**3GPP TSG-WG SA4 Meeting #121 *S4-221359***

**Toulouse, France, November 14 – 18, 2022**

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| --- |
| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **26.247** | **CR** | **0176** | **rev** | **-** | **Current version:** | **17.1.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps | **X** | ME | **X** | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | CR to TS 26.247 Add slice scope into the metrics configuration  |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | SA4 |
|  |  |
| ***Work item code:*** | NR\_QoE\_enh-Core |  | ***Date:*** | 2022-11-04 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *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:*** | In the LS R3-225227 from RAN3, it’s asked to introduce the slice scope information in the QoE configuration container to support the per-slice QoE reporting. In current SA4 specs, the slice scope is missing in the QoE configuration container only with mandatory dnn/slice information in the report, which may lead to unnecessary QoE collection and reporting.  |
|  |  |
| ***Summary of change:*** | Add slice scope in the QoE metric configuration to indicate whether the QoE metric collection and reporting should be executed on the specific network slices.  |
|  |  |
| ***Consequences if not approved:*** | Unalignment between SA4 and RAN3. |
|  |  |
| ***Clauses affected:*** | 10.5, 10.6.2. |
|  |  |
|  | **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's revision history:*** |  |

\* \* \* \* First change \* \* \* \*

## 10.5 Quality Reporting Scheme for DASH

This section specifies a 3GP-DASH quality reporting scheme.

The quality reporting scheme is signaled using in the **Reporting** element in the **Metrics** element. The URN to be used for the **Reporting**@schemeIdUri shall be "urn:3GPP:ns:PSS:DASH:QM10".

The reporting scheme shall use the quality reporting protocol defined in section 10.6.

The semantics and XML syntax of the scheme information for the 3GP-DASH quality reporting scheme are specified in Table 34 and Table 35, respectively.

Table 34: Semantics of Quality Reporting Scheme Information

|  |  |  |
| --- | --- | --- |
| Element or Attribute Name | Use | Description |
|  | @apn | O | This attribute gives the access point that should be used for sending the QoE reports. |
|  | @format | O | This field gives the requested format for the reports. Possible formats are: "uncompressed" and "gzip". |
|  | @samplepercentage | O | Percentage of the clients that should report QoE. The client uses a random number generator with the given percentage to find out if the client should report or not. |
|  | @reportingserver | M | The reporting server URL to which the reports will be sent. |
|  | @reportinginterval | O | Indicates the time(s) reports should be sent. If not present, then the client should send a report after the streaming session has ended. If present, @reportingInterval=n indicates that the client should send a report every n-th second provided that new metrics information has become available since the previous report. For each report sent, only the newly collected information since the previous report shall be reported. |
|  | **LocationFilter** | 0..1 | When present, this element indicates the geographic area(s) or location(s) where quality metric collection is requested. When not present, quality metric collection is requested regardless of the device’s location. The LocationFilter element comprises one or more instances of any combination of targeted cell-IDs, polygons and circular areas.Each cell-ID entry in LocationFilter is announced in cellList, and each polygon and circular area entry is announced in the polygonList or and circularAreaList elements, respectively. |
|  |  cellList | 0..N | This element specifies a list of cell identified by E-UTRAN-CGI or CGI. |
|  |  shape |  | Geographic area comprising one or more instances of polygonList and/or circularAreaList elements. |
|  |  polygonList | 0..N | This element, when present, comprises a list of ‘Polygon’ shapes as defined by OMA MLP[51]. |
|  |  @confLevel | O | This attribute indicates the probability in percent that the DASH client is located in the corresponding polygon area. It is defined as ‘lev\_conf’ by OMA MLP. If not present, it has default value of 60. |
|  |  circularAreaList | 0..N | This element, when present, comprises a list of ‘CircularArea’ shapes as defined by OMA MLP[51]. |
|  |  @confLevel | O | This attribute indicates the probability in percent that the DASH client is located in the corresponding circular area. It is defined as ‘lev\_conf’ by OMA MLP. If not present, it has default value of 60. |
|  | **SliceScope** | 0..1 | When present, this element indicates a list of network slices in which the QoE collection is to requested. When not present, quality metric collection is requested for all network slices. The SliceScope is a list of S-NSSAI. |
| Legend:For attributes: M=Mandatory, O=Optional, OD=Optional with Default Value, CM=Conditionally Mandatory.For elements: <minOccurs>…<maxOccurs> (N=unbounded)Elements are bold; attributes are non-bold and preceded with an @ |

Table 35: Syntax of Quality Reporting Scheme Information

|  |
| --- |
| <?xml version="1.0"?><xs:schema targetNamespace="urn:3GPP:ns:PSS:AdaptiveHTTPStreaming:2009:qm"  attributeFormDefault="unqualified"  elementFormDefault="qualified"  xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:xlink="http://www.w3.org/1999/xlink" xmlns="urn:3GPP:ns:PSS:AdaptiveHTTPStreaming:2009:qm">  <xs:annotation> <xs:appinfo>3GPP DASH Quality Reporting</xs:appinfo> <xs:documentation xml:lang="en"> This Schema defines the quality reporting scheme information for 3GPP DASH. </xs:documentation> </xs:annotation>   <xs:element name="ThreeGPQualityReporting" type="SimpleQualityReportingType"/>  <xs:complexType name="SimpleQualityReportingType"> <xs:sequence> <xs:element name="LocationFilter" type="LocationFilterType" minOccurs="0"/> <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/> </xs:sequence> <xs:attribute name="apn" type="xs:string" use="optional"/> <xs:attribute name="format" type="FormatType" use="optional"/> <xs:attribute name="samplePercentage" type="xs:double" use="optional"/> <xs:attribute name="reportingServer" type="xs:anyURI" use="required"/> <xs:attribute name="reportingInterval" type="xs:unsignedInt" use="optional"/> <xs:attribute name="SliceScope" type="UnsignedIntVectorType" use="optional"/> <xs:anyAttribute namespace="##other" processContents="lax"/> </xs:complexType>  <xs:simpleType name="FormatType">  <xs:restriction base="xs:string"> <xs:enumeration value="uncompressed" /> <xs:enumeration value="gzip" /> </xs:restriction> </xs:simpleType> <xs:complexType name="LocationFilterType"> <xs:sequence> <xs:element name="cellID" type="xs:unsignedLong" minOccurs="0" maxOccurs="unbounded"/> <xs:element name="shape" type="ShapeType" minOccurs="0"/> <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/> </xs:sequence> <xs:anyAttribute namespace="##other" processContents="lax"/> </xs:complexType> <xs:complexType name="ShapeType"> <xs:sequence> <xs:element name="PolygonList" type="PolygonListType" minOccurs="0"/> <xs:element name="CircularAreaList" type="CircularAreaListType" minOccurs="0"/> <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/> </xs:sequence> <xs:anyAttribute namespace="##other" processContents="lax"/> </xs:complexType> <xs:complexType name="PolygonListType"> <xs:annotation> <xs:documentation> see [OMA MLP] </xs:documentation> </xs:annotation> <xs:sequence> <xs:element name="Polygon" minOccurs="0" maxOccurs="unbounded"/> <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/> </xs:sequence> <xs:attribute name="ConfLevel" type="xs:unsignedInt" use="optional"/> <xs:anyAttribute namespace="##other" processContents="lax"/> </xs:complexType> <xs:complexType name="CircularAreaListType"> <xs:annotation> <xs:documentation> see [OMA MLP] </xs:documentation> </xs:annotation> <xs:sequence> <xs:element name="CircularArea" minOccurs="0" maxOccurs="unbounded"/> <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/> </xs:sequence> <xs:attribute name="ConfLevel" type="xs:unsignedInt" use="optional"/> <xs:anyAttribute namespace="##other" processContents="lax"/> </xs:complexType><xs:simpleType name="UnsignedIntVectorType"> <xs:list itemType="xs:unsignedInt"/> </xs:simpleType></xs:schema> |

\* \* \* \* Second change \* \* \* \*

###  10.6.2 Report Format

The QoE report is formatted as an XML document that complies with the following XML schema:

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| <?xml version="1.0"?><xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="urn:3gpp:metadata:2011:HSD:receptionreport"xmlns:sup="urn:3gpp:metadata:2016:PSS:SupplementQoEMetric"xmlns:sv="urn:3gpp:metadata:2016:PSS:schemaVersion" xmlns="urn:3gpp:metadata:2011:HSD:receptionreport" elementFormDefault="qualified">  <xs:element name="ReceptionReport" type="ReceptionReportType"/> <xs:complexType name="ReceptionReportType"> <xs:choice> <xs:element name="QoeReport" type="QoeReportType" minOccurs="0" maxOccurs="unbounded"/> <xs:any namespace="##other" processContents="skip" minOccurs="0" maxOccurs="unbounded"/> </xs:choice> <xs:attribute name="contentURI" type="xs:anyURI" use="required"/> <xs:attribute name="clientID" type="xs:string" use="optional"/> </xs:complexType> <xs:complexType name="QoeReportType"> <xs:sequence> <xs:element name="QoeMetric" type="QoeMetricType" minOccurs="1" maxOccurs="unbounded"/> <xs:element ref="sup:supplementQoEMetric" minOccurs="0" maxOccurs="1"/> <xs:element ref="sv:delimiter"/> <xs:any namespace="##other" processContents="skip" minOccurs="0" maxOccurs="unbounded"/> </xs:sequence> <xs:attribute name="periodID" type="xs:string" use="required"/> <xs:attribute name="reportTime" type="xs:dateTime" use="required"/> <xs:attribute name="reportPeriod" type="xs:unsignedInt" use="required"/> <xs:attribute name="qoeReferenceId" type="xs:hexBinary" use="optional"/> <xs:attribute name="recordingSessionId" type="xs:hexBinary" use="optional"/> <xs:attribute name="dnn" type="xs:string" use="optional"/> <xs:attribute name="snssai" type="xs:unsignedLong" use="optional"/> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:complexType name="QoeMetricType"> <xs:choice> <xs:element name="HttpList" type="HttpListType"/> <xs:element name="RepSwitchList" type="RepSwitchListType"/> <xs:element name="AvgThroughput" type="AvgThroughputType" maxOccurs="unbounded"/> <xs:element name="InitialPlayoutDelay" type="xs:unsignedInt"/> <xs:element name="BufferLevel" type="BufferLevelType"/> <xs:element name="PlayList" type="PlayListType"/> <xs:element name="MPDInformation" type="MpdInformationType" maxOccurs="unbounded"/> <xs:element name="PlayoutDelayforMediaStartup" type="xs:unsignedInt"/> </xs:choice> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:complexType name="HttpListType"> <xs:choice> <xs:element name="HttpListEntry" type="HttpListEntryType" maxOccurs="unbounded"/> </xs:choice> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:complexType name="HttpListEntryType"> <xs:choice> <xs:element name="Trace" type="HttpThroughputTraceType" maxOccurs="unbounded"/> </xs:choice> <xs:attribute name="tcpid" type="xs:unsignedInt" use="optional"/> <xs:attribute name="type" type="ExtensibleHttpEntryResourceType" use="optional"/> <xs:attribute name="url" type="xs:string" use="required"/> <xs:attribute name="actualUrl" type="xs:string" use="optional"/> <xs:attribute name="range" type="xs:string" use="optional"/> <xs:attribute name="trequest" type="xs:dateTime" use="required"/> <xs:attribute name="tresponse" type="xs:dateTime" use="required"/> <xs:attribute name="responsecode" type="xs:unsignedInt" use="optional"/> <xs:attribute name="interval" type="xs:unsignedInt" use="optional"/> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:simpleType name="HttpEntryResourceType"> <xs:restriction base="xs:string"> <xs:enumeration value="MPD"/> <xs:enumeration value="MPDDeltaFile"/> <xs:enumeration value="XLinkExpansion"/> <xs:enumeration value="InitializationSegment"/> <xs:enumeration value="IndexSegment"/> <xs:enumeration value="MediaSegment"/> </xs:restriction> </xs:simpleType> <xs:simpleType name="StringPatternType"> <xs:restriction base="xs:string"> <xs:pattern value="x:\S.\*"/> </xs:restriction> </xs:simpleType> <xs:simpleType name="ExtensibleHttpEntryResourceType"> <xs:union memberTypes="HttpEntryResourceType StringPatternType"/> </xs:simpleType> <xs:complexType name="HttpThroughputTraceType"> <xs:attribute name="s" type="xs:dateTime" use="required"/> <xs:attribute name="d" type="xs:unsignedInt" use="required"/> <xs:attribute name="b" type="UnsignedIntVectorType" use="required"/> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:complexType name="RepSwitchListType"> <xs:choice> <xs:element name="RepSwitchEvent" type="RepSwitchEventType" maxOccurs="unbounded"/> </xs:choice> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:complexType name="RepSwitchEventType"> <xs:attribute name="to" type="xs:string" use="required"/> <xs:attribute name="mt" type="xs:duration" use="optional"/> <xs:attribute name="t" type="xs:dateTime" use="optional"/> <xs:attribute name="lto" type="xs:unsignedInt" use="optional"/> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:complexType name="AvgThroughputType"> <xs:attribute name="numBytes" type="xs:unsignedInt" use="required"/> <xs:attribute name="activityTime" type="xs:unsignedInt" use="required"/> <xs:attribute name="t" type="xs:dateTime" use="required"/> <xs:attribute name="duration" type="xs:unsignedInt" use="required"/> <xs:attribute name="accessbearer" type="xs:string" use="optional"/> <xs:attribute name="inactivityType" type="InactivityType" use="optional"/> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:simpleType name="InactivityType"> <xs:restriction base="xs:string"> <xs:enumeration value="Pause"/> <xs:enumeration value="BufferControl"/> <xs:enumeration value="Error"/> </xs:restriction> </xs:simpleType> <xs:complexType name="BufferLevelType"> <xs:choice> <xs:element name="BufferLevelEntry" type="BufferLevelEntryType" maxOccurs="unbounded"/> </xs:choice> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:complexType name="BufferLevelEntryType"> <xs:attribute name="t" type="xs:dateTime" use="required"/> <xs:attribute name="level" type="xs:unsignedInt" use="required"/> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:complexType name="PlayListType"> <xs:choice> <xs:element name="Trace" type="PlayListEntryType" maxOccurs="unbounded"/> </xs:choice> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:complexType name="PlayListEntryType"> <xs:choice> <xs:element name="TraceEntry" type="PlayListTraceEntryType" maxOccurs="unbounded"/> </xs:choice> <xs:attribute name="start" type="xs:dateTime" use="required"/> <xs:attribute name="mstart" type="xs:duration" use="required"/> <xs:attribute name="startType" type="StartType" use="required"/> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:complexType name="PlayListTraceEntryType"> <xs:attribute name="representationId" type="xs:string" use="optional"/> <xs:attribute name="subrepLevel" type="xs:unsignedInt" use="optional"/> <xs:attribute name="start" type="xs:dateTime" use="required"/> <xs:attribute name="sstart" type="xs:duration" use="required"/> <xs:attribute name="duration" type="xs:unsignedInt" use="required"/> <xs:attribute name="playbackSpeed" type="xs:double" use="optional"/> <xs:attribute name="stopReason" type="StopReasonType" use="optional"/> <xs:attribute name="stopReasonOther" type="xs:string" use="optional"/> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:simpleType name="StartType"> <xs:restriction base="xs:string"> <xs:enumeration value="NewPlayoutRequest"/> <xs:enumeration value="Resume"/> <xs:enumeration value="OtherUserRequest"/> <xs:enumeration value="StartOfMetricsCollectionPeriod"/> </xs:restriction> </xs:simpleType> <xs:simpleType name="StopReasonType"> <xs:restriction base="xs:string"> <xs:enumeration value="RepresentationSwitch"/> <xs:enumeration value="Rebuffering"/> <xs:enumeration value="UserRequest"/> <xs:enumeration value="EndOfPeriod"/> <xs:enumeration value="EndOfContent"/> <xs:enumeration value="EndOfMetricsCollectionPeriod"/> <xs:enumeration value="Failure"/> <xs:enumeration value="Other"/> </xs:restriction> </xs:simpleType> <xs:complexType name="MpdInformationType"> <xs:choice> <xs:element name="Mpdinfo" type="RepresentationType" maxOccurs="unbounded"/> </xs:choice> <xs:attribute name="representationId" type="xs:string" use="required"/> <xs:attribute name="subrepLevel" type="xs:unsignedInt" use="optional"/> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:complexType name="RepresentationType"> <xs:attribute name="codecs" type="xs:string" use="required"/> <xs:attribute name="bandwidth" type="xs:unsignedInt" use="required"/> <xs:attribute name="qualityRanking" type="xs:unsignedInt" use="optional"/> <xs:attribute name="frameRate" type="xs:double" use="optional"/> <xs:attribute name="width" type="xs:unsignedInt" use="optional"/> <xs:attribute name="height" type="xs:unsignedInt" use="optional"/> <xs:attribute name="mimeType" type="xs:string" use="required"/> <xs:anyAttribute processContents="skip"/> </xs:complexType> <xs:simpleType name="DoubleVectorType"> <xs:list itemType="xs:double"/> </xs:simpleType> <xs:simpleType name="StringVectorType"> <xs:list itemType="xs:string"/> </xs:simpleType> <xs:simpleType name="UnsignedIntVectorType"> <xs:list itemType="xs:unsignedInt"/> </xs:simpleType></xs:schema> |
|  |

The following schema is an extension to allow additional QoE metrics.

<?xml version="1.0" encoding="UTF-8"?>

<xs:schema

 xmlns="urn:3gpp:metadata:2016:PSS:SupplementQoEMetric"

 xmlns:xs="http://www.w3.org/2001/XMLSchema"

 targetNamespace="urn:3gpp:metadata:2016:PSS:SupplementQoEMetric"

 elementFormDefault="qualified">

 <xs:element name="supplementQoEMetric" type="SupplementQoEMetricType"/>

<xs:complexType name="SupplementQoEMetricType">

 <xs:sequence>

 <xs:element name="deviceinformation" type="DeviceInformationType" minOccurs="0"/>

 <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>

 </xs:sequence>
 </xs:complexType>

 <xs:complexType name="DeviceInformationType">
 <xs:choice>
 <xs:element name="Entry" type="DeviceInformationEntryType" maxOccurs="unbounded"/>
 </xs:choice>
 <xs:anyAttribute processContents="skip"/>
 </xs:complexType>

 <xs:complexType name="DeviceInformationEntryType">

 <xs:attribute name="start" type="xs:dateTime" use="required"/>
 <xs:attribute name="mstart" type="xs:duration" use="required"/>
 <xs:attribute name="videoWidth" type="xs:unsignedInt" use="required"/>
 <xs:attribute name="videoHeight" type="xs:unsignedInt" use="required"/>
 <xs:attribute name="screenWidth" type="xs:unsignedInt" use="required"/>
 <xs:attribute name="screenHeight" type="xs:unsignedInt" use="required"/>

 <xs:attribute name="pixelWidth" type="xs:double" use="required"/>
 <xs:attribute name="pixelHeight" type="xs:double" use="required"/>

 <xs:attribute name="fieldOfView" type="xs:double" use="required"/>
 <xs:anyAttribute processContents="skip"/>

 </xs:complexType>

</xs:schema>

<?xml version="1.0" encoding="UTF-8"?>

<xs:schema xmlns="urn:3gpp:metadata:2016:PSS:schemaVersion"

 xmlns:xs="http://www.w3.org/2001/XMLSchema"

 targetNamespace="urn:3gpp:metadata:2016:PSS:schemaVersion"

 elementFormDefault="qualified">

 <xs:element name="schemaVersion" type="xs:unsignedInt"/>

 <xs:element name="delimiter" type="xs:byte"/>

</xs:schema>

Note: If a supplementQoEMetric needs to be sent when no ordinar QoEMetric are due, a dummy MPDInformation metric shall be sent with codecs="none", bandwidth=0, mimeType="none", representationId="none".

Note: If the attribute qoeReferenceId was defined in the QMC configuration (see clause L.2), the value shall be copied into each QoE report, to facilitate network-side correlation (see [63]). If this attribute was defined the attribute recordingSessionId shall also be returned for each QoE report. The recordingSessionId is a two-byte octet defined by the client. It shall remain the same for all QoE reports belonging to the same streaming session, and it should be different for QoE reports belonging to different streaming sessions.

Note: For QMC scheme, if the SliceScope is included in the QoE configuration and the slice associated with the streaming service is within the SliceScope, the DASH client should execute the QoE collection and include the S-NSSAI and DNN that correspond to the report data for support of per-slice QoE reporting and evaluation in OAM. This information may be retrieved via the AT Command +CGDCONT [61]) or the specific traffic mapping with URSP rule [69].

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