**3GPP TSG-SA4 Meeting # *S4-211507***

**, Telco, , 2021**

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| *CR-Form-v12.1* |
| **DRAFT CHANGE REQUEST** |
|  |
|  |  | **CR** | **xxxx** | **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 | **X** | Radio Access Network |  | Core Network |  |

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|  |
| ***Title:***  | Add MMtel Call Setup Time |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | EQoE\_MTSI, TEI17 |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** | **C** |  | ***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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | With MMtel functionality like VoLTE/VoNR soon becoming the prevalent method for voice communication, the need for relevant MMtel service quality measurements and service quality assurance increases. There are already possibilities to do some call-quality-related measurements by using the existing QoE metrics specified in TS 26.114, but these currently only describe the quality during an established call. A critical metric which is missing is the call setup time, as seen from the viewpoint of the user who originated the call. |
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| ***Summary of change:*** | Add a Call Setup Time metric for mobile-originated calls. |
|  |  |
| ***Consequences if not approved:*** | MMtel service assurance is missing a critical metric. |
|  |  |
| ***Clauses affected:*** | 2, 16.2.9 (new), 16.4.1, 16.4.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **N** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **N** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **N** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

### ===================== Start of first change =====================

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.173: "IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1".

[3] 3GPP TS 26.235: "Packet switched conversational multimedia applications; Default codecs".

<==== snipped ====>

[178] 3GPP TS 28.405; "Management of Quality of Experience (QoE) measurement collection; Control and configuration"

[179] ISO/IEC 23090-2:2019: " Information technology -- Coded representation of immersive media -- Part 2: Omnidirectional media format".

[180] 3GPP TS 26.118: "3GPP Virtual reality profiles for streaming applications".

[181] ITU-T Recommendation G.1028 (06/2019): "End-to-end quality of service for voice over 4G mobile networks".

### ===================== Start of next change =====================

### 16.2.9 Call setup time

The call setup time is measured on SIP level for originating calls (see ITU-T G-1028 [181] Table 3). It is defined as the time between the transmitted INVITE, and the reception of either "200 OK" or "180 RINGING" (whichever comes first).

The syntax for the metric "Call\_Setup\_Time" is defined in sub-clause 16.3.2.

The measured call setup time shall be stored in the variable *CallSetupTime*. The unit of this metrics is expressed in milliseconds. The variable is reported by the MTSI client as part of the QoE report (sub-clause 16.4).

NOTE: The reason for also using "180 RINGING" as an end-of-call-setup criteria is to compensate for the physical answering delay caused by the called user. Thus the metric measures the fastest possible call setup time, i.e. as if the called user had answered directly.

### ===================== Start of next change =====================

### 16.4.1 XML schema for QoE report message

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

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

targetNamespace="urn:3gpp:metadata:2008:MTSI:qoereport"

xmlns="urn:3gpp:metadata:2008:MTSI:qoereport"

 elementFormDefault="qualified">

 <xs:element name="QoeReport" type="QoeReportType"/>

 <xs:complexType name="QoeReportType">

 <xs:sequence>

 <xs:element name="statisticalReport" type="starType" minOccurs="0"

 maxOccurs="unbounded"/>

 <xs:any namespace="##other" processContents="skip" minOccurs="0"

 maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:anyAttribute processContents="skip"/>

 </xs:complexType>

 <xs:complexType name="starType">

 <xs:sequence>

 <xs:element name="mediaLevelQoeMetrics" type="mediaLevelQoeMetricsType" minOccurs="1"

 maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:attribute name="startTime" type="xs:unsignedLong" use="required"/>

 <xs:attribute name="stopTime" type="xs:unsignedLong" use="required"/>

 <xs:attribute name="callId" type="xs:string" use="required"/>

 <xs:attribute name="clientId" type="xs:string" use="required"/>

 <xs:attribute name="qoeReferenceId" type="xs:hexBinary" use="optional"/>

 <xs:attribute name="recordingSessionId" type="xs:hexBinary" use="optional"/>

 <xs:anyAttribute processContents="skip"/>

 </xs:complexType>

 <xs:complexType name="mediaLevelQoeMetricsType">

 <xs:sequence>

 <xs:any namespace="##other" processContents="skip" minOccurs="0"

 maxOccurs="unbounded"/>

 </xs:sequence>

 <xs:attribute name="mediaId" type="xs:integer" use="required"/>

 <xs:attribute name="totalCorruptionDuration" type="unsignedLongVectorType"
 use="optional"/>

 <xs:attribute name="numberOfCorruptionEvents" type="unsignedLongVectorType"
 use="optional"/>

 <xs:attribute name="corruptionAlternative" type="xs:string" use="optional"/>

 <xs:attribute name="totalNumberofSuccessivePacketLoss" type="unsignedLongVectorType"

 use="optional"/>

 <xs:attribute name="numberOfSuccessiveLossEvents" type="unsignedLongVectorType"
 use="optional"/>

 <xs:attribute name="numberOfReceivedPackets" type="unsignedLongVectorType"
 use="optional"/>

 <xs:attribute name="framerate" type="doubleVectorType" use="optional"/>

 <xs:attribute name="totalJitterDuration" type="doubleVectorType" use="optional"/>

 <xs:attribute name="numberOfJitterEvents" type="unsignedLongVectorType"

 use="optional"/>

 <xs:attribute name="totalSyncLossDuration" type="doubleVectorType" use="optional"/>

 <xs:attribute name="numberOfSyncLossEvents" type="unsignedLongVectorType"

 use="optional"/>

 <xs:attribute name="networkRTT" type="unsignedLongVectorType" use="optional"/>

 <xs:attribute name="internalRTT" type="unsignedLongVectorType" use="optional"/>

 <xs:attribute name="codecInfo" type="stringVectorType" use="optional"/>

 <xs:attribute name="codecProfileLevel" type="stringVectorType" use="optional"/>

 <xs:attribute name="codecImageSize" type="stringVectorType" use="optional"/>

 <xs:attribute name="averageCodecBitrate" type="doubleVectorType" use="optional"/>

 <xs:attribute name="callSetupTime" type="xs:unsignedLong" use="optional"/>

 <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="unsignedLongVectorType">

 <xs:list itemType="xs:unsignedLong"/>

 </xs:simpleType>

</xs:schema>

### 16.4.2 Example XML for QoE report message

Below is one example of QoE report message, in this example the measurement interval is 20 seconds, the reporting interval is 5 minutes, but the call ends after 55 seconds.

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

<QoeReport xmlns="urn:3gpp:metadata:2008:MTSI:qoereport"

 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

 xsi:schemaLocation="urn:3gpp:metadata:2008:MTSI:qoereport qoereport.xsd">

 <statisticalReport

 startTime="1219322514"

 stopTime="1219322569"

 clientId="clientID"

 callId="callID">

 qoeReferenceId="240F512A"

 recordingSessionId="0001"

 <mediaLevelQoeMetrics

 mediaId="1234"

 totalCorruptionDuration="480 0 120"

 numberOfCorruptionEvents="5 0 2"

 corruptionAlternative="a"

 totalNumberofSuccessivePacketLoss="24 0 6"

 numberOfSuccessiveLossEvents="5 0 2"

 numberOfReceivedPackets="535 645 300"

 framerate="50.0 49.2 50.0"

 numberOfJitterEvents="0 1 0"

 totalJitterDuration="0 0.346 0"

 networkRTT="120 132 125"

 internalRTT="20 24 20"

 codecInfo="AMR-WB/16000/1 = ="

 averageCodecBitRate="12.4 12.65 12.7"

 callSetupTime="345"/>

 <mediaLevelQoeMetrics

 mediaId="1236"

 totalCorruptionDuration="83 0 0"

 numberOfCorruptionEvents="1 0 0"

 corruptionAlternative="b"

 totalNumberofSuccessivePacketLoss="3 0 0"

 numberOfSuccessiveLossEvents="2 0 0"

 numberOfReceivedPackets="297 300 225"

 framerate="14.7 15.0 14.9"

 numberOfJitterEvents="0 0 0"

 totalJitterDuration="0 0 0"

 numberOfSyncLossEvents="0 1 0"

 totalSyncLossDuration="0 0.789 0"

 networkRTT="220 232 215"

 internalRTT="27 20 25"

 codecInfo="H263-2000/90000 = ="

 codecProfileLevel="profile=0;level=45 = ="

 codecImageSize="176x144 = ="

 averageCodecBitRate="124.5 128.0 115.1"

 callSetupTime="345"/>

 </statisticalReport>

</QoeReport>