteed again). This feature may only be supported in 5G. | |
| 6 | QoSMonitoring\_5G | | Indicates the support of QoS Monitoring functionality and the report for packet delay monitoring. This feature may only be supported in 5G. | |
| 7 | DisableUENotification\_5G | | Indicates the support of disabling QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation. This feature may only be supported in 5G. This feature requires that the AlternativeQoS\_5G feature is also supported. | |
| 8 | TSC\_5G | | Indicates the support of Time Sensitive Communication. This feature may only be supported in 5G. | |
| 9 | AppId | | Indicates the support of dynamically providing the Application Identifier via the API. | |
| 10 | ExposureToEAS | | This feature indicates the support of direct notification in 5GC. This feature requires that the QoSMonitoring\_5G feature is also supported. | |
| 11 | enNB | | Indicates the support of enhancements to the northbound interfaces. | |
| 12 | AltQosWithIndParams\_5G | | This feature indicates the support of provisioning Alternative Service Requirements with individual QoS parameters. This feature requires that the AlternativeQoS\_5G feature is also supported. | |
| 13 | EnEthAsSessionQoS\_5G | | Indicates the support of required QoS for Ethernet UE, allowing to indicate separately different UL and/or DL Ethernet flows. This feature may only be supported in 5G. | |
| 14 | enNB\_5G | | Indicates the support of enhancements to the northbound interfaces and only applicable to 5G. | |
| 15 | PacketDelayFailureReport | | Indicates the support of packet delay failure report as part of QoS Monitoring procedures. This feature requires that QoSMonitoring\_5G is supported. This feature may only be supported in 5G. | |
| 16 | ToSTC\_5G | | Indicates the support of Type of Service or Traffic Class. This feature may only be supported in 5G. | |
| 17 | EnTSCAC | | Indicates the support of extensions to TSCAC and the RAN feedback for BAT offset and adjusted periodicity.  This feature may only be supported in 5G, and requires that the TSC\_5G feature is also supported. | |
| 18 | AltQoSProfilesSupportReport | | This feature indicates the support of the report of whether Alternative QoS parameters are supported by the access network. This feature requires that AlternativeQoS\_5G and/or AltQosWithIndParams\_5G features are also supported. | |
| 19 | ExtQoS\_5G | | This feature indicates the support of extended QoS parameters. This feature may only be supported in 5G. | |
| 20 | MultiMedia | | Indicates the support for multi-modal or multimedia flows for single UE and multiple UE. This feature may only be supported in 5G. This feature is used in Extend reality usecases. | |
| 21 | ExtErrors | | Indicates the support of additional application errors related to authorization or PDU Session availability. | |
| 22 | QoSTiming\_5G | | This feature indicates the support of QoS timing information for the transfer and support of data transmission (e.g., AI/ML transmission). This feature may only be supported in 5G. | |
| 23 | ListUE\_5G | | Indicates the support for the list of UEs This feature may only be supported in 5G. | |
| 24 | GMEC\_5G | | This feature indicates the support of Generic Group Management Exposure and Communication related enhancements.  The following functionalities are supported:  - Support AF requested QoS for a UE or group of UE(s) not identified by the UE address.  This feature may only be supported in 5G. | |
| 25 | PowerSaving | | | This feature indicates the support of the Power Saving for different traffic measurement. This feature mainly supports for XR related traffic in Rel-18.  This feature may only be supported in 5G. | |
| Feature: A short name that can be used to refer to the bit and to the feature, e.g. "Notification".  Description: A clear textual description of the feature. | | | | |

Editor's note: Whether an independent feature for PDU set qos is needed is FFS.

Editor's note: Whether an independent feature for RT latency is needed is FFS.

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