

[MS-QoE]:

Quality of Experience Monitoring Server Protocol

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1 Introduction

The Quality of Experience Monitoring Server Protocol specifies the Quality of Experience Monitoring Server Protocol. It is a proprietary protocol used for publishing Quality of Experience (QoE) metrics. A client calculates QoE metrics and then sends them to a server for monitoring and diagnostics purposes.

Sections 1.5, 1.8, 1.9, 2, and 3 of this specification are normative. All other sections and examples in this specification are informative.

1.1 Glossary

This document uses the following terms:

202 Accepted: A response that indicates that a request was accepted for processing.

Audio/Video Edge Server (A/V Edge Server): A protocol server that implements the Traversal Using Relay NAT (TURN) Extensions Protocol, as described in [\[MS-TURN\]](#). The protocol server provides connectivity to a protocol client that is behind a network entity, if the network entity provides network address translation (NAT).

B-frame: A bidirectional video frame that references both the previous frame and the next frame.

call: A communication between peers that is configured for a multimedia conversation.

candidate: A set of transport addresses that form an atomic unit for use with a media session. For example, in the case of Real-Time Transport Protocol (RTP) there are two transport addresses for each candidate, one for RTP and another for the Real-Time Transport Control Protocol (RTCP). A candidate has properties such as type, priority, foundation, and base.

codec: An algorithm that is used to convert media between digital formats, especially between raw media data and a format that is more suitable for a specific purpose. Encoding converts the raw data to a digital format. Decoding reverses the process.

Common Intermediate Format (CIF): A picture format, described in the H.263 standard, that is used to specify the horizontal and vertical resolutions of pixels in YCbCr sequences in video signals.

conference: A **Real-Time Transport Protocol (RTP)** session that includes more than one participant.

connectivity check: A Simple Traversal of UDP through NAT (STUN) binding request that is sent to validate connectivity between the local and remote candidates in a candidate pair.

Coordinated Universal Time (UTC): A high-precision atomic time standard that approximately tracks Universal Time (UT). It is the basis for legal, civil time all over the Earth. Time zones around the world are expressed as positive and negative offsets from UTC. In this role, it is also referred to as Zulu time (Z) and Greenwich Mean Time (GMT). In these specifications, all references to UTC refer to the time at UTC-0 (or GMT).

dialog: A peer-to-peer **Session Initiation Protocol (SIP)** relationship that exists between two user agents and persists for a period of time. A dialog is established by **SIP messages**, such as a 2xx response to an INVITE request, and is identified by a call identifier, a local tag, and a remote tag.

endpoint: A device that is connected to a computer network.

forward error correction (FEC): A process in which a sender uses redundancy to enable a receiver to recover from packet loss.

fully qualified domain name (FQDN): An unambiguous domain name that gives an absolute location in the Domain Name System's (DNS) hierarchy tree, as defined in [\[RFC1035\]](#) section 3.1 and [\[RFC2181\]](#) section 11.

I-frame: A video frame that is encoded as a single image, such that it can be decoded without any dependencies on previous frames. Also referred to as Intra-Coded frame, Intra frame, and key frame.

Interactive Connectivity Establishment (ICE): A methodology that was established by the Internet Engineering Task Force (IETF) to facilitate the traversal of network address translation (NAT) by media.

jitter: A variation in a network delay that is perceived by the receiver of each packet.

mean opinion score (MOS): A numerical indication of the perceived quality of media. It is expressed as a single number in the range of 1 to 5, where 1 is the lowest perceived quality and 5 is the highest perceived quality.

Multipurpose Internet Mail Extensions (MIME): A set of extensions that redefines and expands support for various types of content in email messages, as described in [\[RFC2045\]](#), [\[RFC2046\]](#), and [\[RFC2047\]](#).

network address translation (NAT): The process of converting between IP addresses used within an intranet, or other private network, and Internet IP addresses.

P-frame: A predicative video frame that references a previous frame. Also referred to as inter-coded frame or inter-frame.

proxy: A computer, or the software that runs on it, that acts as a barrier between a network and the Internet by presenting only a single network address to external sites. By acting as a go-between that represents all internal computers, the proxy helps protect network identities while also providing access to the Internet.

public switched telephone network (PSTN): Public switched telephone network is the voice-oriented public switched telephone network. It is circuit-switched, as opposed to the packet-switched networks.

QoE Monitoring Agent: A service running on a front-end server that collects and processes **Quality of Experience (QoE)** reports from clients in the form of a **SIP message**, sends a **202 Accepted** or an error response to the client, and sends the QoE metrics to the **QoE Monitoring Server**.

QoE Monitoring Server: A server that collects and processes **Quality of Experience (QoE)** metrics.

Quality of Experience (QoE): A subjective measure of a user's experiences with a media service.

Real-Time Transport Protocol (RTP): A network transport protocol that provides end-to-end transport functions that are suitable for applications that transmit real-time data, such as audio and video, as described in [\[RFC3550\]](#).

remote endpoint: See peer.

reporting endpoint: A protocol client that sends **Quality of Experience (QoE)** metrics to a **QoE Monitoring Server**.

RTP packet: A data packet consisting of the fixed RTP header, a possibly empty list of contributing sources, and the payload data. Some underlying protocols may require an encapsulation of the RTP packet to be defined. Typically one packet of the underlying protocol contains a single RTP packet, but several RTP packets can be contained if permitted by the encapsulation method. See [\[RFC3550\]](#) section 3.

RTVideo: A video **stream (2)** that carries an RTVC1 bit stream.

service: A process or agent that is available on the network, offering resources or services for clients. Examples of services include file servers, web servers, and so on.

session: A collection of multimedia senders and receivers and the data streams that flow between them. A multimedia conference is an example of a multimedia session.

Session Description Protocol (SDP): A protocol that is used for session announcement, session invitation, and other forms of multimedia session initiation. For more information see [\[MS-SDP\]](#) and [\[RFC3264\]](#).

Session Initiation Protocol (SIP): An application-layer control (signaling) protocol for creating, modifying, and terminating sessions with one or more participants. **SIP** is defined in [\[RFC3261\]](#).

SIP message: The data that is exchanged between **Session Initiation Protocol (SIP)** elements as part of the protocol. An SIP message is either a request or a response.

SIP transaction: A **SIP transaction** occurs between a **UAC** and a **UAS**. The **SIP transaction** comprises all messages from the first request sent from the **UAC** to the **UAS** up to a final response (non-1xx) sent from the **UAS** to the **UAC**. If the request is INVITE, and the final response is a non-2xx, the **SIP transaction** also includes an ACK to the response. The ACK for a 2xx response to an INVITE request is a separate **SIP transaction**.

stream: (1) An element of a compound file, as described in [\[MS-CFB\]](#). A stream contains a sequence of bytes that can be read from or written to by an application, and they can exist only in storages.

(2) A flow of data from one host to another host, or the data that flows between two hosts.

Super P-frame (SP-frame): A special P-frame that uses the previous cached frame instead of the previous **P-frame** or **I-frame** as a reference frame.

synchronization source (SSRC): The source of a stream of **RTP packets**, identified by a 32-bit numeric SSRC identifier carried in the RTP header so as not to be dependent upon the network address. All packets from a synchronization source form part of the same timing and sequence number space, so a receiver groups packets by synchronization source for playback. Examples of synchronization sources include the sender of a **stream** of packets derived from a signal source such as a microphone or a camera, or an RTP mixer. A synchronization source may change its data format (for example, audio encoding) over time. The SSRC identifier is a randomly chosen value meant to be globally unique within a particular RTP session. A participant need not use the same SSRC identifier for all the RTP sessions in a multimedia session; the binding of the SSRC identifiers is provided through RTCP. If a participant generates multiple **streams** in one RTP session, for example from separate video cameras, each **MUST** be identified as a different SSRC. See [\[RFC3550\]](#) section 3.

Transmission Control Protocol (TCP): A protocol used with the Internet Protocol (IP) to send data in the form of message units between computers over the Internet. TCP handles keeping track of the individual units of data (called packets) that a message is divided into for efficient routing through the Internet.

TURN server: An **endpoint** that receives Traversal Using Relay NAT (TURN) request messages and sends TURN response messages. The protocol server acts as a data relay, receiving data on the public address that is allocated to a protocol client and forwarding that data to the client.

Uniform Resource Identifier (URI): A string that identifies a resource. The URI is an addressing mechanism defined in Internet Engineering Task Force (IETF) Uniform Resource Identifier (URI): Generic Syntax [\[RFC3986\]](#).

user agent client (UAC): A logical entity that creates a new request, and then uses the client transaction state machinery to send it. The role of **UAC** lasts only for the duration of that transaction. In other words, if a piece of software initiates a request, it acts as a **UAC** for the duration of that transaction. If it receives a request later, it assumes the role of a **user agent server (UAS)** for the processing of that transaction.

user agent server (UAS): A logical entity that generates a response to a **Session Initiation Protocol (SIP)** request. The response either accepts, rejects, or redirects the request. The role of the UAS lasts only for the duration of that transaction. If a process responds to a request, it acts as a UAS for that transaction. If it initiates a request later, it assumes the role of a **user agent client (UAC)** for that transaction.

User Datagram Protocol (UDP): The connectionless protocol within TCP/IP that corresponds to the transport layer in the ISO/OSI reference model.

XML schema: A description of a type of XML document that is typically expressed in terms of constraints on the structure and content of documents of that type, in addition to the basic syntax constraints that are imposed by XML itself. An XML schema provides a view of a document type at a relatively high level of abstraction.

XML schema definition (XSD): The World Wide Web Consortium (W3C) standard language that is used in defining XML schemas. Schemas are useful for enforcing structure and constraining the types of data that can be used validly within other XML documents. XML schema definition refers to the fully specified and currently recommended standard for use in authoring **XML schemas**.

MAY, SHOULD, MUST, SHOULD NOT, MUST NOT: These terms (in all caps) are used as defined in [\[RFC2119\]](#). All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

1.2 References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the [Errata](#).

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information.

[IETF DRAFT-SIP SOAP-00] Deason, N., "SIP and SOAP", draft-deason-sip-soap-00, June 30 2000, <http://www.softarmor.com/wqdb/docs/draft-deason-sip-soap-00.txt>

[MS-RTP] Microsoft Corporation, "[Real-time Transport Protocol \(RTP\) Extensions](#)".

[MS-SDPEXT] Microsoft Corporation, "[Session Description Protocol \(SDP\) Version 2.0 Extensions](#)".

[MS-TURN] Microsoft Corporation, "[Traversal Using Relay NAT \(TURN\) Extensions](#)".

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, <http://www.rfc-editor.org/rfc/rfc2119.txt>

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[RFC3611] Friedman, T., Ed., Caceres, R., Ed., and Clark, A., Ed., "RTP Control Protocol Extended Reports (RTCP XR)", RFC 3611, November 2003, <http://www.ietf.org/rfc/rfc3611.txt>

[RFC4737] Morton, A., Ciavattone, L., Ramachandran, G., et al., "Packet Reordering Metrics", RFC 4737, November 2006, <https://www.rfc-editor.org/rfc/rfc4737.txt>

1.2.2 Informative References

[ITUP.562] ITU-T, "P.562 : Analysis and interpretation of INMD voice-service measurements", Recommendation P.562, May 2004, <http://www.itu.int/rec/T-REC-P.562-200405-I/en>

[ITUP.800.1] ITU-T, "P.800.1 : Mean Opinion Score (MOS) terminology", Recommendation P.800.1, July 2006, <http://www.itu.int/rec/T-REC-P.800.1-200607-I/en>

[MS-RTVPF] Microsoft Corporation, "[RTP Payload Format for RT Video Streams Extensions](#)".

[MS-SIPRE] Microsoft Corporation, "[Session Initiation Protocol \(SIP\) Routing Extensions](#)".

1.3 Overview

This protocol is a proprietary protocol for publishing QoE metrics from a protocol client to a **QoE Monitoring Agent**.

A protocol client publishes QoE metrics for each **Session Initiation Protocol (SIP) session**. The QoE metrics are categorized into two types: one type capturing objective metrics during the session, and the other containing subjective metrics collected from the end user. The protocol client encodes the QoE metrics to conform to the **XML schema** that is specified in section 2, and then publishes the metrics in the form of a SIP **SERVICE** message that the protocol client sends to the QoE Monitoring Agent through a SIP **proxy**. QoE Monitoring Agent then converts the messages into an internal format and sends them to QoE Monitoring Server and/or a registered 3rd consumer.

Note: The routing behavior of the SIP proxy is based on the SIP routing rules that are described in [\[MS-SIPRE\]](#) section 3.

The QoE Monitoring Agent runs along with SIP proxy and it validates the SIP SERVICE message and returns a final SIP SERVICE response. The response is based on standard SIP rules and is either response code **202 Accepted**, or an error code.

Note: A SIP 202 response indicates that the QoE Monitoring Agent accepted the report, but not that it processed the report.

This sequence of events is illustrated in the following figure in which, at the end of a session between two protocol clients, each protocol client publishes QoE metrics to the QoE Monitoring Agent through the SIP Proxy that mediated the session, and the QoE Monitoring Agent returns a SIP 202 response to each protocol client.

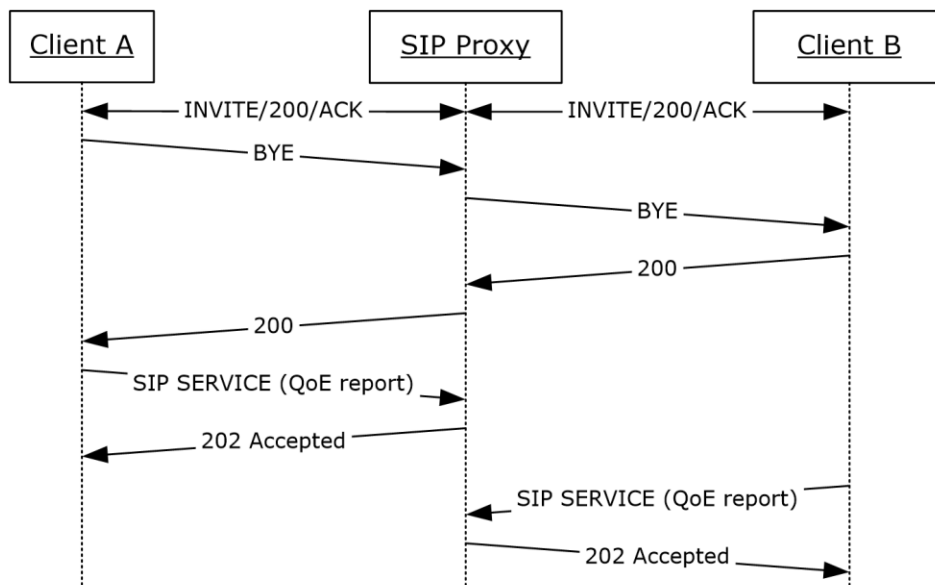


Figure 1: SIP message sequence from protocol client session end through QoE reporting

The QoE Monitoring Server can use QoE metrics for:

- Generating alerts regarding abnormal media quality conditions.
- Generating media quality and resource utilization reports.
- Building a history database for advanced diagnostics and analytic applications.

1.4 Relationship to Other Protocols

This protocol depends on **SIP**. More specifically, this protocol depends on the SIP **SERVICE** method.

1.5 Prerequisites/Preconditions

A **QoE Monitoring Server** is required to collect and aggregate QoE metrics and QoE is enabled.

1.6 Applicability Statement

Use this protocol in scenarios that require monitoring quality of **SIP sessions**.

1.7 Versioning and Capability Negotiation

None.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

2.1 Transport

This protocol relies on **SIP** transport.

2.2 Message Syntax

The **SIP SERVICE** message and response message syntax are specified in [\[IETF DRAFT-SIP SOAP-00\]](#) section 4.0. Depending on the type of QoE metrics being published, the SIP SERVICE message that is used for this protocol MUST include either an **application/vq-rtcp+xml Content-Type** header or an **application/ms-cqf+xml Content-Type**. The content is formatted as a **Multipurpose Internet Mail Extensions (MIME)** type SIP SERVICE message.

QoE Monitoring Agent will process the request only when the request URI is one of the following.

- SIP URI of QoE. Each pool has a SIP URI for QoE (also known as QoE GRUU).
- SIP URI of the pool in which QoE Monitoring Agent is hosted
- Request URI is same to TO header. In this case, the request will be sent to home pool of the target user, and the QoE Monitoring Agent hosted on the home pool will process it.

The subsequent sections follow the product behavior specified in footnote [<1>](#).

Each section contains a detailed specification of the **XML schema** to which QoE payloads MUST conform. Each element is described in a subsection, along with the child elements and attributes for that element. For each element, the following information is listed:

- **Element information:** Element type and a description of the element.
- **Child elements:** Name, type, availability, and description. If a child element is marked as not available, it is shown in the XML schema, but not populated by the protocol client. This protocol only includes descriptions for elements that are published by protocol clients. If a child element is marked as not supported for a specific product version, the **QoE Monitoring Agent** will return an error code as described in section [3.2](#).
- **Attributes (if any):** Element ID, type, required, availability, description, and unit. If an attribute is marked as required, it MUST be present in the XML document. If an attribute is marked as not available, it is shown in the XML schema, but not populated by the protocol client. This protocol only includes descriptions for attributes that are published by protocol clients.

All string types defined within these sections are encoded in Unicode. Unless otherwise stated, if the string exceeds the number of characters specified within [], the value will be truncated. All values SHOULD be formatted as invariant culture.

2.2.1 application/vq-rtcp+xml

The XML schema in this section uses four namespaces:

- ms-rtcp-metrics
- ms-rtcp-metrics.v2
- ms-rtcp-metrics.v3 [<2>](#)
- ms-rtcp-metrics.v4 [<3>](#)

Elements defined in the **ms-rtcp-metrics.v2** namespace are named with a "v2" prefix. Similarly, elements defined in the **ms-rtcp-metrics.v3** namespace are named with a "v3" prefix and elements defined in the **ms-rtcp-metrics.v4** namespace are named with a "v4" prefix. Elements that are not named with a "v2" or a "v3" or "v4" prefix are defined in the **ms-rtcp-metrics** namespace.

2.2.1.1 VQReportEvent Element

A **VQReportEvent** element is a quality report envelope. The type of this element is **VQReportEventType**.

The **VQReportEvent** element is defined as follows^{<4>}:

```
<xs:element name="VQReportEvent" type="tns:VQReportEventType"/>
<xs:complexType name="VQReportEventType">
  <xs:choice>
    <xs:element name="VQSessionReport" type="tns:SessionReportType" maxOccurs="unbounded"/>
    <xs:element name="VQSessionIntervalReport" type="tns:SessionReportType"
maxOccurs="unbounded"/>
    <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded"/>
  </xs:choice>
  <xs:attribute name="Version" type="xs:string" use="optional"/>
  <xs:attribute ref="v2:SchemaVersion" use="optional"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
```

2.2.1.1.1 Child Elements

The following table lists the child elements of the **VQReportEvent** element.

| Element | Type | Available | Description |
|--------------------------------|--------------------------|-----------|---|
| VQSessionReport | SessionReportType | Yes | Quality report for a session (SIP dialog). |
| VQSessionIntervalReport | SessionReportType | No | Not used. |

2.2.1.1.2 Attributes

The following table lists the attributes of the **VQReportEvent** element.

| Attribute | Type | Available | Description |
|--|------------------|-----------|---|
| Version ^{<5>} | xs:string | Yes | Describes version number of the reporting schema. |
| v2:SchemaVersion ^{<6>} | xs:string | Yes | Describes version number of the reporting schema and replaces the Version element. |

2.2.1.2 VQSessionReport Element

VQSessionReport element is a quality report for a **session**, or **SIP dialog**. The type of this element is **SessionReportType**.

The **SessionReportType** type is defined as follows<7>:

```

<xs:complexType name="SessionReportType">
  <xs:sequence>
    <xs:element name="LocationProfile" type="xs:string"
      minOccurs="0"/>
    <xs:element name="Pool" type="xs:string" minOccurs="0"/>
    <xs:element name="Endpoint" type="tns:EndpointType"/>
    <xs:element name="DialogInfo" type="tns:DialogInfoType"/>
    <xs:element name="MediaLine" type="tns:MediaLineType"
      maxOccurs="unbounded"/>
    <xs:element ref="v2:OpaqueClientPlatformData" minOccurs="0" />
    <xs:element ref="v2:OpaqueServerPlatformData" minOccurs="0" />
    <xs:element ref="v2:OpaqueConferenceData" minOccurs="0" />
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:any namespace="##other" processContents="lax"
        minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:attribute name="SessionId" type="xs:string" use="required"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/> </xs:complexType>

<xs:complexType name="OpaqueClientPlatformDataType">
  <xs:sequence>
    <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>
<xs:complexType name="OpaqueServerPlatformDataType">
  <xs:sequence>
    <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>
<xs:complexType name="OpaqueConferenceDataType">
  <xs:sequence>
    <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>

<xs:element name="Separator">
  <xs:complexType></xs:complexType>
</xs:element>

```

2.2.1.2.1 Child Elements

The following table lists the child elements of the **VQSessionReport** element.

| Element | Type | Available | Description |
|------------------------|---------------------|-----------|--|
| LocationProfile | xs:string | No | Not used. |
| Pool | xs:string | No | Not used. |
| Endpoint | EndpointType | Yes | Information about the endpoint that created the report. |

| Element | Type | Available | Description |
|--|-------------------------------------|-----------|--|
| DialogInfo | DialogInfoType | Yes | Information regarding the SIP dialog . |
| MediaLine | MediaLineType | Yes | A media line is the logical equivalent to an m-line in Session Description Protocol (SDP) . |
| v2:OpaqueClientPlatformData <8> | OpaqueClientPlatformDataType | No | Not used. |
| v2:OpaqueServerPlatformData <9> | OpaqueServerPlatformDataType | No | Not used. |
| v2:OpaqueConferenceData <10> | OpaqueConferenceDataType | No | Not used. |
| v2:Separator <11> | default | No | Separator element used for future schema extensions. |

2.2.1.2.2 Attributes

The following table lists the attributes of the **VQSessionReport** element.

| Attribute | Type | Required | Available | Description |
|------------------|----------------------------------|----------|-----------|--|
| SessionId | xs:string [755] | Yes | Yes | SIP dialog ID of the reported session. If maximum string length is exceeded, the report is rejected. |

2.2.1.3 Endpoint Element

Endpoint element contains information about the **endpoint** that created the report. The type of this element is **EndpointType**.

The **EndpointType** type is defined as follows[<12>](#):

```
<xs:complexType name="EndpointType">
  <xs:sequence>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
      maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:attribute name="Name" type="xs:string" use="required"/>
  <xs:attribute name="ProfileId" type="xs:string"/>
  <xs:attribute ref="v2:OS" use="optional"/>
  <xs:attribute ref="v2:CPUName" use="optional"/>
  <xs:attribute ref="v2:CPUNumberOfCores" use="optional"/>
  <xs:attribute ref="v2:CPUProcessorSpeed" use="optional"/>
  <xs:attribute ref="v2:VirtualizationFlag" use="optional"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
```

2.2.1.3.1 Child Elements

None.

2.2.1.3.2 Attributes

The following table lists the attributes of the **Endpoint** element.

| Attribute | Type | Required | Available | Description |
|---|----------------------------------|----------|-----------|--|
| Name | xs:string [256] | Yes | Yes | Computer name of the device that created the report. If the maximum string length is exceeded, the report is rejected. |
| ProfileID | xs:string | No | No | Not used. |
| v2:OS <13> | xs:string [128] | No | Yes | The operating system used for the reporting endpoint . |
| v2:CPUName <14> | xs:string [128] | No | Yes | The name of the central processing unit (CPU) used for the reporting endpoint. |
| v2:CPUNumberOfCores <15> | xs:short | No | Yes | The number of processor CPU cores used for the reporting endpoint. |
| v2:CPUProcessorSpeed <16> | xs:int | No | Yes | The speed in megahertz of the CPU used for the reporting endpoint. |
| v2:VirtualizationFlag <17> | xs:byte | No | Yes | Flag indicating the type of virtualization environment: "0x00" - None "0x01" - HyperV "0x02" - VMWare "0x04" - Virtual PC "0x08" - Xen PC |

2.2.1.4 DialogInfo Element

DialogInfo element contains information regarding the **SIP dialog**. The type of this element is **DialogInfoType**.

The **DialogInfoType** type is defined as follows[<18>](#):

```
<xs:complexType name="DialogInfoType">
  <xs:sequence>
    <xs:element name="DialogCategory" type="tns:DialogCategoryType"
      minOccurs="0"/>
    <xs:element name="CorrelationID" type="xs:string" minOccurs="0"/>
    <xs:element name="FromURI" type="xs:anyURI"/>
    <xs:element name="ToURI" type="xs:anyURI"/>
    <xs:element name="Caller" type="xs:boolean"/>
    <xs:element name="LocalContactURI" type="xs:anyURI"/>
    <xs:element name="RemoteContactURI" type="xs:anyURI"/>
    <xs:element name="LocalUserAgent" type="xs:string"/>
    <xs:element name="RemoteUserAgent" type="xs:string"/>
    <xs:element name="LocalPAI" type="xs:anyURI" minOccurs="0"/>
    <xs:element name="RemotePAI" type="xs:anyURI" minOccurs="0"/>
    <xs:element name="ConfURI" type="xs:anyURI" minOccurs="0"/>
    <xs:element ref="v2:CallPriority" minOccurs="0"/>
    <xs:element ref="v2:MediationServerBypassFlag" minOccurs="0"/>
    <xs:element ref="v2:TrunkingPeer" minOccurs="0"/>
    <xs:element ref="v2:MediaBypassWarningFlag" minOccurs="0"/>
  </xs:sequence>
</xs:complexType>
```

```

<xs:sequence minOccurs="0">
  <xs:element ref="v2:Separator" />
  <xs:element ref="v2:RegisteredInside" minOccurs="0"/>
  <xs:sequence minOccurs="0">
    <xs:element ref="v2:Separator" />
    <xs:any namespace="##other" processContents="lax"
      minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:sequence>

</xs:sequence>
</xs:sequence>
<xs:attribute name="CallId" type="xs:string" use="required"/>
<xs:attribute name="FromTag" type="xs:string"/>
<xs:attribute name="ToTag" type="xs:string"/>
<xs:attribute name="Start" type="xs:dateTime" use="required"/>
<xs:attribute name="End" type="xs:dateTime" use="required"/>
<xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>

<xs:simpleType name="DialogCategoryType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="OCS" />
    <xs:enumeration value="TRUNK" />
  </xs:restriction>
</xs:simpleType>

<xs:element name="CallPriority" type="xs:short"/>
<xs:element name="MediationServerBypassFlag" type="xs:boolean"/>
<xs:element name="TrunkingPeer" type="xs:string"/>
<xs:element name="BSSID" type="xs:string"/>
<xs:element name="MediaBypassWarningFlag" type="xs:int"/>
<xs:element name="RegisteredInside" type="xs:boolean"/>

```

2.2.1.4.1 Child Elements

The following table lists the child elements of the **DialogInfo** element.

| Element | Type | Available | Description |
|----------------------------|---------------------------|-----------|--|
| DialogCategory <19> | DialogCategoryType | Yes | Information about the QoE Report leg type, which is either a UC or Mediation Server-GW trunk. For more information, see the enumeration types in section 2.2.1.4 . |
| CorrelationID <20> | xs:string [775] | Yes | A unique alphanumeric key that is included by reporting endpoints for calls that involve multiple SIP legs. |
| FromURI | xs:anyURI | Yes | SIP URI in the SIP From header that the reporting endpoint uses if it makes a SIP transaction using the reported SIP dialog . |
| ToURI | xs:anyURI | Yes | SIP URI in the SIP To header that the reporting endpoint uses if it makes a SIP transaction using the reported SIP dialog. |
| Caller | xs:boolean | Yes | "True" if the reporter was the caller of the SIP dialog. "False" if |

| Element | Type | Available | Description |
|--|------------------------|-----------|--|
| | | | the reporter was not the caller of the SIP dialog. |
| LocalContactURI | xs:anyURI | Yes | SIP URI in the SIP Contact header of the reported SIP dialog that was sent from the reporting endpoint. |
| RemoteContactURI | xs:anyURI | Yes | SIP URI in the Contact header of the reported SIP dialog that was sent from the remote endpoint . |
| LocalUserAgent | xs:string [450] | Yes | SIP User-Agent or Server header content of the reported SIP dialog that was sent from the reporting endpoint. |
| RemoteUserAgent | xs:string [450] | Yes | SIP User-Agent or Server header content of the reported SIP dialog that was sent from the remote endpoint. |
| LocalPAI | xs:anyURI | Yes | SIP URI in the SIP p-asserted-identity (PAI) header of the reported dialog that was sent from the reporting endpoint. |
| RemotePAI | xs:anyURI | Yes | The SIP URI in the SIP p-asserted-identity (PAI) header of the reported dialog that was sent from the remote endpoint. |
| ConfURI | xs:anyURI | Yes | The SIP URI of a conference bridge that hosted a conference and terminated this dialog. This URI is unique to each conference and common to all the dialogs that participated in the same conference. ConfURI is available for conferences only. |
| v2:CallPriority <21> | xs:short | Yes | The SIP Priority header that indicates the priority selected for the call. |
| v2:MediationServerBypassFlag <22> | xs:boolean | Yes | "True" if the reporting endpoint selected the bypass SDP . |
| v2:TrunkingPeer <23> | xs:string [256] | Yes | The SIP ms-trunking-peer header that reports the fully qualified domain name (FQDN) of the public switched telephone network (PSTN) gateway. |
| v2:MediaBypassWarningFlag <24> | xs:int | Yes | Warning flags to indicate failures that prevent bypass of the mediation server in a PSTN call. The following values are defined: <ul style="list-style-type: none"> ▪ "0x0000" – No error ▪ "0x0001" – Unable to |

| Element | Type | Available | Description |
|---------------------------------|------------|-----------|---|
| | | | determine bypass identifier for the network interface used for the call. |
| v2:RegisteredInside <25> | xs:boolean | Yes | "True" if the listening address is registered within the enterprise. This replaces the Inside element in AddrType . |
| v2:Separator <26> | default | No | Separator element used for future schema extensions. |

2.2.1.4.2 Attributes

The following table lists the attributes of the **DialogInfo** element.

| Attribute | Type | Required | Available | Description | Units |
|----------------|---------------------------|----------|-----------|---|---|
| CallId | xs:string [755] | Yes | Yes | SIP Call-ID of the dialog. If the maximum string length is exceeded, the report is rejected. | Not applicable |
| FromTag | xs:string [256] | No | Yes | SIP From tag of the dialog. | Not applicable |
| ToTag | xs:string [256] | No | Yes | SIP To tag of the dialog. | Not applicable |
| Start | xs:dateTime | Yes | Yes | Start time of the dialog. | Coordinated Universal Time (UTC) |
| End | xs:dateTime | Yes | Yes | End time of the dialog. | UTC |

2.2.1.5 MediaLine Element

MediaLine element is the logical equivalent to an **m-line** in **SDP**. The type of this element is **MediaLineType**. Every QoE report MUST have at least one medialine element.

The **MediaLineType** type is defined as follows<27>:

```
<xs:complexType name="MediaLineType">
  <xs:sequence>
    <xs:element name="Description"
      type="tns:MediaLineDescriptionType"/>
    <xs:element name="InboundStream" type="tns:StreamType"
      minOccurs="0"/>
    <xs:element name="OutboundStream" type="tns:StreamType"
      minOccurs="0"/>
    <xs:element name="LocalConversationalMOS" type="xs:float"
```

```

        minOccurs="0"/>
<xs:element name="RemoteConversationalMOS" type="xs:float"
minOccurs="0"/>
<xs:element name="LocalConversationalMOSAlg" type="xs:string"
minOccurs="0"/>
<xs:element name="RemoteConversationalMOSAlg" type="xs:string"
minOccurs="0"/>
<xs:element ref="v2:AppliedBandwidthLimit" minOccurs="0" />
<xs:element ref="v2:AppliedBandwidthSource" minOccurs="0" />
<xs:element ref="v2:LocalClientEvent" minOccurs="0"/>
<xs:element ref="v2:RemoteClientEvent" minOccurs="0"/>
<xs:element ref="v2:OpaqueCoreEndpointData" minOccurs="0" />
<xs:element ref="v2:OpaqueChannelData" minOccurs="0" />
<xs:sequence minOccurs="0">
  <xs:element ref="v2:Separator" />
  <xs:any namespace="##other" processContents="lax"
minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
</xs:sequence>
<xs:attribute name="Label" type="xs:string" use="required"/>
<xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>

<xs:element name="AppliedBandwidthLimit" type="xs:int"/>
<xs:element name="AppliedBandwidthSource" type="xs:string"/>

<xs:complexType name="OpaqueChannelDataType" >
  <xs:sequence>
    <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
  </xs:sequence>
<xs:anyAttribute namespace="##any" processContents="lax" />

</xs:complexType>

<xs:complexType name="OpaqueCoreEndpointDataType">
  <xs:sequence>
    <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax" />

</xs:complexType>

<xs:element name="Separator">
  <xs:complexType></xs:complexType>

</xs:element

```

2.2.1.5.1 Child Elements

The following table lists the child elements of the **MediaLine** element.

| Element | Type | Availa ble | Description | Units |
|----------------------|--------------------------------------|---------------|--------------------------------------|----------------|
| Description | MediaLineDes criptionType | Yes | Media Line context information. | Not applicable |
| InboundStream | StreamType | Yes | Information regarding the inbound | Not applicable |

| Element | Type | Available | Description | Units |
|---|-----------------------------------|-----------|--|---------------------------------|
| | | | media stream (2) . | |
| OutboundStream | StreamType | Yes | Information regarding the outbound media stream (2). | Not applicable |
| LocalConversationalMOS | xs:float | Yes | Conversational clarity index for remote party, as described in [ITUP.562] section 6.3. | mean opinion score (MOS) |
| RemoteConversationalMOS | xs:float | No | Not used. | |
| LocalConversationalMOSAIG | xs:string | No | Not used. | |
| RemoteConversationalMOSAIG | xs:string | No | Not used. | |
| v2:AppliedBandwidthLimit <28> | xs:int | Yes | The bandwidth limit applied for sending media. | bits per second |
| v2:AppliedBandwidthSource <29> | xs:string [256] | Yes | The source of the bandwidth limit policy that was applied for the sending of media. | Not applicable |
| v2:LocalClientEvent <30> | ClientEventType | Yes | Information about quality events detected by the reporting endpoint . | Not applicable |
| v2:RemoteClientEvent <31> | ClientEventType | Yes | Information about quality events detected by the remote endpoint . | Not applicable |
| v2:OpaqueCoreEndpointData <32> | OpaqueCoreEndpointDataType | No | Not used. | |
| v2:OpaqueChannelData <33> | v2:OpaqueChannelData | No | Not used. | |
| v2:Separator <34> | default | No | Separator element used for future schema extensions. | Not applicable |

2.2.1.5.2 Attributes

The following table lists the attributes of the **MediaLine** element.

| Attribute | Type | Required | Available | Description |
|--------------|------------------|----------|-----------|--|
| Label | xs:string | Yes | Yes | Identifies the Media Line. Currently supported values: <ul style="list-style-type: none"> "main-audio" |

| Attribute | Type | Required | Available | Description |
|-----------|------|----------|-----------|--|
| | | | | <ul style="list-style-type: none"> ▪ "main-video" ▪ "panoramic-video" ▪ "data" <35> ▪ "main-video1" ▪ "main-video2" ▪ "main-video3" ▪ "main-video4" ▪ "main-video5" ▪ "main-video6" <p>If the value does not match one of these listed strings, the report is rejected.</p> |

2.2.1.6 Description Element

A **Description** element contains **MediaLine** context information. The type of this element is **MediaLineDescriptionType**.

The **MediaLineDescriptionType** type is defined as follows [<36>](#):

```

<xs:complexType name="MediaLineDescriptionType">
  <xs:sequence>
    <xs:element name="Connectivity" type="tns:ConnectivityType"
      minOccurs="0"/>
    <xs:element name="Security" type="xs:string" minOccurs="0"/>
    <xs:element name="Offerer" type="xs:boolean" minOccurs="0"/>
    <xs:element name="Transport" type="tns:TransportType"
      minOccurs="0"/>
    <xs:element name="NetworkConnectivityInfo"
      type="tns:NetworkConnectivityInfoType" minOccurs="0" />
    <xs:element name="LocalAddr" type="tns:AddrType"/>
    <xs:element name="RemoteAddr" type="tns:AddrType"/>
    <xs:element name="CaptureDev" type="tns:DeviceType" minOccurs="0"/>
    <xs:element name="RenderDev" type="tns:DeviceType" minOccurs="0"/>
    <xs:element ref="v3:ReflexiveLocalIPAddress" minOccurs="0"/>
    <xs:element ref="v3:MidCallReport" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"></xs:element>
      <xs:element ref="v4:WifiRadioType" minOccurs="0"/>
      <xs:element ref="v4:WifiRSSI" minOccurs="0"/>
      <xs:element ref="v4:SSID" minOccurs="0"/>
      <xs:element ref="v4:WifiChannel" minOccurs="0"/>
      <xs:element ref="v4:ActivePowerProfile" minOccurs="0"/>
      <xs:element ref="v4:WifiHandovers" minOccurs="0"/>
      <xs:element ref="v4:WifiChannelSwitches" minOccurs="0"/>
      <xs:element ref="v4:WifiChannelReassociations" minOccurs="0"/>
      <xs:element ref="v4:RecvQoSMarking" minOccurs="0"/>
      <xs:element ref="v4:SendQoSMarking" minOccurs="0"/>
      <xs:element ref="v4:WifiRadioFrequency" minOccurs="0"/>
      <xs:element ref="v4:WifiMTU" minOccurs="0"/>
      <xs:element ref="v4:WifiSupportFlags" minOccurs="0"/>
      <xs:element ref="v4:WifiStatusFlags" minOccurs="0"/>
      <xs:element ref="v4:WifiTunnelType" minOccurs="0"/>
      <xs:element ref="v4:WifiSignalStrength" minOccurs="0"/>
    
```

```

<xs:element ref="v4:WifiBatteryCharge" minOccurs="0"/>
<xs:element ref="v4:ConnectionName" minOccurs="0"/>
<xs:element ref="v4:DNSSuffix" minOccurs="0"/>
<xs:element ref="v4>LastRTPSendTime" minOccurs="0"/>
<xs:element ref="v4>LastRTCPSendTime" minOccurs="0"/>
<xs:element ref="v4>LastRTPReceiveTime" minOccurs="0"/>
<xs:element ref="v4>LastRTCPReceiveTime" minOccurs="0"/>
<xs:sequence minOccurs="0">
  <xs:element ref="v4:Separator4"></xs:element>
  <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
</xs:sequence>
</xs:sequence>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<xs:simpleType name="TransportType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="UDP"/>
    <xs:enumeration value="TCP"/>
  </xs:restriction>
</xs:simpleType>

```

2.2.1.6.1 Child Elements

The following table lists the child elements of the **Description** element.

| Element | Type | Available | Description |
|---|------------------------------------|--------------------------------|--|
| Connectivity | ConnectivityType | Yes | Interactive Connectivity Establishment (ICE) connectivity information. |
| Security | xs:string [128] | Yes | The security profile in use. Supported values are "V1", "SRTP" and "None". |
| Offerer | xs:boolean | Yes <37> | "True" if the reporting endpoint offered the Media Line; otherwise, "False". |
| Transport | TransportType | Yes | The type of transport in use. Supported values are "TCP" and "UDP". |
| NetworkConnectivityInfo <38> | NetworkConnectivityInfoType | Yes | Information about network connectivity of the endpoint . |
| LocalAddr | AddrType | Yes | Internet Protocol (IP) address related information for the reporting endpoint. |
| RemoteAddr | AddrType | Yes | IP address related information for the remote endpoint . |
| CaptureDev | DeviceType | Yes | A device that is used to capture audio and video media, such as a microphone, a USB phone or a camera. |
| RenderDev | DeviceType | Yes | A device that is used to render audio and video media, such as speakers, a headset, or a |

| Element | Type | Available | Description |
|--|------------------------|-----------|---|
| | | | USB phone. |
| v3:ReflexiveLocalIPAddress<39> | AddrType | Yes | The IP address from which the Media Relay received the allocate request. This address is returned by the Media Relay. |
| v3:MidCallReport<40> | xs:boolean | Yes | A flag that indicates whether the QoE data is reported during the middle of the call. |
| v3:Separator3<41> | default | No | Separator element used for future schema extensions. |
| v4:WifiRadioType<42> | xs:unsignedByte | Yes | Average render speech level after dynamic range compression or analog gain control is applied. |
| v4:WifiRSSI<43> | xs:int | Yes | Average WiFi Received Signal Strength Indication value expressed in percentage points [0-99]. |
| v4:SSID<44> | xs:string | Yes | Name of WiFi Service Set Identifier. |
| v4:WifiChannel<45> | xs:int | Yes | WiFi channel used during session. |
| v4:ActivePowerProfile<46> | xs:int | Yes | Was WiFi placed in lower power mode during session. |
| v4:WifiHandovers<47> | xs:int | Yes | Number of WiFi hand overs to other access points during session. |
| v4:WifiChannelSwitches<48> | xs:int | Yes | Number of times the WiFi channel switched during session. |
| v4:WifiChannelReassociations<49> | xs:int | Yes | Number of WiFi channel reassociated during session. |
| v4:RecvQoSMarking<50> | xs:unsignedByte | Yes | Quality of Service marking on packets received during session. Currently not used. |
| v4:SendQoSMarking<51> | xs:unsignedByte | Yes | Quality of Service marking on packets sent during session. Currently not used. |
| v4:WifiRadioFrequency | xs:int | Yes | WiFi frequency used during session. |
| v4:WifiMTU | xs:int | Yes | The maximum transmission unit (MTU) for the Wi-Fi connection. |
| v4:WifiSupportFlags | xs:int | Yes | A flag that indicates whether the IPv4 or IPv6 protocols are supported. SupportFalg_IPv4 |

| Element | Type | Available | Description |
|--|--------------------|-----------|---|
| | | | = (1<<0); SupportFlag_IPv6 = (1<<1). |
| v4:WifiStatusFlags | xs:int | Yes | A flag that indicates the current connection status. StatusFlag_VPN = (1<<0). |
| v4:WifiTunnelType | xs:int | Yes | A flag that indicates the active tunneling technology between IPv6 and IPv4. The value is one of the following: None = 0 Other = 1 Direct = 2 6To4 = 3 ISATAP = 4 Teredo = 5 IPHTTPS = 6 |
| v4:WifiSignalStrength | xs:int | Yes | The Wi-Fi signal strength in percentage points [0-99]. |
| v4:WifiBatteryCharge | xs:int | Yes | The estimated remaining battery charge in percentage points [0-99], with 0 indicating that the device was plugged in. |
| v4:ConnectionName | xs:string | Yes | The currently active VPN network name. |
| v4:DNSSuffix | xs:string | Yes | The DNS suffix associated with the network adapter. |
| v4>LastRTPSendTime <52> | xs:dateTime | Yes | Date and time the last RTP packet was sent. |
| v4>LastRTCPSendTime <53> | xs:dateTime | Yes | Date and time the last RTP packet was sent. |
| v4>LastRTPReceiveTime <54> | xs:dateTime | Yes | Date and time the last RTP packet was received. |
| v4>LastRTCPSReceiveTime <55> | xs:dateTime | Yes | Date and time the last RTP packet was received. |
| v4:Separator4 <56> | default | Yes | Separator used for future schema extensions. |

2.2.1.7 Connectivity Element

A **Connectivity** element contains **ICE** connectivity information. The type of this element is **ConnectivityType**.

The **ConnectivityType** type is defined as follows:

```
<xs:complexType name="ConnectivityType">
  <xs:sequence>
```

```

<xs:element name="Ice" type="tns:IceStatusType" minOccurs="0"/>
<xs:element name="IceWarningFlags" type="xs:unsignedInt"
  minOccurs="0"/>
<xs:element name="RelayAddress" type="tns:AddrType" minOccurs="0"
  maxOccurs="unbounded"/>
<xs:any namespace="##other" processContents="lax" minOccurs="0"
  maxOccurs="unbounded"/>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>

<xs:simpleType name="IceStatusType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="FAILED"/>
    <xs:enumeration value="DIRECT"/>
    <xs:enumeration value="RELAY"/>
    <xs:enumeration value="HTTP-PROXY"/>
  </xs:restriction>
</xs:simpleType>

```

2.2.1.7.1 Child Elements

The following table lists the child elements of the **Connectivity** element.

| Element | Type | Available | Description |
|------------------------|--------------------------|-----------|---|
| Ice | tns:iceStatusType | Yes | Information about the media path, such as direct or relayed. For more information, see the enumeration types in section 2.2.1.7 . |
| IceWarningFlags | xs:unsignedInt | Yes | Information about ICE process described in bits flags. For more information, see the following table. |
| RelayAddress | tns:AddrType | Yes | IP address related information of the Audio/Video Edge Server (A/V Edge Server) . |

The following table shows the possible values and descriptions for the **IceWarningFlags** applicable to footnote [57](#).

| Value | Description |
|-----------|---|
| "0x000" | There were no failures or ICE was not used. |
| "0x0010" | TURN server is unreachable. |
| "0x0020" | Shared secret with TURN server failed. |
| "0x0040" | An attempt to allocate a User Datagram Protocol (UDP) port on the TURN server failed. |
| "0x0200" | An attempt to allocate a Transmission Control Protocol (TCP) port on the TURN server failed. |
| "0x4000" | UDP local connectivity failed. |
| "0x8000" | UDP network address translation (NAT) connectivity failed. |
| "0x10000" | UDP TURN server connectivity failed. |
| "0x40000" | TCP NAT connectivity failed. |
| "0x80000" | TCP TURN server connectivity failed. |

| Value | Description |
|--------------|---|
| "0x100000" | Message Integrity failed in connectivity check request. |
| "0x200000" | Message Integrity failed in connectivity check response. |
| "0x400000" | Candidate lookup failed upon receiving the connectivity check request. |
| "0x800000" | Candidate lookup failed upon receiving the connectivity check response. |
| "0x1000000" | Connectivity check request failed because of memory problem or other reasons that prevent sending packets. |
| "0x2000000" | Connectivity check response failed because of memory problem or other reasons that prevent sending packets. |
| "0x4000000" | TURN server FQDN was not resolved. |
| "0x8000000" | TURN server credentials are unknown. |
| "0x10000000" | TURN allocation failure due to client security mode. |

The following table shows the possible values and descriptions for the **IceWarningFlags** applicable to footnote [<58>](#).

| Value | Description |
|-------------|--|
| "0x0000000" | There were no failures or ICE was not used. |
| "0x0000001" | TURN server is unreachable. |
| "0x0000002" | An attempt to allocate a UDP port on the TURN server failed. |
| "0x0000004" | An attempt to send UDP on the TURN server failed. |
| "0x0000008" | An attempt to allocate a TCP port on the TURN server failed. |
| "0x0000010" | An attempt to send TCP on the TURN server failed. |
| "0x0000020" | UDP local connectivity failed. |
| "0x0000040" | UDP NAT connectivity failed. |
| "0x0000080" | UDP TURN server connectivity failed. |
| "0x0000100" | TCP NAT connectivity failed. |
| "0x0000200" | TCP TURN server connectivity failed. |
| "0x0000400" | Message integrity failed in connectivity check request. |
| "0x0000800" | The message integrity on the response message was incorrect. |
| "0x0001000" | A bandwidth policy server is configured. |
| "0x0002000" | Connectivity check request failed because of memory problem or other reasons that prevent sending packets. |
| "0x0004000" | TURN server credentials expired or are unknown. |
| "0x0008000" | Bandwidth policy restrictions removed candidates. |
| "0x0010000" | Bandwidth policy restrictions reduced bandwidth for some candidates. |

| Value | Description |
|-------------|--|
| "0x0020000" | Bandwidth policy keep-alive failed. |
| "0x0040000" | Bandwidth policy allocation failure. |
| "0x0080000" | No TURN server configured. |
| "0x0100000" | Multiple TURN servers were attempted for the allocation. |
| "0x0200000" | Port range exhausted. |
| "0x0400000" | Received alternate TURN server. |
| "0x0800000" | Pseudo-TLS failure. See [MS-TURN] section 2.1.1. |
| "0x1000000" | HTTP proxy is configured. |
| "0x2000000" | HTTP proxy authentication failed. |
| "0x4000000" | TCP-TCP connectivity checks failed over TURN server. |
| "0x8000000" | Use candidates check failed. |

2.2.1.8 NetworkConnectivityInfo Element

A **NetworkConnectivityInfo** element contains information specific to the network connection. The type of this element is **NetworkConnectivityInfoType**.

The **NetworkConnectivityInfoType** type is defined as follows<59>:

```
<xs:complexType name="NetworkConnectivityInfoType">
  <xs:sequence>
    <xs:element name="NetworkConnection"
      type="tns:NetworkConnectionType" minOccurs="0"/>
    <xs:element name="VPN" type="xs:boolean" minOccurs="0"/>
    <xs:element name="LinkSpeed" type="xs:float" minOccurs="0"/>
    <xs:element ref="v2:BSSID" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:element ref="v3:NetworkConnectionDetails" type="xs:string" minOccurs="0"/>
      <xs:element ref="v3:WifiDriverDeviceDesc" type="xs:string" minOccurs="0"/>
      <xs:element ref="v3:WifiDriverVersion" type="xs:string" minOccurs="0"/>
      <xs:element ref="v3:TraceRoute" type="v3:TraceRouteType" minOccurs="0"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>

<xs:simpleType name="NetworkConnectionType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="wired" />
    <xs:enumeration value="wifi" />
  </xs:restriction>
</xs:simpleType>
<xs:element name="BSSID" type="xs:string"/>
<xs:element name="Separator">
  <xs:complexType></xs:complexType>
</xs:element />
```

2.2.1.8.1 Child Elements

This section follows the product behavior described in footnote [60](#).

The following table lists the child elements of the **NetworkConnectivityInfo** element.

| Element | Type | Available | Description | Units |
|---|------------------------------|-----------|--|-----------------|
| NetworkConnection | NetworkConnectionType | Yes | Information about the NetworkConnection type. See section 2.2.1.8 . | Not applicable |
| VPN | xs:boolean | Yes | "True" if user is on VPN, "False" if not. | True/False |
| LinkSpeed | xs:float | Yes | The link speed of the network interface of the endpoint . | Bits per second |
| v2:BSSID 61 | xs:string [32] | Yes | Wireless LAN basic service set identifier. | Not applicable |
| v2:Separator 62 | default | No | Separator element used for future schema extensions. | Not applicable |
| v3:NetworkConnectionDetails 63 | xs:string [32] | Yes | Information about the Network media type. | Not applicable |
| v3:WifiDriverDeviceDesc 64 | xs:string [32] | Yes | Manufacturer of WiFi driver installed. | Not applicable |
| v3:WifiDriverVersion 65 | xs:string [32] | Yes | Version number of WiFi driver installed. | Not applicable |
| v3:TraceRoute 66 | TraceRouteType | Yes | Trace route results to the remote endpoint. | Not applicable |

2.2.1.8.1.1 TraceRoute Element

A TraceRoute element contains trace route information between the endpoint and the destination IP address to which the endpoint is sending media. [67](#) The type of this element is **TraceRouteType**.

```

<xs:element name="TraceRoute" type="v3:TraceRouteType"/>
  <xs:complexType name="TraceRouteType">
    <xs:sequence>
      <xs:element name="Hop" type="xs:int" minOccurs="1"/>
      <xs:element name="IPAddress" type="xs:string" minOccurs="0"/>
      <xs:element name="RTT" type="xs:int" minOccurs="0"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v3:Separator3"/>
        <xs:any namespace="##any" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:sequence>
  </xs:complexType>

```

| Element | Type | Available | Description | Units |
|---|-----------------------|-----------|---|-----------------|
| TraceRoute | TraceRouteType | Yes | Information about the TraceRoute type. See section 2.2.1.8 . | Not applicable |
| Hop | xs:int | Yes | The hop associated with this TraceRoute element. | True/False |
| IPAddress | xs:float | Yes | The IP address associated with this TraceRoute element. | Bits per second |
| RTT | xs:string [32] | Yes | The RTT associated with this TraceRoute element. | Not applicable |
| v3:Separator3 <68> | default | No | Separator element used for future schema extensions. | Not applicable |

2.2.1.9 LocalAddr, RemoteAddr, and RelayAddress Elements

LocalAddr, **RemoteAddr**, and **RelayAddress** elements contain IP address-related information for an **endpoint** in the **dialog**. The type for these elements is **AddrType**.

The **AddrType** type is defined as follows[<69>](#):

```
<xs:complexType name="AddrType">
  <xs:sequence>
    <xs:element name="IPAddr" type="xs:string"/>
    <xs:element name="Port" type="xs:unsignedShort" minOccurs="0"/>
    <xs:element name="Inside" type="xs:boolean" minOccurs="0"/>
    <xs:element name="SubnetMask" type="xs:string" minOccurs="0"/>
    <xs:element ref="v2:MACAddr" minOccurs="0" />
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator"/></xs:element>
      <xs:any namespace="##other" processContents="lax"
        minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence> </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
  </xs:complexType>

  <xs:element name="MACAddr" type="xs:string"/>

  <xs:element name="Separator">
    <xs:complexType></xs:complexType>
  </xs:element />
```

2.2.1.9.1 Child Elements

The following table lists the child elements of **LocalAddr**, **RemoteAddr**, and **RelayAddress** elements.

| Element | Type | Available | Description | Units |
|--|-------------------------|-----------|--|--|
| IPAddr | xs:string | Yes | The IP listening address for the stream (2) in dotted notation. | IPv4 or IPv6 |
| Port | xs:unsignedShort | Yes* | The listening port for the stream (2). | Not applicable |
| Inside <70> | xs:boolean | Yes** | "True" if the listening address is inside the OCS Enterprise, otherwise "False". | Not applicable |
| SubnetMask | xs:string | Yes** | The subnet masks of the listing address for the stream (2), in dotted notation if the IP address is IPv4. The subnet mask length If the address is IPv6. | IPv4 or subnet mask length if address is IPv6. |
| v2:MACAddr <71> | xs:string [32] | Yes** | The media access control address of the network interface adapter associated with the IPAddr . | Hexadecimal string |
| v2:Separator <72> | default | No | Separator element used for future schema extensions. | Not applicable |

* Only available for the **LocalAddr** and **RemoteAddr** elements.

** Only available for **LocalAddr**.

2.2.1.10 CaptureDev and RenderDev Elements

CaptureDev and **RenderDev** elements contain microphone, USB phone, or camera device type information. The type for these elements is **DeviceType**.[<73>](#)

The **DeviceType** type is defined as follows:

```
<xs:complexType name="DeviceType">
  <xs:sequence>
    <xs:element name="Name" type="xs:string" minOccurs="0"/>
    <xs:element name="Driver" type="xs:string" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
      maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
```

2.2.1.10.1 Child Elements

The following table lists the child elements of **CaptureDev** and **RenderDev** elements.

| Element | Type | Available | Description |
|-----------------------------------|------------------------|-----------|--|
| Name | xs:string [256] | Yes | Media capture or render device name. For more information, see section 6 . |
| Driver <74> | xs:string [256] | Yes | Manufacturer and version information about the device driver used for the device. |

2.2.1.11 InboundStream and OutboundStream Elements

InboundStream and **OutboundStream** elements contain information regarding a media stream. The type for these elements is **StreamType**.

The **StreamType** type is defined as follows:

```
<xs:complexType name="StreamType">
  <xs:sequence>
    <xs:element name="Network" type="tns:NetworkMetricsType"
      minOccurs="0"/>
    <xs:element name="Payload" type="tns:PayloadMetricsType"/>
    <xs:element name="QualityEstimates" type="tns:QualityEstimatesType"
      minOccurs="0"/><!-- Support reporting multiple payloads per stream-->
    <xs:element ref="v3:AdditionalPayload" minOccurs="0" maxOccurs="unbounded"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"/></xs:sequence>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>

</xs:sequence>
<xs:attribute name="Id" type="xs:unsignedInt" use="required"/>
<xs:attribute name="Start" type="xs:dateTime"/>
<xs:attribute name="End" type="xs:dateTime"/>
<xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
```

2.2.1.11.1 Child Elements

The following table lists the child elements of **InboundStream** and **OutboundStream** elements.

| Element | Type | Available | Description |
|--|-----------------------------|-----------|--|
| Network | NetworkMetricsType | Yes | Network-based metrics. |
| Payload | PayloadMetricsType | Yes | Payload-based metrics. |
| QualityEstimates | QualityEstimatesType | Yes | Metrics estimating the quality of the media. |
| v3:AdditionalPayload <75> | PayloadMetricsType | Yes | Additional payload-based metrics for second codec. |

2.2.1.11.2 Attributes

The following table lists the attributes of **InboundStream** and **OutboundStream** elements.

| Attribute | Type | Required | Available | Description |
|--------------|-----------------------|----------|-----------|---|
| Id | xs:unsignedInt | Yes | Yes | Synchronization Source (SSRC) identifier, as specified in [RFC3550] section 8. |
| Start | xs:dateTime | No | No | Not used. |
| End | xs:dateTime | No | No | Not used. |

2.2.1.12 Network Element

A **Network** element contains network-based metrics. The type of this element is **NetworkMetricsType**.

The **NetworkMetricsType** type is defined as follows [<76>](#):

```
<xs:complexType name="NetworkMetricsType">
  <xs:sequence>
    <xs:element name="DSCP" type="xs:byte" minOccurs="0"/>
    <xs:element name="VLAN" type="xs:int" minOccurs="0"/>
    <xs:element name="Jitter" type="tns:JitterType" minOccurs="0"/>
    <xs:element name="PacketLoss" type="tns:PacketLossType" minOccurs="0"/>
    <xs:element name="BurstGapLoss" type="tns:BurstGapLossType" minOccurs="0"/>
    <xs:element name="Delay" type="tns:DelayType" minOccurs="0"/>
    <xs:element name="Utilization" type="tns:NetworkUtilizationType" minOccurs="0"/>
    <xs:element ref="v2:RatioConcealedSamplesAvg" minOccurs="0"/>
    <xs:element ref="v2:RatioStretchedSamplesAvg" minOccurs="0"/>
    <xs:element ref="v2:RatioCompressedSamplesAvg" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:element ref="v3:ConcealRatioMax" minOccurs="0"/>
      <xs:element ref="v3:ConcealRatioSd" minOccurs="0"/>
      <xs:element ref="v3:HealerPacketDropRatio" minOccurs="0"/>
      <xs:element ref="v3:HealerFECPacketUsedRatio" minOccurs="0"/>
      <xs:element ref="v3:MaxCompressedSamples" minOccurs="0"/>
      <xs:element ref="v3:LossCongestionPercent" minOccurs="0"/>
      <xs:element ref="v3:DelayCongestionPercent" minOccurs="0"/>
      <xs:element ref="v3:ContentionDetectedPercent" minOccurs="0"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v3:Separator3" />
        <xs:element ref="v4:WifiRetransmissionRate" minOccurs="0"/>
        <xs:element ref="v4:WifiSendRate" minOccurs="0"/>
        <xs:element ref="v4:WifiReceiveRate" minOccurs="0"/>
        <xs:element ref="v4:WifiRetryCount" minOccurs="0"/>
        <xs:element ref="v4:WifiTransmittedFrameCount" minOccurs="0"/>
        <xs:element ref="v4:WifiMaxSendSpeed" minOccurs="0"/>
        <xs:element ref="v4:WifiMaxReceiveSpeed" minOccurs="0"/>
        <xs:element ref="v4:QoSMarkedRate" minOccurs="0"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v4:Separator4" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
</xs:complexType>

<xs:element name="RatioConcealedSamplesAvg" type="xs:float"/>
<xs:element name="RatioStretchedSamplesAvg" type="xs:float"/>
<xs:element name="RatioCompressedSamplesAvg" type="xs:float"/>

<xs:element name="Separator">
  <xs:complexType></xs:complexType>
</xs:element />
```

2.2.1.12.1 Child Elements

The following table lists the child elements of the **Network** element.

| Element | Type | Available | Description |
|---------|---------|-----------|-------------|
| DSCP | xs:byte | No | Not used. |

| Element | Type | Available | Description |
|--|-------------------------------|-----------|--|
| VLAN | xs:byte | No | Not used. |
| Jitter | JitterType | Yes | Jitter related metrics. |
| PacketLoss | PacketLossType | Yes | Packet loss related metrics. |
| BurstGapLoss | BurstGapLossType | Yes** | Burst related metrics. |
| Delay | DelayType | Yes<77> | Delay related metrics. |
| Utilization | NetworkUtilizationType | Yes | Utilization related metrics. |
| v2:RatioConcealedSamplesAvg | xs:float | Yes** | Ratio of the number of audio frames with samples generated by packet loss concealment to the total number of audio frames. |
| v2:RatioStretchedSamplesAvg <78> | xs:float | Yes** | Ratio of the number of audio frames with samples that have been stretched to compensate for jitter or loss to the total number of audio frames. |
| v2:RatioCompressedSamplesAvg <79> | xs:float | Yes** | Ratio of the number of audio frames with samples that have been compressed to compensate for jitter or loss to the total number of audio frames. |
| v2:Separator <80> | default | Yes | Separator element used for future schema extensions. |
| v3:ConcealRatioMax <81> | xs:float | Yes | Maximum value of the short term concealment ratio, which is the ratio of the number of audio frames (10 seconds) with samples that are compensated for jitter or loss to the total number of audio frames. |

| Element | Type | Available | Description |
|--|-----------------|-----------|---|
| v3:ConcealRatioSD <82> | xs:float | Yes | Standard deviation of the short term concealment ratio, which is the ratio of the number of audio frames (10 seconds) with samples that are compensated for jitter or loss to the total number of audio frames. |
| v3:HealerPacketDropRatio <83> | xs:float | Yes | Ratio of audio packets dropped by healer over total number of audio packets received by healer. |
| v3:HealerFECPacketUsedRatio <84> | xs:float | Yes | Ratio of used FEC packets over total number of received FEC packets. |
| v3:MaxCompressedSamples <85> | xs:int | Yes | Maximum number of contiguous audio packets compressed by the healer. |
| v3:LossCongestionPercent <86> | xs:float | Outbound | Percentage of the call that congestion is detected due to high loss rate. |
| v3:DelayCongestionPercent <87> | xs:float | Outbound | Percentage of the call that congestion is detected due to high one way delay. |
| v3:ContentionDetectedPercent <88> | xs:float | Outbound | Percentage of the call that contention is detected. |
| v3:Separator3 <89> | default | Yes | Separator element used for future schema extensions. |
| v4:WifiRetransmissionRate <90> | xs:int | Yes | The ratio of Wi-Fi frames that were transmitted unsuccessfully to total frames sent. |
| v4:WifiSendRate <91> | xs:int | Yes | The send rate of the Wi-Fi connection. |
| v4:WifiReceiveRate <92> | xs:int | Yes | The receive rate of the Wi-Fi connection. |
| v4:WifiRetryCount <93> | xs:long | Yes | The number of Wi-Fi frames that were sent successfully after one |

| Element | Type | Available | Description |
|--|----------------|-----------|--|
| | | | or more retry. |
| v4:WifiTransmittedFrameCount <94> | xs:long | Yes | The number of Wi-Fi frames that were successfully transmitted. |
| v4:WifiMaxSendSpeed <95> | xs:int | Yes | Maximum theoretical send speed in kbps. |
| v4:WifiMaxReceiveSpeed <96> | xs:int | Yes | Maximum theoretical receive speed in kbps. |
| v4:QoSMarkedRate <97> | xs:int | Yes | Percentage of packets that had QoS marked. Currently not used. |
| v4:Separator4 <98> | default | Yes | Separator element used for future schema extensions. |

** Available for **InboundStream** only

2.2.1.13 Payload Element

A **Payload** element contains payload-based metrics. The type of this element is **PayloadMetricsType**.

The **PayloadMetricsType** type is defined as follows:

```
<xs:complexType name="PayloadMetricsType">
  <xs:choice>
    <xs:element name="Audio" type="tns:AudioPayloadMetricsType"/>
    <xs:element name="Video" type="tns:VideoPayloadMetricsType"/>
    <xs:element name="ApplicationSharing" type="v3:ApplicationSharingPayloadMetricsType"
  />
  <xs:any namespace="##other" processContents="lax"
    maxOccurs="unbounded"/>
  </xs:choice>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
```

2.2.1.13.1 Child Elements

The following table lists the child elements of the **Payload** element.

| Element | Type | Available | Description |
|--|--|-----------|--|
| Audio | AudioPayloadMetricsType | Yes | Audio-based payload metrics. |
| Video | VideoPayloadMetricsType | Yes | Video-based payload metrics. |
| ApplicationSharing <99> | v3:ApplicationSharingPayloadMetricsType | Yes | ApplicationSharing payload metrics. |

2.2.1.14 Payload.Audio Element

A **Payload.Audio** element contains audio-based payload metrics. The type of this element is **AudioPayloadMetricsType**.

The **AudioPayloadMetricsType** type is defined as follows[<100>](#):

```
<xs:complexType name="AudioPayloadMetricsType">
  <xs:sequence>
    <xs:element name="PayloadType" type="xs:int" minOccurs="0"/>
    <xs:element name="PayloadDescription" type="xs:string"
      minOccurs="0"/>
    <xs:element name="SampleRate" type="xs:int" minOccurs="0"/>
    <xs:element name="FrameDuration" type="xs:int" minOccurs="0"/>
    <xs:element name="FrameOctets" type="xs:int" minOccurs="0"/>
    <xs:element name="FramesPerPacket" type="xs:int" minOccurs="0"/>
    <xs:element name="PacketsPerSecond" type="xs:int" minOccurs="0"/>
    <xs:element name="FMTP" type="xs:string" minOccurs="0"/>
    <xs:element name="Signal" type="tns:SignalType" minOccurs="0"/>
    <xs:element name="JitterBuffer" type="tns:JitterBufferType"
      minOccurs="0"/>
    <xs:element name="SilenceSupress"
      type="tns:SilenceSuppressionStateType" minOccurs="0"/>
    <xs:element ref="v2:AudioFECUsed" minOccurs="0"/>
    <xs:element ref="v2:OpaqueAudioData" minOccurs="0" />
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:AudioPostFECPLR" minOccurs="0"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v2:Separator" />
        <xs:element ref="v3:DecodeStereoPercent" minOccurs="0"/>
        <xs:element ref="v3:AecRenderStereoPercent" minOccurs="0"/>
        <xs:element ref="v3:EncodeStereoPercent" minOccurs="0"/>
        <xs:element ref="v3:AecCaptureStereoPercent" minOccurs="0"/>
        <xs:sequence minOccurs="0">
          <xs:element ref="v3:Separator3" />
          <xs:element ref="v4:JitterBufferSizeAvg" minOccurs="0"/>
          <xs:element ref="v4:JitterBufferSizeMax" minOccurs="0"/>
          <xs:element ref="v4:JitterBufferSizeMin" minOccurs="0"/>
          <xs:element ref="v4:JitterBufferSizeSD" minOccurs="0"/>
          <xs:element ref="v4:NetworkJitterAvg" minOccurs="0"/>
          <xs:element ref="v4:NetworkJitterMax" minOccurs="0"/>
          <xs:element ref="v4:NetworkJitterMin" minOccurs="0"/>
          <xs:element ref="v4:NetworkJitterSD" minOccurs="0"/>
          <xs:element ref="v4:PacketReorderRatio" minOccurs="0"/>
          <xs:element ref="v4:PacketReorderDepthAvg" minOccurs="0"/>
          <xs:element ref="v4:PacketReorderDepthMax" minOccurs="0"/>
          <xs:element ref="v4:BurstLossLength1" minOccurs="0"/>
          <xs:element ref="v4:BurstLossLength2" minOccurs="0"/>
          <xs:element ref="v4:BurstLossLength3" minOccurs="0"/>
          <xs:element ref="v4:BurstLossLength4" minOccurs="0"/>
          <xs:element ref="v4:BurstLossLength5" minOccurs="0"/>
          <xs:element ref="v4:BurstLossLength6" minOccurs="0"/>
          <xs:element ref="v4:BurstLossLength7" minOccurs="0"/>
          <xs:element ref="v4:BurstLossLength8OrHigher" minOccurs="0"/>
          <xs:element ref="v4:FECRecvOnPercent" minOccurs="0"/>
          <xs:element ref="v4:FECRecvDistance1" minOccurs="0"/>
          <xs:element ref="v4:FECRecvDistance2" minOccurs="0"/>
          <xs:element ref="v4:FECRecvDistance3" minOccurs="0"/>
          <xs:element ref="v4:FECRecvDistance4" minOccurs="0"/>
          <xs:element ref="v4:FECRecvDistance5" minOccurs="0"/>
          <xs:element ref="v4:FECRecvDistance6" minOccurs="0"/>
          <xs:element ref="v4:FECRecvDistance7" minOccurs="0"/>
          <xs:element ref="v4:FECRecvDistance8OrHigher" minOccurs="0"/>
          <xs:element ref="v4:FECRecvScheme" minOccurs="0"/>
          <xs:element ref="v4:FECRecvRedundancy" minOccurs="0"/>
        </xs:sequence>
      </xs:sequence>
    </xs:sequence>
  </xs:sequence>
</xs:complexType>
```

```

        <xs:element ref="v4:HealerPushCount" minOccurs="0"/>
        <xs:element ref="v4:HealerPullCount" minOccurs="0"/>
        <xs:element ref="v4:SendMutePercent" minOccurs="0"/>
        <xs:element ref="v4:CaptureOffloadedEffectsAudio" minOccurs="0"/>
        <xs:element ref="v4:RenderOffloadedEffectsAudio" minOccurs="0"/>
        <xs:sequence minOccurs="0">
            <xs:element ref="v4:Separator4" />
            <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:sequence>
</xs:sequence>
</xs:sequence>
</xs:complexType>

<xs:element name="AudioFECUsed" type="xs:boolean"/>

<xs:element name="Separator">
    <xs:complexType></xs:complexType>
</xs:element />

<xs:simpleType name="SilenceSuppressionStateType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="ON" />
        <xs:enumeration value="OFF" />
    </xs:restriction>
</xs:simpleType>

<xs:complexType name="JitterBufferType">
    <xs:sequence>
        <xs:element name="Type" type="tns:JitterBufferAdaptiveType"
            minOccurs="0" />
        <xs:element name="Rate" type="xs:int" minOccurs="0" />
        <xs:element name="Nominal" type="xs:int" minOccurs="0" />
        <xs:element name="Max" type="xs:int" minOccurs="0" />
        <xs:element name="AbsMax" type="xs:int" minOccurs="0" />
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
            maxOccurs="unbounded" />
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>

<xs:simpleType name="JitterBufferAdaptiveType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="UNKNOWN" />
        <xs:enumeration value="RESERVED" />
        <xs:enumeration value="NON-ADAPTIVE" />
        <xs:enumeration value="ADAPTIVE" />
    </xs:restriction>
</xs:simpleType>

```

2.2.1.14.1 Child Elements

The following table lists the child elements of the **Payload.Audio** element.

| Element | Type | Available | Description | Units |
|--|--------|-----------|--|---------|
| PayloadType <101> | xs:int | Yes | Payload number used for the codec , as specified in | Integer |

| Element | Type | Available | Description | Units |
|---|------------------------------------|-----------|---|--------------------|
| | | | [MS-RTP] section 2.2.1. | |
| PayloadDescription | xs:string [256] | Yes | Codec name, as specified in [MS-SDPEXT] section 3.1.5.3 or [RFC3551] section 6. | Not applicable |
| SampleRate | xs:int | Yes | Audio sample rate. | Samples per second |
| FrameDuration | xs:int | No | Not used. | |
| FrameOctets | xs:int | No | Not used. | |
| FramesPerSecond | xs:int | No | Not used. | |
| PacketsPerSecond | xs:int | No | Not used. | |
| FMT | xs:string | No | Not used. | |
| Signal | SignalType | Yes | Metrics regarding signal level and noise. | Not applicable |
| JitterBuffer | JitterBufferType | No | Not used. | |
| SilenceSupress | SilenceSuppressionStateType | No | Not used. | |
| v2:AudioFECUsed <102> | xs:boolean | Yes | "True" means that audio forward error correction (FEC) was used at some point during the call . "False" means that no audio FEC was used during the call. | Not applicable |
| v2:OpaqueAudioData <103> | v2:OpaqueAudioDataType | No | Not used. | |
| v3:AudioPostFECPLR <104> | xs:float | No | Reports packet loss rate after FEC has been applied for audio. Value between 0.00 and 1.00. | Percentage |
| v2:Separator <105> | default | No | Separator element used for future | Not applicable |

| Element | Type | Available | Description | Units |
|---|-----------------|-----------|---|----------------|
| | | | schema extensions. | |
| v3:DecodeStereoPercent <106> | xs:float | Yes | Percentage of audio decoded as stereo. | Percentage |
| v3:AecRenderStereoPercent <107> | xs:float | Yes | Percentage of call processed by AEC as stereo render. | Percentage |
| v3:EncodeStereoPercent <108> | xs:float | Yes | Percentage of audio encoded as stereo. | Percentage |
| v3:AecCaptureStereoPercent <109> | xs:float | Yes | Percentage of call processed by AEC as stereo capture. | Percentage |
| v3:Separator3 <110> | default | No | Separator element used for future schema extensions. | Not applicable |
| v4:JitterBufferSizeAvg <111> | xs:int | Yes | Average size of jitter buffer during session. | milliseconds |
| v4:JitterBufferSizeMax <112> | xs:int | Yes | Maximum size of jitter buffer during session. | Milliseconds |
| v4:JitterBufferSizeMin <113> | xs:int | Yes | Minimum size of jitter buffer during session. | Milliseconds |
| v4:JitterBufferSizeSD <114> | xs:int | Yes | Standard deviation of jitter buffer size during session. | milliseconds |
| v4:NetworkJitterAvg <115> | xs:float | Yes | Average of network jitter computed over 20 second windows during the session. | milliseconds |
| v4:NetworkJitterMax <116> | xs:float | Yes | Maximum of network jitter computed | milliseconds |

| Element | Type | Available | Description | Units |
|---|-----------------|-----------|---|--------------|
| | | | over 20 second windows during the session. | |
| v4:NetworkJitterMin <117> | xs:float | Yes | Minimum of network jitter computed over 20 second window during the session. | milliseconds |
| v4:NetworkJitterSD <118> | xs:float | Yes | Standard deviation of network jitter computed over 20 second window during the session. | milliseconds |
| v4:PacketReorderRatio <119> | xs:float | Yes | Ratio of packets received that were out of sequence during the session. | Fraction |
| v4:PacketReorderDepthAvg <120> | xs:int | Yes | Average of the number of packets between the when the current packet and the out-of sequence packet was received. | packets |
| v4:PacketReorderDepthMax <121> | xs:int | Yes | Maximum of the number of packets between the when the current packet and the out-of sequence packet was received. | packets |
| v4:BurstLossLength1 <122> | xs:float | Yes | Ratio of lost single lost packet over the total number packets for | Fraction |

| Element | Type | Available | Description | Units |
|--|-----------------|-----------|--|------------|
| | | | the session. | |
| v4:BurstLossLength2 <123> | xs:float | Yes | Ratio of 2 consecutive lost packets over the total number packets for the session. | Fraction |
| v4:BurstLossLength3 <124> | xs:float | Yes | Ratio of 3 consecutive lost packets over the total number packets for the session. | Fraction |
| v4:BurstLossLength4 <125> | xs:float | Yes | Ratio of 4 consecutive lost packets over the total number packets for the session. | Fraction |
| v4:BurstLossLength5 <126> | xs:float | Yes | Ratio of 5 consecutive lost packets over the total number packets for the session. | Fraction |
| v4:BurstLossLength6 <127> | xs:float | Yes | Ratio of 6 consecutive lost packets over the total number packets for the session. | Fraction |
| v4:BurstLossLength7 <128> | xs:float | Yes | Ratio of 7 consecutive lost packets over the total number packets for the session. | Fraction |
| v4:BurstLossLength8OrHigher <129> | xs:float | Yes | Ratio of 8 or more consecutive lost packets over the total number packets for the session. | Fraction |
| v4:FECRecvOnPercent <130> | xs:float | Yes | Percentage of session where FEC was enabled for | Percentage |

| Element | Type | Available | Description | Units |
|---|-----------------|-----------|--|--|
| | | | packets received. | |
| v4:FECRecvDistance1 <131> | xs:float | Yes | Percentage of session where packets with FEC distance of 1 was received. | Percentage |
| v4:FECRecvDistance2 <132> | xs:float | Yes | Percentage of session where packets with FEC distance of 2 was received. | Percentage |
| v4:FECRecvDistance3 <133> | xs:float | Yes | Percentage of session where packets with FEC distance of 3 was received. | Percentage |
| v4:FECRecvDistance4 <134> | xs:float | Yes | Percentage of session where packets with FEC distance of 4 was received. | Percentage |
| v4:FECRecvDistance5 <135> | xs:float | Yes | Percentage of session where packets with FEC distance of 5 was received. | Percentage |
| v4:FECRecvDistance6 <136> | xs:float | Yes | Percentage of session where packets with FEC distance of 6 was received. | Percentage |
| v4:FECRecvDistance7 <137> | xs:float | Yes | Percentage of session where packets with FEC distance of 7 was received. | Percentage |
| v4:FECRecvDistance8OrHigher <138 ≥ | xs:float | Yes | Percentage of session where packets with FEC distance of 8 or larger was received. | Percentage |
| v4:FECRecvScheme <139> | xs:float | Yes | Track which FEC scheme is being used during | 0 – codec level FEC (in-band) 1 –external |

| Element | Type | Available | Description | Units |
|--|-----------------|-----------|---|----------------|
| | | | session. | FEC (RFC 2198) |
| v4:FECRecvRedundancy <140> | xs:float | Yes | Average FEC redundancy for packets received. | float |
| v4:HealerPushCount <141> | xs:int | Yes | Number of packets pushed into the audio healer/jitter buffer from network. | packets |
| v4:HealerPullCount <142> | xs:int | Yes | Number of packets pulled from the audio healer/jitter buffer to be rendered or mixed. | packets |
| v4:SendMutePercent <143> | xs:float | Yes | Percentage of session duration where the client was muted. | percentage |
| v4:CaptureOffloadedEffectsAudio <144> | xs:int | Yes | Bitmask representing which audio capture DSP effects were used in hardware. | TBD |
| v4:RenderOffloadedEffectsAudio <145> | xs:int | Yes | Bitmask representing which audio render DSP effects were used in hardware. | TBD |
| v4:Separator4 <146> | default | Yes | Separator used for future schema extensions. | Not applicable |

2.2.1.15 Payload.Video Element

A **Payload.Video** element contains video-based payload metrics. The type of this element is **VideoPayloadMetricsType**.

The **VideoPayloadMetricsType** type is defined as follows^{<147>}:

```
<xs:complexType name="VideoPayloadMetricsType">
  <xs:sequence>
    <xs:element name="PayloadType" type="xs:int" minOccurs="0"/>
    <xs:element name="PayloadDescription" type="xs:string"
      minOccurs="0"/>
    <xs:element name="Resolution" type="xs:string" minOccurs="0"/>
    <xs:element name="VideoBitRateAvg" type="xs:int" minOccurs="0"/>
    <xs:element name="VideoBitRateMax" type="xs:int" minOccurs="0"/>
    <xs:element name="VideoFrameRateAvg" type="xs:float" minOccurs="0"/>
    <xs:element name="VideoPacketLossRate" type="xs:float"
      minOccurs="0"/>
    <xs:element name="VideoFrameLossRate" type="xs:float"
      minOccurs="0"/>
    <xs:element name="VideoFrameEncodingTime" type="xs:float"
      minOccurs="0"/>
    <xs:element name="VideoFrameDecodingTime" type="xs:float"
      minOccurs="0"/>
    <xs:element name="VideoFEC" type="xs:boolean" minOccurs="0"/>
    <xs:element name="FrozenVideoFreq" type="xs:float" minOccurs="0"/>
    <xs:element name="FrozenPeriodPercentAvg" type="xs:float" minOccurs="0"/>
    <xs:element name="ConsecutivePacketLossAvg" type="xs:float"
      minOccurs="0"/>
    <xs:element name="RateMatchLevel" type="xs:float" minOccurs="0"/>
    <xs:element ref="v2:VideoAllocateBWAvg" minOccurs="0"/>
    <xs:element ref="v2:VideoLocalFrameLossPercentageAvg" minOccurs="0"/>

    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:element ref="v2:VideoResolutionDistribution" minOccurs="0" />
      <xs:element ref="v2:VideoRateMatchingLevelDistribution" minOccurs="0" />
      <xs:sequence minOccurs="0">
        <xs:element ref="v2:Separator" />
        <xs:element ref="v3:SendCodecTypes" minOccurs="0"/>
        <xs:element ref="v3:SendFrameRateAverage" minOccurs="0"/>
        <xs:element ref="v3:SendBitRateMaximum" minOccurs="0"/>
        <xs:element ref="v3:SendBitRateAverage" minOccurs="0"/>
        <xs:element ref="v3:SendVideoStreamsMax" minOccurs="0"/>
        <xs:element ref="v3:SendResolutionWidth" minOccurs="0"/>
        <xs:element ref="v3:SendResolutionHeight" minOccurs="0"/>

        <xs:element ref="v3:RecvCodecTypes" minOccurs="0"/>
        <xs:element ref="v3:RecvResolutionWidth" minOccurs="0"/>
        <xs:element ref="v3:RecvResolutionHeight" minOccurs="0"/>
        <xs:element ref="v3:RecvFrameRateAverage" minOccurs="0"/>
        <xs:element ref="v3:RecvBitRateMaximum" minOccurs="0"/>
        <xs:element ref="v3:RecvBitRateAverage" minOccurs="0"/>
        <xs:element ref="v3:RecvVideoStreamsMax" minOccurs="0"/>
        <xs:element ref="v3:RecvVideoStreamsMin" minOccurs="0"/>
        <xs:element ref="v3:RecvVideoStreamsMode" minOccurs="0"/>
        <xs:element ref="v3:VideoPostFECPLR" minOccurs="0"/>

        <xs:element ref="v3:DynamicCapabilityPercent" minOccurs="0"/>
        <xs:element ref="v3:ResolutionMin" minOccurs="0"/>
        <xs:element ref="v3:LowBitRateCallPercent" minOccurs="0"/>
        <xs:element ref="v3:LowFrameRateCallPercent" minOccurs="0"/>
        <xs:element ref="v3:LowResolutionCallPercent" minOccurs="0"/>
        <!-- Added to support multiple video payloads in single stream-->
        <xs:element ref="v3:DurationSeconds" minOccurs="0" />
        <xs:element ref="v3:IsAggregatedData" minOccurs="0" />
        <xs:element ref="v3:UseForCallClassification" minOccurs="0" />
      </xs:sequence>
    </xs:sequence>

    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3" />
      <xs:element ref="v4:RecvReorderBufferTotalPackets" minOccurs="0" />
      <xs:element ref="v4:RecvReorderBufferReorderedPackets" minOccurs="0" />
    </xs:sequence>
  </xs:sequence>
</xs:complexType>
```

```

        <xs:element ref="v4:RecvReorderBufferReorderedPacketsSuccessfullyOrdered"
minOccurs="0" />
        <xs:element ref="v4:RecvReorderBufferPacketsDroppedDueToBufferExhaustion"
minOccurs="0" />
        <xs:element ref="v4:RecvReorderBufferMaxSuccessfullyOrderedExtent" minOccurs="0"
/>
        <xs:element ref="v4:RecvReorderBufferMaxSuccessfullyOrderedLateTime"
minOccurs="0" />
        <xs:element ref="v4:RecvReorderBufferPacketsDroppedDueToTimeout" minOccurs="0" />

        <xs:sequence minOccurs="0">
            <xs:element ref="v4:Separator4" />
            <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:sequence>
</xs:sequence>
</xs:sequence>
</xs:sequence>
</xs:sequence>
</xs:complexType>

<xs:element name="VideoAllocateBWAvg" type="xs:int"/>

<xs:element name="VideoLocalFrameLossPercentageAvg" type="xs:float"/>
<xs:element name="Separator">
    <xs:complexType></xs:complexType>
</xs:element />

```

2.2.1.15.1 Child Elements

The following table lists the child elements of the **Payload.Video** element.

| Element | Type | Available | Description | Units |
|--|------------------------|-----------|---|-------------------|
| PayloadType <148> | xs:int | Yes | Payload number used for the codec , as specified in [MS-RTP] section 2.2.1. | Integer |
| PayloadDescription | xs:string [256] | Yes | Codec name, as specified in [MS-SDPEXT] section 3.1.5.3 or [RFC3551] section 6. | Not applicable |
| Resolution | xs:string [9] | Yes | Report video resolution in pixels, in the string format of Width x Height without spaces, for example "640x480". | Pixels |
| VideoBitRateAvg | xs:int | Yes | Average bit rate, or bits per second, sent or received for a video stream (2) , computed over the duration of the session . This includes raw video and transport bits. | Bits per second |
| VideoBitRateMax | xs:int | Yes | Maximum bit rate, or bits per second, sent or received for a video stream (2), computed over the duration of the session. | Bits per second |
| VideoFrameRateAvg | xs:float | Yes | Average frames per second sent or received for a video stream (2), computed over | Frames per second |

| Element | Type | Available | Description | Units |
|---|-------------------|-----------|---|----------------|
| | | | the duration of the session. | |
| VideoPacketLossRate | xs:float | Outbound | The average fraction lost, as specified in [RFC3550] section 6.4.1, computed over the duration of the session. | Fraction |
| VideoFrameLossRate | xs:float | Inbound | The average fraction of frames lost on the video receiver side, computed over the duration of the session. | Fraction |
| VideoFrameEncodingTime | xs:float | Outbound | Average frame encoding time. This is the time difference between encoding start and encoding finish, computed over the duration of the session. | Milliseconds |
| VideoFrameDecodingTime | xs:float | Inbound | Average frame decoding time. This is the time difference between decoding start and decoding finish, computed over the duration of the session. | Milliseconds |
| VideoFEC | xs:boolean | No | Not used. | Not applicable |
| FrozenVideoFreq | xs:float | Inbound | Frequency of occurrence of long duration frozen video, where long duration is defined as no video frames displayed for more than 1 second. Equal to the ratio of total occurrence over session duration. | Fraction |
| FrozenPeriodPercentAvg <149> | xs:float | Inbound | Percentage of total call duration for which frozen video was observed. | Percentage |
| ConsecutivePacketLossAvg <150> | xs:float | Inbound | Average number of consecutive packets lost during a video session. | Packets |
| RateMatchLevel <151> | xs:float | Outbound | Describes the level of frame rate matching in video sessions. This is the average of the level values encountered in the RTVideo bit stream (2). Zero ("0") corresponds to the case where all frame types (I-frames , Super P-frames (SP-frames) , P-frames , and B-frames) are transmitted. "1" corresponds to the case where I-frames, SP-frames, and P-frames are transmitted. "2" corresponds to the case where I-frames and SP-frames are transmitted. "3" corresponds to the case where only I-frames are transmitted. | Not applicable |

| Element | Type | Available | Description | Units |
|--|--|----------------------|---|-------------------|
| v2:VideoAllocateBWAvg<152> | xs:int | Outbound | The bandwidth allocated for sending video. | Bits per second |
| v2:VideoLocalFrameLossPercentageAvg<153> | xs:float | Inbound | The average percentage of video frames lost as displayed to the user. This includes frames recovered from network losses. | Percentage |
| v2:Separator<154> | default | No | Separator element used for future schema extensions. | Not applicable |
| v2:VideoResolutionDistribution<155> | VideoResolutionDistributionType | Inbound/O utbound | The distribution of received or sent video resolution. | Not applicable |
| v2:VideoRateMatchingLevelDistribution<156> | VideoRateMatchingLevelDistributionType | Inbound | The distribution of received video rate matching level. | Not applicable |
| v2:Separator<157> | default | No | Separator element used for future schema extensions. | Not applicable |
| v3:SendCodecTypes<158> | xs:string [256] | Outbound | Codec name, as specified in [MS-SDPEXT] section 3.1.5.3 or [RFC3551] section 6 concatenated by an indicator of resource type of the codec. See section 2.2.1.15.1.1 . | Not applicable |
| v3:SendResolutionWidth<159> | xs:int | Outbound | The maximum video image width sent for all video streams (2), computed over the duration of the session. | Pixels |
| v3:SendResolutionHeight<160> | xs:int | Outbound | The maximum video image height sent for all video streams (2), computed over the duration of the session. | Pixels |
| v3:SendFrameRateAverage<161> | xs:float | Outbound | Average frames per second sent for all video streams (2), computed over the duration of the session. | Frames per second |
| v3:SendBitRateMaximum<162> | xs:int | Outbound | The maximum bandwidth actually sent for all video streams (2), computed over the duration of the session. | Bits per second |
| v3:SendBitRateAverage<163> | xs:int | Outbound | The average bandwidth actually sent for all video streams (2), computed over the duration of the session. | Bits per second |
| v3:SendVideoStreamsMax<164> | xs:int | Outbound | The maximum number of video streams (2), active during any one second interval, computed over the duration of the session. | Streams |

| Element | Type | Available | Description | Units |
|--|----------------------------------|------------------|---|-------------------|
| v3:RecvCodecTypes <165> | xs:string [256] | Inbound | Codec name, as specified in [MS-SDPEXT] section 3.1.5.3 or [RFC3551] section 6 concatenated by resource type. See section 2.2.1.15.1.2 | Not applicable |
| v3:RecvResolutionWidth <166> | xs:int | Inbound | The maximum video image width received for all video streams (2), computed over the duration of the session. | Pixels |
| v3:RecvResolutionHeight <167> | xs:int | Inbound | The maximum video image height received for all video streams (2), computed over the duration of the session. | Pixels |
| v3:RecvFrameRateAverage <168> | xs:float | Inbound | Average frames per second received for all video streams (2), computed over the duration of the session. | Frames per second |
| v3:RecvBitRateMaximum <169> | xs:int | Inbound | The maximum bandwidth received for all video streams (2), computed over the duration of the session. | Bits per second |
| v3:RecvBitRateAverage <170> | xs:int | Inbound | The average bandwidth received for all video streams (2), computed over the duration of the session. | Bits per second |
| v3:RecvVideoStreamsMax <171> | xs:int | Inbound | The maximum number of video streams (2), received during any one second interval, computed over the duration of the session. | Streams |
| v3:RecvVideoStreamsMin <172> | xs:int | Inbound | The minimum number of video streams (2), received during any one second interval, computed over the duration of the session. | Streams |
| v3:RecvVideoStreamsMode <173> | xs:int | Inbound | The most common number ("mode") of video streams (2), received during any one second interval, computed over the duration of the session. | Streams |
| v3:VideoPostFECPLR <174> | xs:float | Inbound | Reports packet loss rate after FEC has been applied for video. Aggregated across all video streams and codecs. Value between 0.00 and 1.00. | Percentage |
| v3:DynamicCapabilityPercent <175> | xs:float | Inbound/Outbound | Percentage of time that the client is running under capability of less than 0.7 of expected capability for this type of CPU. Inbound and Outbound are identical since it measures the client, not the | Percentage |

| Element | Type | Available | Description | Units |
|--|-------------------|----------------------|--|----------------|
| | | | channel. | |
| v3:ResolutionMin <176> | xs:boolean | No | True if channel ever received resolution less than 120 (for smaller dimension). False otherwise. | |
| v3:LowBitRateCallPercent <177> | xs:float | Inbound | Percentage of time of the call where bit rate is 70 kilobits per second or less. | Percentage |
| v3:LowFrameRateCallPercent <178> | xs:float | Inbound | Percentage of time of the call where frame rate is less than 7.5 frames per second. | Percentage |
| v3:LowResolutionCallPercent <179> | xs:float | No | Percentage of time of the call where resolution is low. Threshold is 120 pixels for smaller dimension. | |
| v3:DurationSeconds | xs:float | Inbound/O utbound | Length of the call in seconds. | Seconds |
| v3:IsAggregatedData | xs:boolean | Inbound/O utbound | Indicates whether the data has been aggregated from multiple calls. | Not applicable |
| v3:UseForCallClassification | xs:boolean | Inbound/O utbound | Indicates whether the stream is for call classification. | Not applicable |
| v3:Separator3 <180> | default | No | Separator element used for future schema extensions. | Not applicable |
| v4:RecvReorderBufferTotalPackets <181> | xs:int | Inbound | Total video packets received during the call. | Packets |
| v4:RecvReorderBufferReorderedPackets <182> | xs:int | Inbound | Total video packets received out of order during the call. | Packets |
| v4:RecvReorderBufferReorderedPacketsSuccessfullyOrdered <183> | xs:int | Inbound | Total video packets received out of sequence but were successfully ordered. | Packets |
| v4:RecvReorderBufferPacketsDroppedDueToBufferExhaustion <184> | xs:int | Inbound | Total video packets dropped resulting from high jitter/packet loss during high bitrate video calls. | Packets |
| v4:RecvReorderBufferMaxSuccessfullyOrderedExtent <185> | xs:int | Inbound | Maximum reordering extent of received reordered packets. Reordering extent is defined by [RFC4737] section 4.2. | |
| v4:RecvReorderBufferMaxSuccessfullyOrderedLateTime <186> | xs:int | Inbound | Maximum late time offset of received reordered packets in 100ns units. Late time offset is defined by [RFC4737] section 4.3. | |
| v4:RecvReorderBufferPackets | xs:int | Inbound | Total video packets received by the network, but discarded | Packets |

| Element | Type | Available | Description | Units |
|---------------------------------------|---------|-----------|--|----------------|
| DroppedDueToTimeout <187> > | | | because they arrived too late relative to other packets, due to high network jitter. | |
| v4:Separator4 <188> | default | No | Separator element used for future schema extensions. | Not applicable |

2.2.1.15.1.1 v3:SendCodecTypes Element

This is filled by the codec name, as specified in [\[MS-SDPEXT\]](#) section 3.1.5.3 or [\[RFC3551\]](#) section 6 concatenated by a string that describes the type of codec resource used. <189> The codec resource choices for outbound direction (that is, encoding) are as follows:

| Type | String | Description |
|----------------|--------|---|
| Software | SW | Software encoding integrated in app, running on CPU. |
| Inbox Software | SWI | Software encoding using Operating System component, running on CPU. |
| Hardware | HW | Hardware encoding integrated in app, running on DSP or dedicated hardware. |
| Inbox Hardware | HWI | Hardware encoding using Operating System component, running on DSP or dedicated hardware. |
| Camera | CAM | H.264 encoding camera. |

Example: For the H264 codec, if a portion of the call is HW but then the application switches to SW, then **v3:SendCodecTypes** element will be filled with "H264 SW-HW".

2.2.1.15.1.2 v3:RecvCodecTypes Element

This is filled by the codec name, as specified in [\[MS-SDPEXT\]](#) section 3.1.5.3 or [\[RFC3551\]](#) section 6 concatenated by a string that describes the type of codec resource used. <190> The codec resource choices for inbound direction (that is, decoding) are as follows:

| Type | String | Description |
|----------------|--------|---|
| Software | SW | Software decoding integrated in app, running on CPU. |
| Inbox Software | SWI | Software decoding using Operating System component, running on CPU. |
| Hardware | HW | Hardware decoding integrated in app, running on DSP or dedicated hardware. |
| Inbox Hardware | HWI | Hardware decoding using Operating System component, running on DSP or dedicated hardware. |

2.2.1.15.1.3 List of combined resource types

The full list of possible ordered combinations for the concatenated string of codec resources is as follows:

"Invalid"

"SW"

"SWI"

"SW-SWI"

"HW"

"SW-HW"

"SWI-HW"

"SW-SWI-HW"

"HWI"

"SW-HWI"

"SWI-HWI"

"SW-SWI-HWI"

"HW-HWI"

"SW-HW-HWI"

"SWI-HW-HWI"

"SW-SWI-HW-HWI"

"CAM"

"SW-CAM"

"SWI-CAM"

"SW-SWI-CAM"

"HW-CAM"

"SW-HW-CAM"

"SWI-HW-CAM"

"SW-SWI-HW-CAM"

"HWI-CAM"

"SW-HWI-CAM"

"SWI-HWI-CAM"

"SW-SWI-HWI-CAM"

"HW-HWI-CAM"

"SW-HW-HWI-CAM"

"SWI-HW-HWI-CAM"

"SW-SWI-HW-HWI-CAM"

2.2.1.16 v3:AdditionalPayload Element

A **v3:AdditionalPayload** element contains video metrics pertaining to the second codec in the channel. [<191>](#) The **Payload** element carries the video metrics pertaining to the first codec in the channel.

If the channel streamed both H.264 and VC-1 video content, then all metrics specific to H.264 are carried in the **Payload** element and all metrics specific to VC-1 are carried in the **v3:AdditionalPayload** element. If only H.264 content is streamed, then the metrics are carried in the **Payload** element and the **v3:AdditionalPayload** element does not exist in the report. If only VC-1 content is streamed then the metrics are placed in the **Payload** element and the **v3:AdditionalPayload** element does not exist in the report.

2.2.1.16.1 Child Elements

The child elements of **v3:AdditionalPayload** are the same as those of **Payload** (see section [2.2.1.15](#)).

2.2.1.17 v2:VideoResolutionDistribution Element

A **VideoResolutionDistribution** element contains metrics representing a distribution of video resolutions. The type of this element is **VideoResolutionDistributionType**. [<192>](#)

The **VideoResolutionDistributionType** type is defined as follows:

```
<xs:complexType name="VideoResolutionDistributionType">
  <xs:sequence>
    <xs:element name="CIFQuality" type="xs:unsignedByte" />
    <xs:element name="VGAQuality" type="xs:unsignedByte" />
    <xs:element name="HD720Quality" type="xs:unsignedByte" />
    <xs:sequence minOccurs="0">
      <xs:element ref="tns:Separator"/>
      <xs:any namespace="##any" processContents="lax"
        minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
</xs:complexType>
```

2.2.1.17.1 Child Elements

The following table lists the child elements of the **VideoResolutionDistribution** element. [<193>](#)

| Element | Type | Available | Description | Units |
|---|-------------------------|-----------|---|--------------------|
| CIFQuality <194> | xs:unsigned byte | Yes | The percentage of the duration of a call that is using the CIF resolution defined in the following table. | Percentage (0-100) |
| VGAQuality <195> | xs:unsigned byte | Yes | The percentage of the duration of a call that is using the VGA resolution defined in the following table. | Percentage (0-100) |

| Element | Type | Available | Description | Units |
|---|-------------------------|-----------|---|--------------------|
| HD720Quality <196> | xs:unsigned byte | Yes | The percentage of the duration of a call that is using the HD720 resolution defined in the following table. | Percentage (0-100) |
| Separator <197> | default | No | Separator element used for future schema extensions. | Not applicable |

The following table lists the values of height and width in pixels of the resolution used by elements within the **VideoResolutionDistribution** element.

| Resolution | Width | Height |
|------------|-------------------|--------------------|
| CIF | 240 ≤ width < 480 | height ≥ 180 |
| CIF | width ≥ 240 | 180 ≤ height < 360 |
| VGA | 480 ≤ width < 960 | height ≥ 360 |
| VGA | width ≥ 480 | 360 ≤ height < 600 |
| HD720 | width ≥ 960 | height ≥ 600 |

2.2.1.18 v2:VideoRateMatchingLevelDistribution Element

A **VideoRateMatchingLevelDistribution** element contains metrics describing the portion of the **call** where video frames are discarded to reduce bandwidth. The type of this element is **VideoRateMatchingLevelDistributionType**.[<198>](#)

The **VideoRateMatchingLevelDistributionType** type is defined as follows:

```
<xs:complexType name="VideoRateMatchingLevelDistributionType">
  <xs:sequence>
    <xs:element name="None_Drop" type="xs:unsignedByte" />
    <xs:element name="B_Drop" type="xs:unsignedByte" />
    <xs:element name="BP_Drop" type="xs:unsignedByte" />
    <xs:element name="BPSP_Drop" type="xs:unsignedByte" />
    <xs:element name="BPSP_I_Drop" type="xs:unsignedByte" />
    <xs:sequence minOccurs="0">
      <xs:element ref="tns:Separator"/>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>
```

2.2.1.18.1 Child Elements

The following table lists the child elements of the **VideoRateMatchingLevelDistribution** element.[<199>](#)

| Element | Type | Available | Description | Units |
|--|-------------------------|-----------|--|--------------------|
| None_Drop <200> | xs:unsigned byte | Yes | The percentage of the duration of a call where no frame types were dropped to reduce bandwidth. | Percentage (0-100) |

| Element | Type | Available | Description | Units |
|--------------------------------------|------------------|-----------|---|--------------------|
| B_Drop<201> | xs:unsigned byte | Yes | The percentage of the duration of a call where only B-frames were dropped to reduce bandwidth. Refer to [MS-RTVPF] section 1.1 for details about frame types. | Percentage (0-100) |
| BP_Drop<202> | xs:unsigned byte | Yes | The percentage of the duration of a call where B-frames and P-frames were dropped to reduce bandwidth. Refer to [MS-RTVPF] section 1.1 for details about frame types. | Percentage (0-100) |
| BPSP_Drop<203> | xs:unsigned byte | Yes | The percentage of the duration of a call where B-frames, P-frames, and SP-frames were dropped to reduce bandwidth. Refer to [MS-RTVPF] section 1.1 for details about frame types. | Percentage (0-100) |
| BPSP_I_Drop | xs:unsigned byte | Yes | The percentage of the duration of a call where B-frames, P-frames, SP-frames, and I-frames were dropped to reduce bandwidth.<204> Refer to [MS-RTVPF] section 1.1 for details about frame types. | Percentage (0-100) |
| Separator<205> | default | No | Separator element used for future schema extensions. | Not applicable |

2.2.1.19 Payload.ApplicationSharing Element

A **Payload.ApplicationSharing** element contains ApplicationSharing-based payload metrics. The type of this element is **v3:ApplicationSharingPayloadMetricsType**.

The **ApplicationSharingPayloadMetricsType** type is defined as follows<206>:

```
<xs:complexType name="ApplicationSharingPayloadMetricsType">
  <xs:sequence>
    <xs:element name="PayloadDescription" type="xs:string" minOccurs="0"/>
    <xs:element name="AverageRectangleHeight" type="xs:int" minOccurs="0"/>
    <xs:element name="AverageRectangleWidth" type="xs:int" minOccurs="0"/>
    <xs:element name="ApplicationShared" type="xs:string" minOccurs="0"/>
    <xs:element name="RDPTileProcessingLatency" type="v3:MetricAggregationType"
minOccurs="0"/>
    <xs:element name="CaptureTileRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="SpoiledTilePercent" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="ScrapingFrameRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="IncomingTileRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="IncomingFrameRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="OutgoingTileRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="OutgoingFrameRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="OpaqueAppSharingData" type="v2:OpaqueChannelDataType" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"/>
      <xs:element ref="v4:InitialFrameReceivedTime" minOccurs="0"/>
      <xs:element ref="v4:InitialFrameSentSize" minOccurs="0"/>
      <xs:element ref="v4:NumSharingStarted" minOccurs="0"/>
      <xs:element ref="v4:NumRemoteControlChanges" minOccurs="0"/>
      <xs:element name="SharerAppSharingEstablishTime" type="v4:AppSharingEstablishTime"
minOccurs="0"/>
      <xs:element name="ViewerAppSharingEstablishTime" type="v4:AppSharingEstablishTime"
minOccurs="0"/>
    
```



```

<xs:sequence minOccurs="0">
  <xs:element ref="v4:Separator4" />
  <xs:any namespace="##any" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
</xs:sequence>
</xs:sequence>
</xs:sequence>
<xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

```

2.2.1.19.1 Child Elements

The following table lists the child elements of the **Payload.ApplicationSharing** element.

| Element | Type | Available | Description | Units |
|---|--------------------------|-----------|--|-------------------|
| PayloadDescription<207> | xs:string | Yes | ApplicationSharing payload name. | Not applicable |
| AverageRectangleHeight<208> | xs:int | Yes | Average height of the region being shared or viewed in the ApplicationSharing session. | Pixels |
| AverageRectangleWidth<209> | xs:int | Yes | Average width of the region being shared or viewed in the ApplicationSharing session. | Pixels |
| ApplicationShared<210> | xs:string | Yes | "Desktop" or "Application" being shared in the ApplicationSharing session. If the user is viewing the ApplicationSharing session then the value of this element is "Viewer." | Not applicable |
| RDPTileProcessingLatency<211> | v3:MetricAggregationType | Yes | Latency of processing tiles on the RDP Stack at the MCU. | Milliseconds |
| CaptureTileRate<212> | v3:MetricAggregationType | Yes | Raw tile capture rate from the graphics capture source. | Tiles per second |
| SpoiledTilePercentage<213> | v3:MetricAggregationType | Yes | Percentage of tiles which are discarded instead of being sent to a remote peer (for example, from the MCU to a viewer). | Percentage |
| ScrapingFrameRate<214> | v3:MetricAggregationType | Yes | Raw scraping rate from the graphics capture source. | Frames per second |
| IncomingTileRate<215> | v3:MetricAggregationType | Yes | Rate of tile received. | Tiles per second |
| IncomingFrameRate<216> | v3:MetricAggregationType | Yes | Rate of frame received. | Frames per second |
| OutgoingTileRate<217> | v3:MetricAggregationType | Yes | Rate of tile sent. | Tiles per second |
| OutgoingFrameRate<218> | v3:MetricAggregationType | Yes | Rate of frame sent. | Frames per second |
| OpaqueAppSharingData<219> | v2:OpaqueChannelDataType | No | Not used. | |

| Element | Type | Available | Description | Units |
|---|-----------------------------------|-----------|---|----------------|
| v3:Separator3 | default | No | Separator element used for future schema extensions. | Not applicable |
| v4:InitialFrameReceivedTime <220> | xs:dateTime | Yes | Time the initial frame was received. | datetime |
| v4:InitialFrameSentSize <221> | xs:int | Yes | Size of the initial frame of screen data sent. | bytes |
| v4:NumSharingStarted <222> | xs:int | Yes | Number of times during session sharing was started. | count |
| v4:NumRemoteControlChanges <223> | xs:int | Yes | Number of timers during remote control of sharing occurred. | count |
| v4:SharerAppSharingEstablishTime <224> | v4:AppSharingEstablishTime | Yes | Time spent by sharer establishing session. | Not applicable |
| v4:ViewerAppSharingEstablishTime <225> | V4:AppSharingEstablishTime | Yes | Time spent by viewer establishing session. | Not applicable |
| v4:Separator4 <226> | default | Yes | Separator used for future schema extensions. | Not applicable |
| v4:InitialFrameReceivedTime <227> | xs:dateTime | Yes | Time the initial frame was received. | datetime |
| v4:InitialFrameSentSize <228> | xs:int | Yes | Size of the initial frame of screen data sent. | bytes |
| v4:NumSharingStarted <229> | xs:int | Yes | Number of times during session sharing was started. | count |
| v4:NumRemoteControlChanges <230> | xs:int | Yes | Number of timers during remote control of sharing occurred. | count |
| v4:SharerAppSharingEstablishTime <231> | v4:AppSharingEstablishTime | Yes | Time spent by sharer establishing session. | Not applicable |
| v4:ViewerAppSharingEstablishTime <232> | V4:AppSharingEstablishTime | Yes | Time spent by viewer establishing session. | Not applicable |
| v4:Separator4 <233> | default | Yes | Separator used for future schema extensions. | Not applicable |

2.2.1.19.1.1 MetricAggregationType

The **MetricAggregationType** type is defined as follows.

```
<xs:complexType name="MetricAggregationType">
  <xs:sequence>
    <xs:element name="Total" type="xs:float" minOccurs="0"/>
    <xs:element name="Average" type="xs:float" minOccurs="0"/>
    <xs:element name="Max" type="xs:float" minOccurs="0"/>
    <xs:element name="Burst" type="v3:MetricBurstGapType" minOccurs="0"/>
    <xs:element name="Gap" type="v3:MetricBurstGapType" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"/>
    </xs:sequence>
  </xs:sequence>
</xs:complexType>
```

```

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

```

2.2.1.19.1.1.1 Child Elements

The following table lists the child elements of the **MetricAggregationType**. For units and the data it represents see section [2.2.1.19.1](#).

| Element | Type | Available | Description |
|----------------------|------------------------------|-----------|--|
| Total | xs:float | Yes | Total aggregated value. |
| Average | xs:float | Yes | Average aggregated value. |
| Max | xs:float | Yes | Maximum aggregated value. |
| Burst | v3:MetricBurstGapType | Yes | Computed burst metrics. |
| Gap | v3:MetricBurstGapType | Yes | Computed gap metrics. |
| v3:Separator3 | default | No | Separator element used for future schema extensions. |

2.2.1.19.1.2 MetricBurstGapType

The **MetricBurstGapType** type is defined as follows.

```

<xs:complexType name="MetricBurstGapType">
  <xs:sequence>
    <xs:element name="Occurrences" type="xs:int" minOccurs="0"/>
    <xs:element name="Density" type="xs:float" minOccurs="0"/>
    <xs:element name="Duration" type="xs:float" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"/>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
</xs:complexType>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

```

2.2.1.19.1.2.1 Child Elements

The following table lists the child elements of the **MetricBurstGapType**. For units and data it represents see section [2.2.1.19.1](#). Each element of **MetricBurstGapType** represents either the computed Burst metrics or the computed Gap metrics.

| Element | Type | Available | Description |
|--|-----------------|-----------|--------------------------------------|
| Occurrences <234> | xs:int | Yes | Number of instances of Burst or Gap. |
| Density <235> | xs:float | Yes | Average density of Burst or Gap. |
| Duration <236> | xs:float | Yes | Average duration of Burst or Gap. |
| v3:Separator3 <237> | default | No | Separator element used for future |

| Element | Type | Available | Description |
|---------|------|-----------|--------------------|
| | | | schema extensions. |

2.2.1.19.1.3 AppSharingEstablishTime

The **AppSharingEstablishTime** type is defined as follows.

```
<xs:complexType name="AppSharingEstablishTime">
  <xs:sequence>
    <xs:element name="SignalingTime" type="xs:int"/>
    <xs:element name="MediaSetupTime" type="xs:int"/>
    <xs:element name="ProtocolConnectTime" type="xs:int"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>
```

2.2.1.19.1.3.1 Child Elements

The following table lists the child elements of **AppSharingEstablishTime**. For units and the data it represents see section [2.2.1.19.1](#).

| Element | Type | Available | Description |
|--|---------------|-----------|---|
| SignalingTime <238> | xs:int | Yes | Total time spent in signaling processing. |
| MediaSetupTime <239> | xs:int | Yes | Total time spent in media processing. |
| ProtocolConnectTime <240> | xs:int | Yes | Total time spent in protocol connection processing. |

2.2.1.20 QualityEstimates Element

A **QualityEstimates** element contains metrics estimating the quality of the media. The type of this element is **QualityEstimatesType**.

The **QualityEstimatesType** type is defined as follows:

```
<xs:complexType name="QualityEstimatesType">
  <xs:choice>
    <xs:element name="Audio" type="tns:AudioQualityEstimatesType"/>
    <xs:element name="Video" type="tns:VideoQualityEstimatesType"/>
    <xs:any namespace="##other" processContents="lax"
      maxOccurs="unbounded"/>
  </xs:choice>
</xs:complexType>
```

2.2.1.20.1 Child Elements

The following table lists the child elements of the **QualityEstimates** element.

| Element | Type | Available | Description |
|---------|---------------------------|-----------|--|
| Audio | AudioQualityEstimatesType | Yes | Audio metrics estimating quality of the media. |
| Video | VideoQualityEstimatesType | No | Not used. |

2.2.1.21 QualityEstimates.Audio Element

A **QualityEstimates.Audio** element contains audio metrics estimating the quality of the media. The type of this element is **AudioQualityEstimatesType**.

The **AudioQualityEstimatesType** type is defined as follows:

```
<xs:complexType name="AudioQualityEstimatesType">
  <xs:sequence>
    <xs:element name="RecvListenMOS" type="xs:float" minOccurs="0"/>
    <xs:element name="RecvListenMOSMin" type="xs:float" minOccurs="0"/>
    <xs:element name="RecvListenMOSAlg" type="xs:string" minOccurs="0"/>
    <xs:element name="SendListenMOS" type="xs:float" minOccurs="0"/>
    <xs:element name="SendListenMOSMin" type="xs:float" minOccurs="0"/>
    <xs:element name="SendListenMOSAlg" type="xs:string" minOccurs="0"/>
    <xs:element name="NetworkMOS" type="tns:NetworkAudioMOSType"
      minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
      maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
```

2.2.1.21.1 Child Elements

The following table lists the child elements of the **QualityEstimates.Audio** element.

| Element | Type | Available | Description | Units |
|------------------|-----------|-----------|--|-------|
| RecvListenMOS | xs: float | Inbound | The MOS-LQO wideband, as specified by [ITUP.800.1] section 2.1.2, for decoded audio received by the reporting entity during the session . | MOS |
| RecvListenMOSMin | xs: float | Inbound | Minimum of the RecvListenMOS for the stream (2) during the session. | MOS |
| RecvListenMOSAlg | xs: float | No | Not used. | |
| SendListenMOS | xs: float | Outbound | The MOS-LQO wideband, as specified by [ITUP.800.1] section 2.1.2 for pre-encoded audio sent by | MOS |

| Element | Type | Available | Description | Units |
|-------------------------|----------------------------|-----------|--|-------|
| | | | the reporting entity during the session. | |
| SendListenMOSMin | xs: float | Outbound | Minimum of the SendListenMOS for the stream (2) over the duration of the session. | MOS |
| SendListenMOSAlg | xs: float | No | Not used. | |
| NetworkMOS | NetworkAudioMOSType | Inbound | Predictive metrics based on network factors alone. | MOS |

2.2.1.22 NetworkMOS Element

A **NetworkMOS** element contains predictive metrics based on network factors alone. The type of this element is **NetworkAudioMOSType**.

The **NetworkAudioMOSType** type is defined as follows [<241>](#):

```

<xs:complexType name="NetworkAudioMOSType">
  <xs:sequence>
    <xs:element name="OverallAvg" type="xs:float" minOccurs="0"/>
    <xs:element name="OverallMin" type="xs:float" minOccurs="0"/>
    <xs:element name="DegradationAvg" type="xs:float" minOccurs="0"/>
    <xs:element name="DegradationMax" type="xs:float" minOccurs="0"/>
    <xs:element name="DegradationJitterAvg" type="xs:float"
      minOccurs="0"/>
    <xs:element name="DegradationPacketLossAvg" type="xs:float"
      minOccurs="0"/>
    <xs:element ref="v2:NetworkMOSAlg" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:any namespace="##other" processContents="lax"
        minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/></xs:complexType>

<xs:element name="NetworkMOSAlg" type="xs:string"/>

<xs:element name="Separator">
  <xs:complexType></xs:complexType>
</xs:element />

```

2.2.1.22.1 Child Elements

The following table lists the child elements of the **NetworkMOS** element.

| Element | Type | Available | Description | Units |
|-------------------|-----------------|-----------|---|-------|
| OverallAvg | xs:float | Inbound | The average of MOS-LQO wideband, as specified by [ITUP.800.1] section 2.1.2, based on the audio codec used and the observed packet loss and inter-arrival packet jitter . | MOS |

| Element | Type | Available | Description | Units |
|---------------------------------|------------------|-----------|--|----------------|
| OverallMin | xs:float | Inbound | The minimum of MOS-LQO wideband, as specified by [ITUP.800.1] section 2.1.2, based on the audio codec used and the observed packet loss and inter-arrival packet jitter. | MOS |
| DegradationAvg | xs:float | Inbound | The difference between the OverallAvg and the maximum possible MOS-LQO for the audio codec used in the session . | MOS |
| DegradationMax | xs:float | Inbound | The difference between the OverallMin and the maximum possible MOS-LQO for the audio codec used in the session. | MOS |
| DegradationJitterAvg | xs: float | Inbound | The average fraction of the DegradationAvg that was caused by inter-arrival packet jitter. | Fraction |
| DegradationPacketLossAvg | xs:float | Inbound | The average fraction of the DegradationAvg that was caused by packet loss. | Fraction |
| v2:NetworkMOSAlg <242> | xs:string | No | The algorithm used for computing the OverallAvg , OverallMin , DegradationAvg , DegradationMax , DegradationJitterAvg and DegradationPacketLossAvg values. | Not applicable |
| v2:Separator <243> | default | No | Separator element used for future schema extensions. | Not applicable |

2.2.1.23 Utilization Element

A **Utilization** element contains metrics related to network utilization. The type of this element is **NetworkUtilizationType**.

The **NetworkUtilizationType** type is defined as follows:

```
<xs:complexType name="NetworkUtilizationType">
  <xs:sequence>
    <xs:element name="Packets" type="xs:int" minOccurs="0"/>
    <xs:element name="BandwidthEst" type="xs:int" minOccurs="0"/>
    <xs:element name="BandwidthAlloc" type="xs:int" minOccurs="0"/>
    <xs:element name="BandwidthEstMin" type="xs:int" minOccurs="0"/>
    <xs:element name="BandwidthEstMax" type="xs:int" minOccurs="0"/>
    <xs:element name="BandwidthEstStdDev" type="xs:int" minOccurs="0"/>
    <xs:element name="BandwidthEstAvge" type="xs:int" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
      maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
```

2.2.1.23.1 Child Elements

The following table lists the child elements of the **Utilization** element.

| Element | Type | Available | Description | Units |
|------------------------------------|---------------|-----------|--|-----------------|
| Packets | xs:int | Yes | Number of Real-Time Transport Protocol (RTP) packets sent in the session . | Packets |
| BandwidthEst | xs:int | Outbound | Estimated one way available bandwidth of the stream (2) at the end of the session. | Bits per second |
| BandwidthAlloc | xs:int | No | Not used. | |
| v3:BandwidthEstMin <244> | xs:int | Outbound | Minimal estimated one way available bandwidth of the stream (2) at the end of the session. | Bits per second |
| v3:BandwidthEstMax <245> | xs:int | Outbound | Maximum estimated one way available bandwidth of the stream (2) at the end of the session. | Bits per second |
| v3:BandwidthEstStdDev <246> | xs:int | Outbound | Standard deviation of estimated one way available bandwidth of the stream (2) at the end of the session. | Bits per second |
| v3:BandwidthEstAvge <247> | xs:int | Outbound | Average estimated one way available bandwidth of the stream (2) at the end of the session. | Bits per second |

2.2.1.24 PacketLoss Element

A **PacketLoss** element contains metrics related to packet loss. The type of this element is **PacketLossType**.

The **PacketLossType** type is defined as follows:

```
<xs:complexType name="PacketLossType">
  <xs:sequence>
    <xs:element name="LossRate" type="xs:float" minOccurs="0"/>
    <xs:element name="LossRateMax" type="xs:float" minOccurs="0"/>
    <xs:element name="DiscardRate" type="xs:float" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
      maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
```

2.2.1.24.1 Child Elements

The following table lists the child elements of the **PacketLoss** element.

| Element | Type | Available | Description | Units |
|--------------------|-----------------|-----------|--|----------|
| LossRate | xs:float | Yes | The average fraction lost, as specified in RFC3550 section 6.4.1, computed over the duration of the session . | Fraction |
| LossRateMax | xs:float | Yes | The maximum fraction lost, as specified in [RFC3550] section 6.4.1, computed over the duration of the session. | Fraction |
| DiscardRate | xs:float | No | Not used. | |

2.2.1.25 BurstGapLoss Element

A **BurstGapLoss** element contains metrics related to **Burst** and **Gap**. The type of this element is **BurstGapLossType**.

The **BurstGapLossType** type is defined as follows:

```
<xs:complexType name="BurstGapLossType">
  <xs:sequence>
    <xs:element name="BurstDensity" type="xs:float" minOccurs="0"/>
    <xs:element name="BurstDuration" type="xs:int" minOccurs="0"/>
    <xs:element name="GapDensity" type="xs:float" minOccurs="0"/>
    <xs:element name="GapDuration" type="xs:int" minOccurs="0"/>
    <xs:element name="MinGapThreshold" type="xs:int" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
      maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
```

2.2.1.25.1 Child Elements

The following table lists the child elements of the **BurstGapLoss** element.

| Element | Type | Available | Description | Units |
|------------------------|-----------------|-----------|--|------------------|
| BurstDensity | xs:float | Inbound | The average burst density, as specified in RFC3611 section 4.7.2, computed with a Gmin=16 for the RTP packets received. | Percentage * 100 |
| BurstDuration | xs:int | Inbound | The average burst duration, as specified in RFC3611 section 4.7.2, computed with a Gmin=16 for the RTP packets received. | Milliseconds |
| GapDensity | xs:float | Inbound | The average gap density, as specified in RFC3611 section 4.7.2, computed with a Gmin=16 for the RTP packets received. | Percentage * 100 |
| GapDuration | xs:int | Inbound | The average gap duration, as specified in RFC3611 section 4.7.2, computed with a Gmin=16 for the RTP packets received. | Milliseconds |
| MinGapThreshold | xs:int | No | Not used. | |

2.2.1.26 Delay Element

A **Delay** element contains metrics related to delays. The type of this element is **DelayType**.

The **DelayType** type is defined as follows:

```
<xs:complexType name="DelayType">
  <xs:sequence>
    <xs:element name="RoundTrip" type="xs:int" minOccurs="0"/>
    <xs:element name="RoundTripMax" type="xs:int" minOccurs="0"/>
    <xs:element name="EndSystem" type="xs:int" minOccurs="0"/>
    <xs:element name="OneWay" type="xs:int" minOccurs="0"/>
    <xs:element ref="v3:RelativeOneWay" minOccurs="0"/>
  </xs:sequence>
</xs:complexType>
```

```

<xs:sequence minOccurs="0">
  <xs:element ref="v3:Separator3" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
</xs:sequence>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>

```

2.2.1.26.1 Child Elements

The following table lists the child elements of the **Delay** element.

| Element | Type | Available | Description | Units |
|--|---------------------------------|-----------|---|----------------|
| RoundTrip | xs:int | Outbound | The average network propagation round-trip time computed as specified in [RFC3550] section 6.4.1. | Milliseconds |
| RoundTripMax | xs:int | Outbound | The maximum network propagation round-trip time computed as specified in [RFC3550] section 6.4.1. | Milliseconds |
| EndSystem | xs:int | No | Not used. | |
| OneWay | xs:int | No | Not used. | |
| v3:RelativeOneWay <248> | v3:MetricAggregationType | Yes | The computed relative one way delay of the peer. MetricAggregationType is described in section 2.2.1.19.1.1 . | |
| v3:Separator3 <249> | default | No | Separator element used for future schema extensions. | Not applicable |

2.2.1.27 Jitter Element

A **Jitter** element contains metrics related to **jitter**. The type of this element is **JitterType**.

The **JitterType** type is defined as follows:

```

<xs:complexType name="JitterType">
  <xs:sequence>
    <xs:element name="InterArrival" type="xs:int" minOccurs="0"/>
    <xs:element name="InterArrivalMax" type="xs:int" minOccurs="0"/>
    <xs:element name="MeanAbs" type="xs:int" minOccurs="0"/>
    <xs:element name="v3:InterArrivalSD" type="xs:float" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>

```

2.2.1.27.1 Child Elements

The following table lists the child elements of the **Jitter** element.

| Element | Type | Available | Description | Units |
|--|-----------------|-----------|--|----------------|
| InterArrival | xs:int | Yes | The average inter-arrival jitter , as specified in RFC3550 section 6.4.1. | Milliseconds |
| InterArrivalMax | xs:int | Yes | The maximum inter-arrival jitter, as specified in RFC3550 section 6.4.1. | Milliseconds |
| MeanAbs | xs:int | No | Not used. | |
| v3:InterArrivalSD <250> | xs:float | Yes | The standard deviation of inter-arrival jitter, as specified in RFC3550 section 6.4.1. | Not applicable |

2.2.1.28 Signal Element

A **Signal** element contains metrics related to the signal. The type of this element is **SignalType**.

The **SignalType** type is defined as follows [<251>](#):

```
<xs:complexType name="SignalType">
  <xs:sequence>
    <xs:element name="SignalLevel" type="xs:int" minOccurs="0" />
    <xs:element name="NoiseLevel" type="xs:int" minOccurs="0" />
    <xs:element name="EchoReturn" type="xs:int" minOccurs="0" />
    <xs:element name="SpeakerFeedbackMicIn" type="xs:int" minOccurs="0"/>
    <xs:element name="SpeechLevelMicIn" type="xs:int" minOccurs="0"/>
    <xs:element name="SpeechLevelPostProcess" type="xs:int" minOccurs="0"/>
    <xs:element name="SignalLevelLoudSpeaker" type="xs:int" minOccurs="0"/>
    <xs:element name="BackGroundNoiseMicIn" type="xs:int" minOccurs="0"/>
    <xs:element name="BackGroundNoiseSent" type="xs:int" minOccurs="0" />
    <xs:element name="LocalSpeechToEcho" type="xs:int" minOccurs="0" />
    <xs:element name="SpeakerGlitchRate" type="xs:int" minOccurs="0" />
    <xs:element name="MicGlitchRate" type="xs:int" minOccurs="0" />
    <xs:element name="SpeakerClipRate" type="xs:int" minOccurs="0" />
    <xs:element name="MicClipRate" type="xs:int" minOccurs="0" />
    <xs:element name="RxAGCSignalLevel" type="xs:int" minOccurs="0" />
    <xs:element name="RxAGCNoiseLevel" type="xs:int" minOccurs="0" />
    <xs:element ref="v2:InitialSignalLevelRMS" minOccurs="0"/>
    <xs:element ref="v2:AudioTimestampDriftRateMic" minOccurs="0"/>
    <xs:element ref="v2:AudioTimestampDriftRateSpk" minOccurs="0"/>
    <xs:element ref="v2:AudioTimestampErrorMicMs" minOccurs="0"/>
    <xs:element ref="v2:AudioTimestampErrorSpkMs" minOccurs="0"/>
    <xs:element ref="v2:VsEntryCauses" minOccurs="0"/>
    <xs:element ref="v2:EchoEventCauses" minOccurs="0"/>
    <xs:element ref="v2:EchoPercentMicIn" minOccurs="0"/>
    <xs:element ref="v2:EchoPercentSend" minOccurs="0"/>
    <xs:element ref="v2:RxAvgAGCGain" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />

      <xs:element ref="v3:RecvSignalLevelCh1" minOccurs="0"/>
      <xs:element ref="v3:RecvSignalLevelCh2" minOccurs="0"/>
      <xs:element ref="v3:RecvNoiseLevelCh1" minOccurs="0"/>
      <xs:element ref="v3:RecvNoiseLevelCh2" minOccurs="0"/>
      <xs:element ref="v3:SendSignalLevelCh1" minOccurs="0"/>
      <xs:element ref="v3:SendSignalLevelCh2" minOccurs="0"/>

      <xs:element ref="v3:SendNoiseLevelCh1" minOccurs="0"/>
      <xs:element ref="v3:SendNoiseLevelCh2" minOccurs="0"/>
    </xs:sequence>
  </xs:sequence>
</xs:complexType>
```

```

<xs:element ref="v3:Separator3"/>
<xs:element ref="v4:RenderSignalLevel" minOccurs="0"/>
<xs:element ref="v4:RenderNoiseLevel" minOccurs="0"/>
<xs:element ref="v4:RenderLoopbackSignalLevel" minOccurs="0"/>
<xs:sequence minOccurs="0">
  <xs:element ref="v4:Separator4" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
</xs:sequence>
</xs:sequence>
</xs:sequence>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>

```

2.2.1.28.1 Child Elements

The following table lists the child elements of the **Signal** element.

| Element | Type | Available | Description | Units |
|---|---------------|-----------|---|-------|
| SignalLevel | xs:int | Yes | The average energy level of received or sent audio classified as speech. | dB |
| NoiseLevel | xs:int | Yes | The average energy level of received or sent audio classified as noise. | dB |
| EchoReturn | xs:int | No | Not used. | |
| SpeakerFeedbackMicIn <252> | xs:int | Yes | Signal level of the leakage of Loudspeaker or Headphone output into the microphone input. | dBoV |
| SpeechLevelMicIn <253> | xs:int | Yes | The speech level into the microphone at a given endpoint . | dBoV |
| SpeechLevelPostProcess <254> | xs:int | Yes | Overall average speech level sent from an endpoint after all processing. | dBoV |
| SignalLevelLoudSpeaker <255> | xs:int | Yes | Input level to the loudspeaker or headphone input. | dBoV |
| BackGroundNoiseMicIn <256> | xs:int | Yes | Background noise input to the microphone. | dBoV |
| BackGroundNoiseSent <257> | xs:int | Yes | Background noise left over after all processing. | dBoV |
| LocalSpeechToEcho <258> | xs:int | Yes | If less than 10 decibels, speech level is too low | dB |

| Element | Type | Available | Description | Units |
|--|------------------------|-----------|---|---------------|
| | | | compared to echo level, and distorted speech might occur. | |
| SpeakerGlitchRate <259> | xs:int | Yes | Average glitches per 5 minutes for the loudspeaker rendering. | Glitch count |
| MicGlitchRate <260> | xs:int | Yes | Average glitches per 5 minutes for the microphone capture. | Glitch count |
| SpeakerClipRate <261> | xs:int | Yes | Average clips per 5 minutes during the call for the loudspeaker rendering. | Glitch count |
| MicClipRate <262> | xs:int | Yes | Average clips per 5 minutes during the call for the microphone capture. | Glitch count |
| RxAGCSignalLevel <263> | xs:int | Yes | Signal level received at the automatic gain control for the inbound audio stream (2) . | dBoV |
| RxAGCNoiseLevel <264> | xs:int | Yes | Noise level received at the automatic gain control for the inbound audio stream (2). | dBoV |
| v2:InitialSignalLevelRMS <265> | xs:float | Yes | The root-mean-square of the received signal for the first 30 seconds of the call. | sample level |
| v2:AudioTimestampDriftRateMic <266> | xs:float | Yes | Microphone or capture device clock drift rate. | percent |
| v2:AudioTimestampDriftRateSpk <267> | xs:float | Yes | Speaker or render device clock drift rate. | percent |
| v2:AudioTimestampErrorMicMs <268> | xs:float | Yes | Noise in timestamp information from microphone or capture device. | milliseconds |
| v2:AudioTimestampErrorSpkMs <269> | xs:float | Yes | Noise in timestamp information from speaker or render device. | milliseconds |
| v2:VsEntryCauses <270> | xs:unsignedByte | Yes | The bit flag indicating the reason(s) the AEC | unsigned byte |

| Element | Type | Available | Description | Units |
|---|------------------------|-----------|---|-------|
| | | | <p>entered half-duplex mode:</p> <ul style="list-style-type: none"> ▪ "0x01" – Sample timestamps from capture or render device were poor quality. ▪ "0x02" – High level of echo remained after echo cancellation. ▪ "0x04" – Policy forced echo canceller into half-duplex mode. ▪ "0x10" – Echo canceller placed into half-duplex mode to reduce CPU consumption. ▪ "0x20" – Severe quality degradation because of sample timestamp issues from capture or render device. | |
| v2:EchoEventCauses <271> | xs:unsignedByte | Yes | <p>The bit flag indicating the reasons the DeviceEchoEvent was detected:</p> <ul style="list-style-type: none"> ▪ "0x01" – Sample timestamps from capture or render device were poor quality. ▪ "0x04" – High level of echo remained after echo cancellation. ▪ "0x10" – Signal from capture device had significant instances of | flag |

| Element | Type | Available | Description | Units |
|-------------------------------------|-----------------|-----------|---|----------------|
| | | | maximum signal level. | |
| v2:EchoPercentMicIn <272> | xs:float | Yes | Percentage of time when echo is detected in the audio from the capture or microphone device prior to echo cancellation. | Percentage |
| v2:EchoPercentSend <273> | xs:float | Yes | Percentage of time when echo is detected in the audio from the capture or microphone device after echo cancellation. | Percentage |
| v2:RxAvgAGCGain <274> | xs:float | Yes | The gain level applied to the received signal. | dB |
| v2:Separator <275> | default | Yes | Separator element used for future schema extensions. | Not applicable |
| v3: RecvSignalLevelCh1 <276> | xs:int | Yes | Average energy level of received for audio classified as mono speech, or left channel of stereo speech. | dB |
| v3: RecvSignalLevelCh2 <277> | xs:int | Yes | Average energy level of received for audio classified as right channel of stereo speech. | dB |
| v3: RecvNoiseLevelCh1 <278> | xs:int | Yes | Average energy level of received for audio classified as noise, mono signal or the left channel of stereo signal. | dB |
| v3: RecvNoiseLevelCh2 <279> | xs:int | Yes | Average energy level of received for audio classified as noise, the right channel of stereo signal. | dB |
| v3: SendSignalLevelCh1 <280> | xs:int | Yes | Average energy level of sent for audio classified as mono speech, or left channel of stereo speech. | dB |
| v3: SendSignalLevelCh2 <281> | xs:int | Yes | Average energy level of sent for audio | dB |

| Element | Type | Available | Description | Units |
|---|-----------------|-----------|---|----------------|
| | | | classified as right channel of stereo speech. | |
| v3: RecvNoiseLevelCh1 <282> | xs:int | Yes | Average energy level of sent for audio classified as noise, mono signal or the left channel of stereo signal. | dB |
| v3: RecvNoiseLevelCh2 <283> | xs:int | Yes | Average energy level of sent for audio classified as noise, the right channel of stereo signal. | dB |
| v3:Separator3 <284> | default | Yes | Separator element used for future schema extensions. | Not applicable |
| v4:RenderSignalLevel <285> | xs:float | Yes | Average render speech level after dynamic range compression or analog gain control is applied. | dBo |
| v4:RenderNoiseLevel <286> | xs:float | Yes | Average render noise level after dynamic range compression or analog gain control is applied. | dBo |
| v4:RenderLoopbackSignalLevel <287> | xs:float | Yes | Average level of speaker loopback signal (after any device offload effects have been applied). | dBo |
| v4:Separator4 <288> | default | Yes | Separator used for future schema extensions. | Not applicable |

2.2.1.29 v2:LocalClientEvent and v2:RemoteClientEvent Elements

LocalClientEvent and **RemoteClientEvent** elements contain information about the quality events detected by the **endpoints**. The type of these elements are **ClientEventType**. [<289>](#)

The **ClientEventType** type is defined as follows:

```
<xs:complexType name="ClientEventType">
  <xs:sequence>
    <xs:element name="NetworkSendQualityEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="NetworkReceiveQualityEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="NetworkDelayEventRatio"
      type="xs:float" minOccurs="0"/>
  </xs:sequence>
</xs:complexType>
```



```

<xs:element name="NetworkBandwidthLowEventRatio"
  type="xs:float" minOccurs="0"/>
<xs:element name="CPUInsufficientEventRatio"
  type="xs:float" minOccurs="0"/>
<xs:element name="DeviceHalfDuplexAECEventRatio"
  type="xs:float" minOccurs="0"/>
<xs:element name="DeviceRenderNotFunctioningEventRatio"
  type="xs:float" minOccurs="0"/>
<xs:element name="DeviceCaptureNotFunctioningEventRatio"
  type="xs:float" minOccurs="0"/>
<xs:element name="DeviceGlitchesEventRatio"
  type="xs:float" minOccurs="0"/>
<xs:element name="DeviceLowSNREventRatio"
  type="xs:float" minOccurs="0"/>
<xs:element name="DeviceLowSpeechLevelEventRatio"
  type="xs:float" minOccurs="0"/>
<xs:element name="DeviceClippingEventRatio"
  type="xs:float" minOccurs="0"/>
<xs:element name="DeviceEchoEventRatio"
  type="xs:float" minOccurs="0"/>
<xs:element name="DeviceNearEndToEchoRatioEventRatio"
  type="xs:float" minOccurs="0"/>
<xs:element name="DeviceMultipleEndpointsEventCount"
  type="xs:short" minOccurs="0"/>
<xs:element name="DeviceHowlingEventCount"
  type="xs:short" minOccurs="0"/>
<xs:sequence minOccurs="0">

  <xs:element ref="v2:Separator"/>
  <xs:element ref="v3:DeviceRenderZeroVolumeEventRatio"
    type="xs:float" minOccurs="0"/>
  <xs:element ref="v3:DeviceRenderMuteEventRatio"
    type="xs:float" minOccurs="0"/>
  <xs:sequence minOccurs="0">

    <xs:element ref="v3:Separator3"/>
    <xs:any namespace="##any" processContents="lax"
      minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:sequence>
</xs:sequence>
<xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>

```

2.2.1.29.1 Child Elements

The following table lists the child elements of the **LocalClientEvent** and **RemoteClientEvent** element.

| Element | Type | Available | Description | Units |
|--|----------|-----------|--|----------|
| NetworkSendQualityEventRatio <290 ≥ | xs:float | Yes | Fraction of the call that the reporting endpoint detected the network was causing poor quality of the audio sent. | Fraction |
| NetworkReceiveQualityEventRatio <2 91> | xs:float | Yes | Fraction of the call that the reporting endpoint detected the network was causing poor quality of the audio received. | Fraction |
| NetworkDelayEventRatio <292> | xs:float | Yes | Fraction of the call that | Fraction |

| Element | Type | Available | Description | Units |
|--|----------|-----------|--|----------|
| | | | the reporting endpoint detected the network delay was significant enough to impact the ability to have real-time two-way communication. | |
| NetworkBandwidthLowEventRatio <293> | xs:float | Yes | Fraction of the call that the reporting endpoint detected the available bandwidth or bandwidth policy was low enough to cause poor quality of the audio sent. | Fraction |
| CPUInsufficientEventRatio <294> | xs:float | Yes | Fraction of the call that the reporting endpoint detected the CPU resources available were insufficient and caused poor quality of the audio sent and received. | Fraction |
| DeviceHalfDuplexAECEventRatio <295> | xs:float | Yes | Fraction of the call that the reporting endpoint detected issues and operated the acoustic echo canceller in half-duplex mode, which impacted the ability to have real-time two-way communication. | Fraction |
| DeviceRenderNotFunctioningEventRatio <296> | xs:float | Yes | Fraction of the call that the reporting endpoint detected the render device was not working properly. | Fraction |
| DeviceCaptureNotFunctioningEventRatio <297> | xs:float | Yes | Fraction of the call that the reporting endpoint detected the capture device was not working properly. | Fraction |
| DeviceGlitchesEventRatio <298> | xs:float | Yes | Fraction of the call that the reporting endpoint detected glitches or gaps in the audio played or captured that caused poor quality of the audio being sent or received. | Fraction |
| DeviceLowSNREventRatio <299> | xs:float | Yes | Fraction of the call that the reporting endpoint detected low speech to noise level that caused poor quality of the audio being sent. | Fraction |
| DeviceLowSpeechLevelEventRatio <300> | xs:float | Yes | Fraction of the call that the reporting endpoint | Fraction |

| Element | Type | Available | Description | Units |
|--|-----------------|-----------|--|----------------|
| | | | detected low speech level that caused poor quality of the audio being sent. | |
| DeviceClippingEventRatio <301> | xs:float | Yes | Fraction of the call that the reporting endpoint detected clipping in the captured audio that caused poor quality of the audio being sent. | Fraction |
| DeviceEchoEventRatio <302> | xs:float | Yes | Fraction of the call that the reporting endpoint detected echo that caused poor quality of the audio being sent. | Fraction |
| DeviceNearEndToEchoRatioEventRatio <303> | xs:float | Yes | Fraction of the call that the reporting endpoint detected a ratio of the near end signal level to the echo level that caused poor quality of the audio being sent. | Fraction |
| DeviceMultipleEndpointsEventCount <304> | xs:short | Yes | Number of times during the call that the reporting endpoint detected multiple endpoints in the same room or acoustic environment. | Not applicable |
| DeviceHowlingEventCount <305> | xs:short | Yes | Number of times during the call that the reporting endpoint detected two or more endpoints in the same room or acoustic environment that caused poor quality audio in the form of howling or screeching audio. | Not applicable |
| v2:Separator <306> | default | Yes | Separator element used for future schema extensions. | Not applicable |
| v3:DeviceRenderZeroVolumeEventRatio <307> | xs:float | Yes | Fraction of the call that device render volume is set to 0. | Fraction |
| v3:DeviceRenderMuteEventRatio <308> | xs:float | Yes | Fraction of the call that device render is muted. | Fraction |
| v3:Separator3 <309> | default | Yes | Separator element used for future schema extensions. | Not applicable |

2.2.2 application/ms-cqf+xml

The XML schema in this section uses the namespace:

- ms-cqf

2.2.2.1 CallQualityFeedbackReport Element

A **CallQualityFeedbackReport** element is a quality feedback report envelope and contains information regarding the **SIP dialog**. The type of this element is **CallQualityFeedbackReportType**.

The **CallQualityFeedbackReport** element is defined as follows^{<310>}:

```
<xs:element name="CallQualityFeedbackReport"
  type="mstns:CallQualityFeedbackReportType"/>

<xs:complexType name="CallQualityFeedbackReportType">
  <xs:sequence>
    <xs:element name="ReportingUserURI" type="xs:anyURI" minOccurs="1" maxOccurs="1"/>
    <xs:element name="Rating" type="xs:int" minOccurs="1" maxOccurs="1"/>
    <xs:element name="Feedback" type="mstns:TextFeedbackType" minOccurs="0"
  maxOccurs="1"/>
    <xs:element name="Tokens" type="mstns:TokenCollectionType" minOccurs="0"
  maxOccurs="1"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
  maxOccurs="unbounded"/>
  </xs:sequence>

  <xs:attribute name="CallId" type="xs:string" use="required"/>
  <xs:attribute name="FromTag" type="xs:string" use="required"/>
  <xs:attribute name="ToTag" type="xs:string" use="required"/>
  <xs:attribute name="Start" type="xs:dateTime"/>
  <xs:attribute name="End" type="xs:dateTime"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
```

2.2.2.1.1 Child Elements

The following table lists the child elements of the **CallQualityFeedbackReport** element.

| Element | Type | Available | Description |
|-------------------------|----------------------------|-----------|---|
| ReportingUserURI | xs:anyURI | Yes | SIP URI in the SIP From header that the reporting endpoint uses if it makes a SIP transaction using the reported SIP dialog . |
| Rating | xs:int | Yes | Subjective rating given by the end user ranging from 1 to 5. |
| Feedback | TextFeedbackType | Yes | Information related to the verbose feedback from the end user. |
| Tokens | TokenCollectionType | Yes | Information on a predefined collection of issue types experienced during the call. |

2.2.2.1.2 Attributes

The following table lists the attributes of the **CallQualityFeedbackReport** element.

| Attribute | Type | Required | Available | Description | Units |
|----------------|------------------------|----------|-----------|--|---|
| CallId | xs:string [755] | Yes | Yes | SIP Call-ID of the dialog. If the maximum string length is exceeded, the report is rejected. | Not applicable |
| FromTag | xs:string [256] | Yes | Yes | SIP From tag of the dialog. | Not applicable |
| ToTag | xs:string [256] | Yes | Yes | SIP To tag of the dialog. | Not applicable |
| Start | xs:dateTime | No | Yes | Start time of the call. | Coordinated Universal Time (UTC) |
| End | Xs:dateTime | No | Yes | End time of the call. | UTC |

2.2.2.2 Feedback Element

A **Feedback** element contains information related to the verbose feedback from the end user. The type of this element is **TextFeedbackType**.

The **TextFeedbackType** type is defined as follows[<311>](#):

```
<xs:complexType name="TextFeedbackType">
  <xs:sequence>
    <xs:element name="Text" type="xs:string"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>

  <xs:attribute name="LanguageTag" type="xs:string"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
```

2.2.2.2.1 Child Elements

The following table lists the child elements of the **Feedback** element.

| Element | Type | Available | Description |
|-------------|-------------------------|-----------|--|
| Text | xs:string [4000] | Yes | Additional text feedback about the end user experience regarding the call session. |

2.2.2.2.2 Attributes

The following table lists the attributes of the **Feedback** element.

| Attribute | Type | Required | Available | Description |
|-------------|-----------|----------|-----------|--|
| LanguageTag | xs:string | No | Yes | Language of the client. Format is defined in MS-LCID http://msdn.microsoft.com/en-us/library/cc233965.aspx . |

2.2.2.3 Tokens Element

A **Tokens** element contains a preset collection of feedback reasons. The client determines the set of reasons in the collection based on the call media type. The type of this element is **TokenCollectionType**.

The **TokenCollectionType** type is defined as follows [<312>](#):

```
<xs:complexType name="TokenCollectionType">
  <xs:sequence>
    <xs:element name="Token" type="mstns:TokenValueType" minOccurs="1" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
```

2.2.2.3.1 Child Elements

The following table lists the child elements of the **Tokens** element.

| Element | Type | Available | Description |
|---------|----------------|-----------|---|
| Token | TokenValueType | Yes | Information on a predefined issue type experienced during the call. |

2.2.2.4 Token Element

A **Token** element contains a predefined issue type experienced during the call. The elements contained form a name-value pair where the name corresponds to a predefined issue type and the value indicates whether the issue type was encountered during the call session. The type of this element is **TokenValueType**.

The **TokenValueType** type is defined as follows [<313>](#):

```
<xs:complexType name="TokenValueType">
  <xs:sequence>
    <xs:element name="Id" type="xs:int" minOccurs="1" maxOccurs="1"/>
    <xs:element name="Value" type="xs:int" minOccurs="1" maxOccurs="1"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>

  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
```

2.2.2.4.1 Child Elements

The following table lists the child elements of the **Tokens** element.

| Element | Type | Available | Description |
|----------------|---------------|------------------|---|
| Id | xs:int | Yes | For audio the ID ranges from 1 to 5. For video the ID ranges from 21 to 25. |
| Value | xs:int | Yes | Supported values are "0" and "1". |

3 Protocol Details

3.1 SIP UAC Details

A protocol client performs the role of a **SIP user agent client (UAC)**. A SIP user agent client initiates a SIP **SERVICE** transaction by sending a SIP SERVICE message to the SIP **URI** of a SIP **user agent server (UAS)**. Upon receiving an error, a protocol client can retry to send the report.

3.1.1 Abstract Data Model

None.

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Higher-Layer Triggered Events

None.

3.1.5 Message Processing Events and Sequencing Rules

None.

3.1.6 Timer Events

None.

3.1.7 Other Local Events

None.

3.2 SIP UAS Details

A **QoE Monitoring Agent** performs the role of a **SIP UAS**. The SIP UAS accepts the **SERVICE** message and responds with a SERVICE response code 202 or a SIP SERVICE response error code. The SIP SERVICE response error code that is returned depends on the issue. The following table lists the error codes that are returned depending on the content of the SIP SERVICE request.

| Error code | Reason |
|------------|--|
| 606 | Only VQReportEvent and CallQualityFeedbackReport are supported in current version. 606 is returned if received data is not one of the two specified types. |
| 400 | If there is a schema validation failure or one or more metric values in the report contain an invalid value. |
| 401 | If the From header in SIP request doesn't match the value of LocalPAI or FromURI (when LocalPAI is missing) obtained from payload body. If the sender is an anonymous user, 401 could be returned when the focus-uri |

| Error code | Reason |
|------------|---|
| | header in SIP request does not match ConfURI obtained from payload body. |
| 415 | If the Content-Type header is not "application/vq-rtcp+xml" or "application/ms-cqf+xml". |
| 413 | If metric report exceeds the maximum size limit of 300 kilobytes allowed by the QoE Monitoring Agent. |

3.2.1 Abstract Data Model

None.

3.2.2 Timers

None.

3.2.3 Initialization

None.

3.2.4 Higher-Layer Triggered Events

None.

3.2.5 Message Processing Events and Sequencing Rules

None.

3.2.6 Timer Events

None.

3.2.7 Other Local Events

None.

3.3 SIP Proxy Details

A **SIP proxy** routes the **SIP messages** from the **UAC** to the **UAS** and vice versa.

3.3.1 Abstract Data Model

None.

3.3.2 Timers

None.

3.3.3 Initialization

None.

3.3.4 Higher-Layer Triggered Events

None.

3.3.5 Message Processing Events and Sequencing Rules

None.

3.3.6 Timer Events

None.

3.3.7 Other Local Events

None.

4 Protocol Examples

The following examples illustrate **QoE** metrics message payloads that adheres to the **XML schema** described in section 2. In the following examples, domain names, server names, e-mail aliases, phone numbers, and IP addresses have been changed to fictitious values.

4.1 application/vq-rtcp+xml

```
SERVICE sip:server1@contoso.com;gruu;opaque=srvr:QoS:jcH1fn2RSB6uyC59R-IH8QAA SIP/2.0
Via: SIP/2.0/TLS 123.45.67.890:1263
Max-Forwards: 70
From: <sip:alice@contoso.com>;tag=3d26651a97;epid=782abb8f70
To: <sip:server1@contoso.com;gruu;opaque=srvr:QoS:jcH1fn2RSB6uyC59R-IH8QAA>
Call-ID: f86d23b698b34a70a2d23772e7391d94
CSeq: 1 SERVICE
Contact: <sip:alice@contoso.com;opaque=user:epid:reTyjuqAaVmcCIO4qlA4vwAA;gruu>
User-Agent: UCCP/2.0.6362.0 OC/2.0.6362.0 (Microsoft Office Communicator)
Proxy-Authorization: NTLM qop="auth", realm="SIP Communications Service", opaque="7B435440",
crand="40171178", cnum="178", targetname="location-server-01.exchange.corp.contoso.com",
response="010000003a516f532e969c311f676e47"
Content-Type: application/vq-rtcp+xml
Content-Length: 3283
<?xml version="1.0"?>
<VQReportEvent xmlns="ms-rtcp-metrics">
  <VQSessionReport SessionId="ab323818af644d1eab6bacd6d66d03a7;from-tag=e957a6c0d5;to-
tag=313433a5ba">
    <Endpoint Name="alice.example.corp.contoso.com" />
    <DialogInfo CallId="ab323818af644d1eab6bacd6d66d03a7" FromTag="e957a6c0d5"
ToTag="313433a5ba" Start="2008-01-07T19:47:06.0082Z" End="2008-01-07T19:55:11.0742Z">
      <FromURI>sip:alice@contoso.com</FromURI>
      <ToURI>sip:5550100@contoso.com;user=phone</ToURI>
      <Caller>true</Caller>

<LocalContactURI>sip:alice@contoso.com;opaque=user:epid:reTyjuqAaVmcCIO4qlA4vwAA;gruu</LocalC
ontactURI>

<RemoteContactURI>sip:server1@contoso.com;gruu;opaque=srvr:MediationServer:WftfTuTVQCSAB0ZJi-
j7qAAA;grid=f684305ffb3a4a8184e8cd16846a983c</RemoteContactURI>
  <LocalUserAgent>UCCP/2.0.6362.0 OC/2.0.6362.0 (Microsoft Office
Communicator)</LocalUserAgent>
  <RemoteUserAgent>RTCC/3.0.0.0 MediationServer</RemoteUserAgent>
</DialogInfo>
<MediaLine Label="main-audio">
  <Description>
    <Connectivity>
      <Ice>DIRECT</Ice>
      <IceWarningFlags>327680</IceWarningFlags>
    </Connectivity>
    <Security>SRTP</Security>
    <Offerer>true</Offerer>
    <Transport>UDP</Transport>
  </NetworkConnectivityInfo>
</VPN>true</VPN>
<LinkSpeed>11000000.000000</LinkSpeed>
</NetworkConnectivityInfo>
  <LocalAddr>
    <IPAddr>123.45.67.890</IPAddr>
    <Port>50004</Port>
    <Inside>true</Inside>
    <SubnetMask>255.255.254.0</SubnetMask>
  </LocalAddr>
  <RemoteAddr>
    <IPAddr>123.12.34.567</IPAddr>
    <Port>63284</Port>
  </RemoteAddr>
```

```

    <CaptureDev>
      <Name>Catalina-V263</Name>
    </CaptureDev>
    <RenderDev>
      <Name>Catalina-V263</Name>
    </RenderDev>
  </Description>
  <InboundStream Id="1536632130">
    <Network>
      <Jitter>
        <InterArrival>2</InterArrival>
        <InterArrivalMax>3</InterArrivalMax>
      </Jitter>
      <PacketLoss>
        <LossRate>0.000000</LossRate>
        <LossRateMax>0.009259</LossRateMax>
      </PacketLoss>
      <BurstGapLoss>
        <BurstDensity>0</BurstDensity>
        <BurstDuration>0</BurstDuration>
        <GapDensity>0</GapDensity>
        <GapDuration>461660</GapDuration>
      </BurstGapLoss>
      <Utilization>
        <Packets>23148</Packets>
      </Utilization>
    </Network>
    <Payload>
      <Audio>
        <Signal>
          <SignalLevel>2434</SignalLevel>
          <NoiseLevel>4861</NoiseLevel>
          <SignalLevelLoudSpeaker>2502</SignalLevelLoudSpeaker>
        </Signal>
        <SpeakerGlitchRate>7</SpeakerGlitchRate>
        <SpeakerClipRate>0</SpeakerClipRate>
      </Audio>
    </Payload>
    <QualityEstimates>
      <Audio>
        <RecvListenMOS>1.880000</RecvListenMOS>
        <RecvListenMOSMin>1.000000</RecvListenMOSMin>
        <NetworkMOS>
          <OverallAvg>2.950000</OverallAvg>
          <OverallMin>2.940000</OverallMin>
          <DegradationAvg>0.000000</DegradationAvg>
          <DegradationMax>0.010000</DegradationMax>
          <DegradationJitterAvg>0.000000</DegradationJitterAvg>
          <DegradationPacketLossAvg>0.000000</DegradationPacketLossAvg>
        </NetworkMOS>
      </Audio>
    </QualityEstimates>
  </InboundStream>
  <OutboundStream Id="1869098562">
    <Network>
      <Jitter>
        <InterArrival>2</InterArrival>
        <InterArrivalMax>2</InterArrivalMax>
      </Jitter>
      <PacketLoss>
        <LossRate>0.000000</LossRate>
        <LossRateMax>0.000000</LossRateMax>
      </PacketLoss>
      <Delay>
        <RoundTrip>1</RoundTrip>
        <RoundTripMax>2</RoundTripMax>
      </Delay>
      <Utilization>
        <Packets>7497</Packets>
      </Utilization>
    </Network>
  </OutboundStream>

```

```

        <BandwidthEst>23872930</BandwidthEst>
    </Utilization>
</Network>
<Payload>
    <Audio>
        <PayloadDescription>x-msrta</PayloadDescription>
        <SampleRate>8000</SampleRate>
        <Signal>
            <SignalLevel>1834</SignalLevel>
            <NoiseLevel>5987</NoiseLevel>
            <SpeakerFeedbackMicIn>5000</SpeakerFeedbackMicIn>
        <SpeechLevelMicIn>2404</SpeechLevelMicIn>
        <SpeechLevelPostProcess>2500</SpeechLevelPostProcess>
        <BackGroundNoiseMicIn>7000</BackGroundNoiseMicIn>
        <BackGroundNoiseSent>8100</BackGroundNoiseSent>
        <LocalSpeechToEcho>-2600</LocalSpeechToEcho>
        <MicGlitchRate>7</MicGlitchRate>
        <MicClipRate>10</MicClipRate>
    </Signal>
    </Audio>
</Payload>
<QualityEstimates>
    <Audio>
        <SendListenMOS>3.440000</SendListenMOS>
        <SendListenMOSMin>1.100000</SendListenMOSMin>
    </Audio>
</QualityEstimates>
</OutboundStream>
<LocalConversationalMOS>3.010000</LocalConversationalMOS>
</MediaLine>
</VQSessionReport>
</VQReportEvent>

```

4.2 application/ms-cqf+xml

```

SERVICE sip:server1@contoso.com;gruu;opaque=srvr:QoS:jcH1fn2RSB6uyC59R-IH8QAA SIP/2.0
Via: SIP/2.0/TLS 123.45.67.890:53507
Max-Forwards: 70
From: <sip:alice@contoso.com>;tag=3d26651a97;epid=782abb8f70
To: <sip:server1@contoso.com;gruu;opaque=srvr:QoS:jcH1fn2RSB6uyC59R-IH8QAA>
Call-ID: f86d23b698b34a70a2d23772e7391d94
CSeq: 1 SERVICE
Contact: <sip:alice@contoso.com;opaque=user:epid:reTyjuqAaVmcCI04qlA4vwAA;gruu>
User-Agent: UCCAPI/15.0.4693.2000 OC/15.0.4693.2000 (Skype for Business)
Proxy-Authorization: TLS-DSK qop="auth", realm="SIP Communications Service",
opaque="7B435440", targetname="location-server-01.exchange.corp.contoso.com",
crand="40171178", cnum="178", response="010000003a516f532e969c311f676e47"
Content-Type: application/ms-cqf+xml
Content-Length: 632
<?xml version="1.0"?>
<CallQualityFeedbackReport xmlns="ms-cqf" CallId="ab323818af644d1eab6bacd6d66d03a7"
FromTag="e957a6c0d5" ToTag="313433a5ba">
    <ReportingUserURI>sip:alice@contoso.com</ReportingUserURI>
    <Rating>4</Rating>
    <Feedback LanguageTag="en-US">
        <Text>Nothing more to tell, call quality was great!</Text>
    </Feedback>
    <Tokens>
        <Token>
            <Id>1</Id>
            <Value>1</Value>
            <Tag>DistortedSpeech</Tag>
        </Token>
        <Token>
            <Id>2</Id>
            <Value>1</Value>
            <Tag>ElectronicFeedback</Tag>

```

```
</Token>
<Token>
  <Id>3</Id>
  <Value>0</Value>
  <Tag>BackgroundNoise</Tag>
</Token>
<Token>
  <Id>4</Id>
  <Value>1</Value>
  <Tag>MuffledSpeech</Tag>
</Token>
<Token>
  <Id>5</Id>
  <Value>0</Value>
  <Tag>Echo</Tag>
</Token>
</Tokens>
</CallQualityFeedbackReport>
```

5 Security

5.1 Security Considerations for Implementers

This protocol has no additional security considerations beyond those described in [\[MS-SIPRE\]](#) section 5.

5.2 Index of Security Parameters

None.

6 Appendix A: Full XML Schema

This section provides the detailed **XML schema definition (XSD)** schema specification of the **XML schema** used for constructing the **QoE** metrics payload.

6.1 Office Communications Server 2007 Schema

This section follows the product behavior described in footnote [<314>](#).

```
<?xml version="1.0" encoding="UTF-8" ?>
<xs:schema xmlns:tns="ms-rtcp-metrics" xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="ms-rtcp-metrics" elementFormDefault="qualified"
attributeFormDefault="unqualified">
<!--
    RTCP METRICS STATEMENT
-->
<xs:element name="VQReportEvent" type="tns:VQReportEventType" />
<!--
    RTCP REPORT TYPE
-->
<xs:complexType name="VQReportEventType">
<xs:choice>
<xs:element name="VQSessionReport" type="tns:SessionReportType" maxOccurs="unbounded"
/>
<xs:element name="VQSessionIntervalReport" type="tns:SessionReportType"
maxOccurs="unbounded" />
<xs:any namespace="##other" processContents="lax" maxOccurs="unbounded" />
</xs:choice>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    VQ SESSION REPORT TYPE
-->
<xs:complexType name="SessionReportType">
<xs:sequence>
<xs:element name="LocationProfile" type="xs:string" minOccurs="0" />
<xs:element name="Pool" type="xs:string" minOccurs="0" />
<xs:element name="Endpoint" type="tns:EndpointType" />
<xs:element name="DialogInfo" type="tns:DialogInfoType" />
<xs:element name="MediaLine" type="tns:MediaLineType" maxOccurs="unbounded" />
<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:attribute name="SessionId" type="xs:string" use="required" />
<xs:anyAttribute namespace="##other" processContents="lax" />
<!--
    SessionId = DialogID
-->
</xs:complexType>
<!--
    DIALOG INFO TYPE
-->
<xs:complexType name="DialogInfoType">
<xs:sequence>
<xs:element name="FromURI" type="xs:anyURI" />
<xs:element name="ToURI" type="xs:anyURI" />
<xs:element name="Caller" type="xs:boolean" />
<xs:element name="LocalContactURI" type="xs:anyURI" />
<xs:element name="RemoteContactURI" type="xs:anyURI" />
<xs:element name="LocalUserAgent" type="xs:string" />
<xs:element name="RemoteUserAgent" type="xs:string" />

```



```

<!--
    PAI = P-Asserted-Identity
-->
<xs:element name="LocalPAI" type="xs:anyURI" minOccurs="0" />
<xs:element name="RemotePAI" type="xs:anyURI" minOccurs="0" />
<xs:element name="ConfURI" type="xs:anyURI" minOccurs="0" />
<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:attribute name="CallId" type="xs:string" use="required" />
<xs:attribute name="FromTag" type="xs:string" />
<xs:attribute name="ToTag" type="xs:string" />
<xs:attribute name="Start" type="xs:dateTime" use="required" />
<xs:attribute name="End" type="xs:dateTime" use="required" />
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    ENDPOINT TYPE
-->
<xs:complexType name="EndpointType">
<xs:sequence>
<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:attribute name="Name" type="xs:string" use="required" />
<xs:attribute name="ProfileId" type="xs:string" />
<xs:anyAttribute namespace="##other" processContents="lax" />
<!--
    Name = Computer Name
-->
<!--
    ProfileId = Endpoint Report GUID - Note: this attribute is optional
-->
</xs:complexType>
<!--
    MEDIA LINE REPORT TYPE
-->
<xs:complexType name="MediaLineType">
<xs:sequence>
<xs:element name="Description" type="tns:MediaLineDescriptionType" />
<xs:element name="InboundStream" type="tns:StreamType" minOccurs="0" />
<xs:element name="OutboundStream" type="tns:StreamType" minOccurs="0" />
<xs:element name="LocalConversationalMOS" type="xs:float" minOccurs="0" />
<xs:element name="RemoteConversationalMOS" type="xs:float" minOccurs="0" />
<xs:element name="LocalConversationalMOSAlg" type="xs:string" minOccurs="0" />
<xs:element name="RemoteConversationalMOSAlg" type="xs:string" minOccurs="0" />
<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<!-- Label values : "main-audio", "main-video", "panoramic-video", "data", -->
<!-- Additional Label values in v3 : "main-video1", "main-video2", "main-
video3", "main-video4", "main-video5", "main-video6", -->
<xs:attribute name="Label" type="xs:string" use="required" />
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    MEDIA LINE TYPE
-->
<xs:complexType name="MediaLineDescriptionType">
<xs:sequence>
<xs:element name="Connectivity" type="tns:ConnectivityType" minOccurs="0" />
<!--
    Security values : "None", "SRTP", "V1"
-->
<xs:element name="Security" type="xs:string" minOccurs="0" />
<xs:element name="Offerer" type="xs:boolean" minOccurs="0" />

```

```

    <xs:element name="Transport" type="tns:TransportType" minOccurs="0" />
    <xs:element name="LocalAddr" type="tns:AddrType" />
    <xs:element name="RemoteAddr" type="tns:AddrType" />
<!--
Microphone or USB Phone or Camera device name
-->
    <xs:element name="CaptureDev" type="tns:DeviceType" minOccurs="0" />
<!--
Speakers or USB Phone device name
-->
    <xs:element name="RenderDev" type="tns:DeviceType" minOccurs="0" />
    <xs:element name="ReflexiveLocalIPAddress" type="tns:AddrType"/>
    <xs:element name="MidCallReport" type="xs:boolean" default="false" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
Device TYPE
-->
<xs:complexType name="DeviceType">
<xs:sequence>
    <xs:element name="Name" type="xs:string" minOccurs="0" />
    <xs:element name="Driver" type="xs:string" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
STREAM DIRECTIONAL METRICS TYPE
-->
<xs:complexType name="StreamType">
<xs:sequence>
    <xs:element name="Network" type="tns:NetworkMetricsType" minOccurs="0" />
    <xs:element name="Payload" type="tns:PayloadMetricsType" />
    <xs:element name="QualityEstimates" type="tns:QualityEstimatesType" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
</xs:sequence>
<xs:attribute name="Id" type="xs:unsignedInt" use="required" />
<xs:attribute name="Start" type="xs:dateTime" />
<xs:attribute name="End" type="xs:dateTime" />
<xs:anyAttribute namespace="##other" processContents="lax" />
<!--
Id = SSRC
-->
</xs:complexType>
<!--
NETWORK METRICS
-->
<xs:complexType name="NetworkMetricsType">
<xs:sequence>
<!--
DiffServ CodePoint
-->
    <xs:element name="DSCP" type="xs:byte" minOccurs="0" />
<!--
VLAN is described via 12 bits
-->
    <xs:element name="VLAN" type="xs:int" minOccurs="0" />
    <xs:element name="Jitter" type="tns:JitterType" minOccurs="0" />
    <xs:element name="PacketLoss" type="tns:PacketLossType" minOccurs="0" />
    <xs:element name="BurstGapLoss" type="tns:BurstGapLossType" minOccurs="0" />
    <xs:element name="Delay" type="tns:DelayType" minOccurs="0" />

```

```

    <xs:element name="Utilization" type="tns:NetworkUtilizationType" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
  />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    ICE TYPE

-->
<xs:complexType name="ConnectivityType">
<xs:sequence>
  <xs:element name="Ice" type="tns:IceStatusType" minOccurs="0" />
  <xs:element name="IceWarningFlags" type="xs:unsignedInt" minOccurs="0" />
  <xs:element name="RelayAddress" type="tns:AddrType" minOccurs="0" maxOccurs="unbounded"
  />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
  />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    ICE CONECTIVITY TYPE

-->
<xs:simpleType name="IceStatusType">
<xs:restriction base="xs:string">
  <xs:enumeration value="FAILED" />
  <xs:enumeration value="DIRECT" />
  <xs:enumeration value="RELAY" />
  <xs:enumeration value="HTTP-PROXY" />
</xs:restriction>
</xs:simpleType>
<!--
    NETWORK UTILIZATION TYPE

-->
<xs:complexType name="NetworkUtilizationType">
<xs:sequence>
  <xs:element name="Packets" type="xs:int" minOccurs="0" />
  <xs:element name="BandwidthEst" type="xs:int" minOccurs="0" />
  <xs:element name="BandwidthAlloc" type="xs:int" minOccurs="0" />
  <xs:element name="BandwidthEstMin" type="xs:int" minOccurs="0"/>
  <xs:element name="BandwidthEstMax" type="xs:int" minOccurs="0"/>
  <xs:element name="BandwidthEstStdDev" type="xs:int" minOccurs="0"/>
  <xs:element name="BandwidthEstAvge" type="xs:int" minOccurs="0"/>
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
  />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    PAYLOAD METRICS TYPE

-->
<xs:complexType name="PayloadMetricsType">
<xs:choice>
  <xs:element name="Audio" type="tns:AudioPayloadMetricsType" />
  <xs:element name="Video" type="tns:VideoPayloadMetricsType" />
  <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded" />
</xs:choice>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    AUDIO METRICS TYPE

-->
<xs:complexType name="AudioPayloadMetricsType">
<xs:sequence>

```

```

<xs:element name="PayloadType" type="xs:int" minOccurs="0" />
<xs:element name="PayloadDescription" type="xs:string" minOccurs="0" />
<xs:element name="SampleRate" type="xs:int" minOccurs="0" />
<xs:element name="FrameDuration" type="xs:int" minOccurs="0" />
<xs:element name="FrameOctets" type="xs:int" minOccurs="0" />
<xs:element name="FramesPerPacket" type="xs:int" minOccurs="0" />
<xs:element name="PacketsPerSecond" type="xs:int" minOccurs="0" />
<xs:element name="FMTP" type="xs:string" minOccurs="0" />
<xs:element name="Signal" type="tns:SignalType" minOccurs="0" />
<xs:element name="JitterBuffer" type="tns:JitterBufferType" minOccurs="0" />
<xs:element name="SilenceSupress" type="tns:ratioConcealSuppressionStateType"
minOccurs="0" />
<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
</xs:complexType>
<!--
    VIDEO METRICS TYPE
-->
<xs:complexType name="VideoPayloadMetricsType">
<xs:sequence>
<xs:element name="PayloadType" type="xs:int" minOccurs="0" />
<xs:element name="PayloadDescription" type="xs:string" minOccurs="0" />
<xs:element name="Resolution" type="xs:string" minOccurs="0" />
<xs:element name="VideoBitRateAvg" type="xs:int" minOccurs="0" />
<xs:element name="VideoBitRateMax" type="xs:int" minOccurs="0" />
<xs:element name="VideoFrameRateAvg" type="xs:float" minOccurs="0" />
<xs:element name="VideoPacketLossRate" type="xs:float" minOccurs="0" />
<xs:element name="VideoFrameLossRate" type="xs:float" minOccurs="0" />
<xs:element name="VideoFrameEncodingTime" type="xs:float" minOccurs="0" />
<xs:element name="VideoFrameDecodingTime" type="xs:float" minOccurs="0" />
<xs:element name="VideoFEC" type="xs:boolean" minOccurs="0" />
<xs:element name="FrozenVideoFreq" type="xs:float" minOccurs="0" />
<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
</xs:complexType>
<!--
    PACKET LOSS CONCEALMENT TYPE
-->
<xs:simpleType name="PacketLossConcealmentType">
<xs:restriction base="xs:string">
<xs:enumeration value="UNSPECIFIED" />
<xs:enumeration value="DISABLED" />
<xs:enumeration value="ENHANCED" />
<xs:enumeration value="STANDARD" />
</xs:restriction>
</xs:simpleType>
<!--
    SILENCE SUPPRESSION STATE TYPE
-->
<xs:simpleType name="SilenceSuppressionStateType">
<xs:restriction base="xs:string">
<xs:enumeration value="ON" />
<xs:enumeration value="OFF" />
</xs:restriction>
</xs:simpleType>
<!--
    ADDR TYPE
-->
<xs:complexType name="AddrType">
<xs:sequence>
<xs:element name="IPAddr" type="xs:string" />
<xs:element name="Port" type="xs:unsignedShort" minOccurs="0" />
<xs:element name="Inside" type="xs:boolean" minOccurs="0" />

```

```

    <xs:element name="SubnetMask" type="xs:string" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
  />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    JITTER BUFFER TYPE

-->
<xs:complexType name="JitterBufferType">
<xs:sequence>
  <xs:element name="Type" type="tns:JitterBufferAdaptiveType" minOccurs="0" />
  <xs:element name="Rate" type="xs:int" minOccurs="0" />
  <xs:element name="Nominal" type="xs:int" minOccurs="0" />
  <xs:element name="Max" type="xs:int" minOccurs="0" />
  <xs:element name="AbsMax" type="xs:int" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
  />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    JITTER BUFFER ADAPTIVE TYPE

-->
<xs:simpleType name="JitterBufferAdaptiveType">
<xs:restriction base="xs:string">
  <xs:enumeration value="UNKNOWN" />
  <xs:enumeration value="RESERVED" />
  <xs:enumeration value="NON-ADAPTIVE" />
  <xs:enumeration value="ADAPTIVE" />
</xs:restriction>
</xs:simpleType>
<!--
    PACKET LOSS TYPE

-->
<xs:complexType name="PacketLossType">
<xs:sequence>
  <xs:element name="LossRate" type="xs:float" minOccurs="0" />
  <xs:element name="LossRateMax" type="xs:float" minOccurs="0" />
  <xs:element name="DiscardRate" type="xs:float" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
  />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    BURST GAP LOSS TYPE

-->
<xs:complexType name="BurstGapLossType">
<xs:sequence>
  <xs:element name="BurstDensity" type="xs:float" minOccurs="0" />
  <xs:element name="BurstDuration" type="xs:int" minOccurs="0" />
  <xs:element name="GapDensity" type="xs:float" minOccurs="0" />
  <xs:element name="GapDuration" type="xs:int" minOccurs="0" />
  <xs:element name="MinGapThreshold" type="xs:int" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
  />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    DELAY TYPE

-->
<xs:complexType name="DelayType">

```

```

<xs:sequence>
  <xs:element name="RoundTrip" type="xs:int" minOccurs="0" />
  <xs:element name="RoundTripMax" type="xs:int" minOccurs="0" />
  <xs:element name="EndSystem" type="xs:int" minOccurs="0" />
  <xs:element name="OneWay" type="xs:int" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  JITTER TYPE

-->
<xs:complexType name="JitterType">
  <xs:sequence>
    <xs:element name="InterArrival" type="xs:int" minOccurs="0" />
    <xs:element name="InterArrivalMax" type="xs:int" minOccurs="0" />
    <xs:element name="MeanAbs" type="xs:int" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  SIGNAL TYPE

-->
<xs:complexType name="SignalType">
  <xs:sequence>
    <xs:element name="SignalLevel" type="xs:int" minOccurs="0" />
    <xs:element name="NoiseLevel" type="xs:int" minOccurs="0" />
    <xs:element name="EchoReturn" type="xs:int" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  QUALITY ESTIMATES TYPE

-->
<xs:complexType name="QualityEstimatesType">
  <xs:choice>
    <xs:element name="Audio" type="tns:AudioQualityEstimatesType" />
    <xs:element name="Video" type="tns:VideoQualityEstimatesType" />
    <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded" />
  </xs:choice>
</xs:complexType>
<!--
  AUDIO QUALITY ESTIMATES TYPE

-->
<xs:complexType name="AudioQualityEstimatesType">
  <xs:sequence>
    <xs:element name="RecvListenMOS" type="xs:float" minOccurs="0" />
    <xs:element name="RecvListenMOSMin" type="xs:float" minOccurs="0" />
    <xs:element name="RecvListenMOSAlg" type="xs:string" minOccurs="0" />
    <xs:element name="SendListenMOS" type="xs:float" minOccurs="0" />
    <xs:element name="SendListenMOSMin" type="xs:float" minOccurs="0" />
    <xs:element name="SendListenMOSAlg" type="xs:string" minOccurs="0" />
    <xs:element name="NetworkMOS" type="tns:NetworkAudioMOSType" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--

```

NETWORK AUDIO MOS FACTOR TYPE

```
-->
<xs:complexType name="NetworkAudioMOSType">
<xs:sequence>
  <xs:element name="OverallAvg" type="xs:float" minOccurs="0" />
  <xs:element name="OverallMin" type="xs:float" minOccurs="0" />
  <xs:element name="DegradationAvg" type="xs:float" minOccurs="0" />
  <xs:element name="DegradationMax" type="xs:float" minOccurs="0" />
  <xs:element name="DegradationJitterAvg" type="xs:float" minOccurs="0" />
  <xs:element name="DegradationPacketLossAvg" type="xs:float" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
```

VIDEO QUALITY ESTIMATES TYPE

```
-->
<xs:complexType name="VideoQualityEstimatesType">
<xs:sequence>
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
```

TRANSPORT TYPE

```
-->
<xs:simpleType name="TransportType">
<xs:restriction base="xs:string">
  <xs:enumeration value="UDP" />
  <xs:enumeration value="TCP" />
</xs:restriction>
</xs:simpleType>
</xs:schema>
```

6.2 Office Communications Server 2007 R2 Schema

This section follows the product behavior described in footnote [<315>](#).

```
<?xml version="1.0" encoding="UTF-8" ?>
<xs:schema xmlns:tns="ms-rtcp-metrics" xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="ms-rtcp-metrics" elementFormDefault="qualified"
attributeFormDefault="unqualified" version="2.0">
<!--
```

RTCP METRICS STATEMENT

```
-->
<xs:element name="VQReportEvent" type="tns:VQReportEventType" />
<!--
```

RTCP REPORT TYPE

```
-->
<xs:complexType name="VQReportEventType">
<xs:choice>
  <xs:element name="VQSessionReport" type="tns:SessionReportType" maxOccurs="unbounded"
/>
  <xs:element name="VQSessionIntervalReport" type="tns:SessionReportType"
maxOccurs="unbounded" />
  <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded" />
</xs:choice>
```

```

    <xs:attribute name="Version" type="xs:string" use="optional" />
    <xs:anyAttribute namespace="##other" processContents="lax" />
  </xs:complexType>
<!--
    VQ SESSION REPORT TYPE

-->
<xs:complexType name="SessionReportType">
<xs:sequence>
  <xs:element name="LocationProfile" type="xs:string" minOccurs="0" />
  <xs:element name="Pool" type="xs:string" minOccurs="0" />
  <xs:element name="Endpoint" type="tns:EndpointType" />
  <xs:element name="DialogInfo" type="tns:DialogInfoType" />
  <xs:element name="MediaLine" type="tns:MediaLineType" maxOccurs="unbounded" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
</xs:sequence>
  <xs:attribute name="SessionId" type="xs:string" use="required" />
  <xs:anyAttribute namespace="##other" processContents="lax" />
<!--
    SessionId = DialogID
-->
</xs:complexType>
<!--
    DIALOG INFO TYPE

-->
<xs:complexType name="DialogInfoType">
<xs:sequence>
  <xs:element name="DialogCategory" type="tns:DialogCategoryType" minOccurs="0" />
  <xs:element name="CorrelationID" type="xs:string" minOccurs="0" />
  <xs:element name="FromURI" type="xs:anyURI" />
  <xs:element name="ToURI" type="xs:anyURI" />
  <xs:element name="Caller" type="xs:boolean" />
  <xs:element name="LocalContactURI" type="xs:anyURI" />
  <xs:element name="RemoteContactURI" type="xs:anyURI" />
  <xs:element name="LocalUserAgent" type="xs:string" />
  <xs:element name="RemoteUserAgent" type="xs:string" />
<!--
    PAI = P-Asserted-Identity
-->
  <xs:element name="LocalPAI" type="xs:anyURI" minOccurs="0" />
  <xs:element name="RemotePAI" type="xs:anyURI" minOccurs="0" />
  <xs:element name="ConfURI" type="xs:anyURI" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
</xs:sequence>
  <xs:attribute name="CallId" type="xs:string" use="required" />
  <xs:attribute name="FromTag" type="xs:string" />
  <xs:attribute name="ToTag" type="xs:string" />
  <xs:attribute name="Start" type="xs:dateTime" use="required" />
  <xs:attribute name="End" type="xs:dateTime" use="required" />
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    ENDPOINT TYPE

-->
<xs:complexType name="EndpointType">
<xs:sequence>
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
</xs:sequence>
  <xs:attribute name="Name" type="xs:string" use="required" />
  <xs:attribute name="ProfileId" type="xs:string" />
  <xs:anyAttribute namespace="##other" processContents="lax" />
<!--
    Name = Computer Name
-->

```



```

<!--
  ProfileId = Endpoint Report GUID - Note: this attribute is optional
-->
</xs:complexType>
<!--
  MEDIA LINE REPORT TYPE

-->
<xs:complexType name="MediaLineType">
<xs:sequence>
  <xs:element name="Description" type="tns:MediaLineDescriptionType" />
  <xs:element name="InboundStream" type="tns:StreamType" minOccurs="0" />
  <xs:element name="OutboundStream" type="tns:StreamType" minOccurs="0" />
  <xs:element name="LocalConversationalMOS" type="xs:float" minOccurs="0" />
  <xs:element name="RemoteConversationalMOS" type="xs:float" minOccurs="0" />
  <xs:element name="LocalConversationalMOSAlg" type="xs:string" minOccurs="0" />
  <xs:element name="RemoteConversationalMOSAlg" type="xs:string" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<!--
  Label values : "main-audio", "main-video", "panoramic-video"
-->
<xs:attribute name="Label" type="xs:string" use="required" />
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  MEDIA LINE TYPE

-->
<xs:complexType name="MediaLineDescriptionType">
<xs:sequence>
  <xs:element name="Connectivity" type="tns:ConnectivityType" minOccurs="0" />
<!--
  Security values : "None", "SRTP", "V1"
-->
  <xs:element name="Security" type="xs:string" minOccurs="0" />
  <xs:element name="Offerer" type="xs:boolean" minOccurs="0" />
  <xs:element name="Transport" type="tns:TransportType" minOccurs="0" />
  <xs:element name="NetworkConnectivityInfo" type="tns:NetworkConnectivityInfoType"
minOccurs="0" />
  <xs:element name="LocalAddr" type="tns:AddrType" />
  <xs:element name="RemoteAddr" type="tns:AddrType" />
<!--
  Microphone or USB Phone or Camera device name
-->
  <xs:element name="CaptureDev" type="tns:DeviceType" minOccurs="0" />
<!--
  Speakers or USB Phone device name
-->
  <xs:element name="RenderDev" type="tns:DeviceType" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  Device TYPE

-->
<xs:complexType name="DeviceType">
<xs:sequence>
  <xs:element name="Name" type="xs:string" minOccurs="0" />
  <xs:element name="Driver" type="xs:string" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>

```

```

<!--
    STREAM DIRECTIONAL METRICS TYPE

-->
<xs:complexType name="StreamType">
<xs:sequence>
  <xs:element name="Network" type="tns:NetworkMetricsType" minOccurs="0" />
  <xs:element name="Payload" type="tns:PayloadMetricsType" />
  <xs:element name="QualityEstimates" type="tns:QualityEstimatesType" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:attribute name="Id" type="xs:unsignedInt" use="required" />
<xs:attribute name="Start" type="xs:dateTime" />
<xs:attribute name="End" type="xs:dateTime" />
<xs:anyAttribute namespace="##other" processContents="lax" />
<!--
  Id = SSRC
-->
</xs:complexType>
<!--
    NETWORK METRICS

-->
<xs:complexType name="NetworkMetricsType">
<xs:sequence>
<!--
  DiffServ CodePoint
-->
  <xs:element name="DSCP" type="xs:byte" minOccurs="0" />
<!--
  VLAN is described via 12 bits
-->
  <xs:element name="VLAN" type="xs:int" minOccurs="0" />
  <xs:element name="Jitter" type="tns:JitterType" minOccurs="0" />
  <xs:element name="PacketLoss" type="tns:PacketLossType" minOccurs="0" />
  <xs:element name="BurstGapLoss" type="tns:BurstGapLossType" minOccurs="0" />
  <xs:element name="Delay" type="tns:DelayType" minOccurs="0" />
  <xs:element name="Utilization" type="tns:NetworkUtilizationType" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    ICE TYPE

-->
<xs:complexType name="ConnectivityType">
<xs:sequence>
  <xs:element name="Ice" type="tns:IceStatusType" minOccurs="0" />
  <xs:element name="IceWarningFlags" type="xs:unsignedInt" minOccurs="0" />
  <xs:element name="RelayAddress" type="tns:AddrType" minOccurs="0" maxOccurs="unbounded"
/>
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    ICE CONECTIVITY TYPE

-->
<xs:simpleType name="IceStatusType">
<xs:restriction base="xs:string">
  <xs:enumeration value="FAILED" />
  <xs:enumeration value="DIRECT" />
  <xs:enumeration value="RELAY" />
  <xs:enumeration value="HTTP-PROXY" />

```

```

    </xs:restriction>
  </xs:simpleType>
<!--
  NETWORK UTILIZATION TYPE
-->
<xs:complexType name="NetworkUtilizationType">
  <xs:sequence>
    <xs:element name="Packets" type="xs:int" minOccurs="0" />
    <xs:element name="BandwidthEst" type="xs:int" minOccurs="0" />
    <xs:element name="BandwidthAlloc" type="xs:int" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  PAYLOAD METRICS TYPE
-->
<xs:complexType name="PayloadMetricsType">
  <xs:choice>
    <xs:element name="Audio" type="tns:AudioPayloadMetricsType" />
    <xs:element name="Video" type="tns:VideoPayloadMetricsType" />
    <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded" />
  </xs:choice>
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  AUDIO METRICS TYPE
-->
<xs:complexType name="AudioPayloadMetricsType">
  <xs:sequence>
    <xs:element name="PayloadType" type="xs:int" minOccurs="0" />
    <xs:element name="PayloadDescription" type="xs:string" minOccurs="0" />
    <xs:element name="SampleRate" type="xs:int" minOccurs="0" />
    <xs:element name="FrameDuration" type="xs:int" minOccurs="0" />
    <xs:element name="FrameOctets" type="xs:int" minOccurs="0" />
    <xs:element name="FramesPerPacket" type="xs:int" minOccurs="0" />
    <xs:element name="PacketsPerSecond" type="xs:int" minOccurs="0" />
    <xs:element name="FMTP" type="xs:string" minOccurs="0" />
    <xs:element name="Signal" type="tns:SignalType" minOccurs="0" />
    <xs:element name="JitterBuffer" type="tns:JitterBufferType" minOccurs="0" />
    <xs:element name="SilenceSupress" type="tns:SilenceSuppressionStateType" minOccurs="0" />
  </xs:sequence>
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
</xs:complexType>
<!--
  VIDEO METRICS TYPE
-->
<xs:complexType name="VideoPayloadMetricsType">
  <xs:sequence>
    <xs:element name="PayloadType" type="xs:int" minOccurs="0" />
    <xs:element name="PayloadDescription" type="xs:string" minOccurs="0" />
    <xs:element name="Resolution" type="xs:string" minOccurs="0" />
    <xs:element name="VideoBitRateAvg" type="xs:int" minOccurs="0" />
    <xs:element name="VideoBitRateMax" type="xs:int" minOccurs="0" />
    <xs:element name="VideoFrameRateAvg" type="xs:float" minOccurs="0" />
    <xs:element name="VideoPacketLossRate" type="xs:float" minOccurs="0" />
    <xs:element name="VideoFrameLossRate" type="xs:float" minOccurs="0" />
    <xs:element name="VideoFrameEncodingTime" type="xs:float" minOccurs="0" />
    <xs:element name="VideoFrameDecodingTime" type="xs:float" minOccurs="0" />
    <xs:element name="VideoFEC" type="xs:boolean" minOccurs="0" />
    <xs:element name="FrozenVideoFreq" type="xs:float" minOccurs="0" />
    <xs:element name="FrozenPeriodPercentAvg" type="xs:float" minOccurs="0" />
  </xs:sequence>
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
</xs:complexType>

```

```

    <xs:element name="ConsecutivePacketLossAvg" type="xs:float" minOccurs="0" />
    <xs:element name="RateMatchLevel" type="xs:float" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
  />
</xs:sequence>
</xs:complexType>
<!--
    PACKET LOSS CONCEALMENT TYPE

-->
<xs:simpleType name="PacketLossConcealmentType">
<xs:restriction base="xs:string">
  <xs:enumeration value="UNSPECIFIED" />
  <xs:enumeration value="DISABLED" />
  <xs:enumeration value="ENHANCED" />
  <xs:enumeration value="STANDARD" />
</xs:restriction>
</xs:simpleType>
<!--
    SILENCE SUPPRESSION STATE TYPE

-->
<xs:simpleType name="SilenceSuppressionStateType">
<xs:restriction base="xs:string">
  <xs:enumeration value="ON" />
  <xs:enumeration value="OFF" />
</xs:restriction>
</xs:simpleType>
<!--
    ADDR TYPE

-->
<xs:complexType name="AddrType">
<xs:sequence>
  <xs:element name="IPAddr" type="xs:string" />
  <xs:element name="Port" type="xs:unsignedShort" minOccurs="0" />
  <xs:element name="Inside" type="xs:boolean" minOccurs="0" />
  <xs:element name="SubnetMask" type="xs:string" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
  />
</xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    JITTER BUFFER TYPE

-->
<xs:complexType name="JitterBufferType">
<xs:sequence>
  <xs:element name="Type" type="tns:JitterBufferAdaptiveType" minOccurs="0" />
  <xs:element name="Rate" type="xs:int" minOccurs="0" />
  <xs:element name="Nominal" type="xs:int" minOccurs="0" />
  <xs:element name="Max" type="xs:int" minOccurs="0" />
  <xs:element name="AbsMax" type="xs:int" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
  />
</xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    JITTER BUFFER ADAPTIVE TYPE

-->
<xs:simpleType name="JitterBufferAdaptiveType">
<xs:restriction base="xs:string">
  <xs:enumeration value="UNKNOWN" />
  <xs:enumeration value="RESERVED" />
  <xs:enumeration value="NON-ADAPTIVE" />
  <xs:enumeration value="ADAPTIVE" />

```

```

    </xs:restriction>
  </xs:simpleType>
<!--
  PACKET LOSS TYPE
-->
<xs:complexType name="PacketLossType">
  <xs:sequence>
    <xs:element name="LossRate" type="xs:float" minOccurs="0" />
    <xs:element name="LossRateMax" type="xs:float" minOccurs="0" />
    <xs:element name="DiscardRate" type="xs:float" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  BURST GAP LOSS TYPE
-->
<xs:complexType name="BurstGapLossType">
  <xs:sequence>
    <xs:element name="BurstDensity" type="xs:float" minOccurs="0" />
    <xs:element name="BurstDuration" type="xs:int" minOccurs="0" />
    <xs:element name="GapDensity" type="xs:float" minOccurs="0" />
    <xs:element name="GapDuration" type="xs:int" minOccurs="0" />
    <xs:element name="MinGapThreshold" type="xs:int" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  DELAY TYPE
-->
<xs:complexType name="DelayType">
  <xs:sequence>
    <xs:element name="RoundTrip" type="xs:int" minOccurs="0" />
    <xs:element name="RoundTripMax" type="xs:int" minOccurs="0" />
    <xs:element name="EndSystem" type="xs:int" minOccurs="0" />
    <xs:element name="OneWay" type="xs:int" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  JITTER TYPE
-->
<xs:complexType name="JitterType">
  <xs:sequence>
    <xs:element name="InterArrival" type="xs:int" minOccurs="0" />
    <xs:element name="InterArrivalMax" type="xs:int" minOccurs="0" />
    <xs:element name="MeanAbs" type="xs:int" minOccurs="0" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded" />
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  SIGNAL TYPE
-->
<xs:complexType name="SignalType">
  <xs:sequence>
    <xs:element name="SignalLevel" type="xs:int" minOccurs="0" />
    <xs:element name="NoiseLevel" type="xs:int" minOccurs="0" />

```

```

<xs:element name="EchoReturn" type="xs:int" minOccurs="0" />
<xs:element name="SpeakerFeedbackMicIn" type="xs:int" minOccurs="0" />
<xs:element name="SpeechLevelMicIn" type="xs:int" minOccurs="0" />
<xs:element name="SpeechLevelPostProcess" type="xs:int" minOccurs="0" />
<xs:element name="SignalLevelLoudSpeaker" type="xs:int" minOccurs="0" />
<xs:element name="BackGroundNoiseMicIn" type="xs:int" minOccurs="0" />
<xs:element name="BackGroundNoiseSent" type="xs:int" minOccurs="0" />
<xs:element name="LocalSpeechToEcho" type="xs:int" minOccurs="0" />
<xs:element name="SpeakerGlitchRate" type="xs:int" minOccurs="0" />
<xs:element name="MicGlitchRate" type="xs:int" minOccurs="0" />
<xs:element name="SpeakerClipRate" type="xs:int" minOccurs="0" />
<xs:element name="MicClipRate" type="xs:int" minOccurs="0" />
<xs:element name="RxAGCSignalLevel" type="xs:int" minOccurs="0" />
<xs:element name="RxAGCNoiseLevel" type="xs:int" minOccurs="0" />
<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    QUALITY ESTIMATES TYPE
-->
<xs:complexType name="QualityEstimatesType">
<xs:choice>
<xs:element name="Audio" type="tns:AudioQualityEstimatesType" />
<xs:element name="Video" type="tns:VideoQualityEstimatesType" />
<xs:any namespace="##other" processContents="lax" maxOccurs="unbounded" />
</xs:choice>
</xs:complexType>
<!--
    AUDIO QUALITY ESTIMATES TYPE
-->
<xs:complexType name="AudioQualityEstimatesType">
<xs:sequence>
<xs:element name="RecvListenMOS" type="xs:float" minOccurs="0" />
<xs:element name="RecvListenMOSMin" type="xs:float" minOccurs="0" />
<xs:element name="RecvListenMOSAlg" type="xs:string" minOccurs="0" />
<xs:element name="SendListenMOS" type="xs:float" minOccurs="0" />
<xs:element name="SendListenMOSMin" type="xs:float" minOccurs="0" />
<xs:element name="SendListenMOSAlg" type="xs:string" minOccurs="0" />
<xs:element name="NetworkMOS" type="tns:NetworkAudioMOSType" minOccurs="0" />
<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    NETWORK AUDIO MOS FACTOR TYPE
-->
<xs:complexType name="NetworkAudioMOSType">
<xs:sequence>
<xs:element name="OverallAvg" type="xs:float" minOccurs="0" />
<xs:element name="OverallMin" type="xs:float" minOccurs="0" />
<xs:element name="DegradationAvg" type="xs:float" minOccurs="0" />
<xs:element name="DegradationMax" type="xs:float" minOccurs="0" />
<xs:element name="DegradationJitterAvg" type="xs:float" minOccurs="0" />
<xs:element name="DegradationPacketLossAvg" type="xs:float" minOccurs="0" />
<xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
/>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
    VIDEO QUALITY ESTIMATES TYPE
-->

```

```

<xs:complexType name="VideoQualityEstimatesType">
<xs:sequence>
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
  />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  TRANSPORT TYPE

  -->
<xs:simpleType name="TransportType">
<xs:restriction base="xs:string">
  <xs:enumeration value="UDP" />
  <xs:enumeration value="TCP" />
</xs:restriction>
</xs:simpleType>
<!--
  NETWORK CONNECTIVITY TYPE

  -->
<xs:complexType name="NetworkConnectivityInfoType">
<xs:sequence>
  <xs:element name="NetworkConnection" type="tns:NetworkConnectionType" minOccurs="0" />
  <xs:element name="VPN" type="xs:boolean" minOccurs="0" />
  <xs:element name="LinkSpeed" type="xs:float" minOccurs="0" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"
  />
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax" />
</xs:complexType>
<!--
  ETHERNET CONNECTION TYPE

  -->
<xs:simpleType name="NetworkConnectionType">
<xs:restriction base="xs:string">
  <xs:enumeration value="wired" />
  <xs:enumeration value="wifi" />
</xs:restriction>
</xs:simpleType>
<!--
  DIALOG CATEGORY

  -->
<xs:simpleType name="DialogCategoryType">
<xs:restriction base="xs:string">
  <xs:enumeration value="OCS" />
  <xs:enumeration value="TRUNK" />
</xs:restriction>
</xs:simpleType>
</xs:schema>

```

6.3 Microsoft Lync Server 2010 Schema

This section follows the product behavior described in footnote [<316>](#). The schema has been split into three related schema definition files:

- ms-rtcp-metrics.xsd
- ms-rtcp-metrics.medialine.xsd
- ms-rtcp-metrics.v2.xsd

The schema for **ms-rtcp-metrics.xsd** is as follows:

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:tns="ms-rtcp-metrics" xmlns:v2="ms-rtcp-metrics.v2"
xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="ms-rtcp-metrics"
elementFormDefault="qualified" version="1.2" attributeFormDefault="unqualified">
  <xs:import namespace="ms-rtcp-metrics.v2"></xs:import>
  <xs:include schemaLocation="ms-rtcp-metrics.medialine.xsd"></xs:include>
  <!--
    RTPC METRICS STATEMENT
  -->
  <xs:element name="VQReportEvent" type="tns:VQReportEventType"/>
  <!--
    RTPC REPORT TYPE
  -->
  <xs:complexType name="VQReportEventType">
    <xs:choice>
      <xs:element name="VQSessionReport" type="tns:SessionReportType"
maxOccurs="unbounded"/>
      <xs:element name="VQSessionIntervalReport" type="tns:SessionReportType"
maxOccurs="unbounded"/>
      <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded"/>
    </xs:choice>
    <xs:attribute name="Version" type="xs:string" use="optional"/>
    <xs:attribute ref="v2:SchemaVersion" use="optional"/>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
  </xs:complexType>
  <!--
    VQ SESSION REPORT TYPE
  -->
  <xs:complexType name="SessionReportType">
    <xs:sequence>
      <xs:element name="LocationProfile" type="xs:string" minOccurs="0"/>
      <xs:element name="Pool" type="xs:string" minOccurs="0"/>
      <xs:element name="Endpoint" type="tns:EndpointType"/>
      <xs:element name="DialogInfo" type="tns:DialogInfoType"/>
      <xs:element name="MediaLine" type="tns:MediaLineType" maxOccurs="unbounded"/>
      <xs:element ref="v2:OpaqueClientPlatformData" minOccurs="0" />
      <xs:element ref="v2:OpaqueServerPlatformData" minOccurs="0" />
      <xs:element ref="v2:OpaqueConferenceData" minOccurs="0" />
      <xs:sequence minOccurs="0">
        <xs:element ref="v2:Separator" />
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:sequence>
    <xs:attribute name="SessionId" type="xs:string" use="required"/>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
    <!--SessionId = DialogID -->
  </xs:complexType>
  <!--
    DIALOG INFO TYPE
  -->
  <xs:complexType name="DialogInfoType">
    <xs:sequence>
      <xs:element name="DialogCategory" type="tns:DialogCategoryType" minOccurs="0"/>
      <xs:element name="CorrelationID" type="xs:string" minOccurs="0"/>
      <xs:element name="FromURI" type="xs:anyURI"/>
      <xs:element name="ToURI" type="xs:anyURI"/>
      <xs:element name="Caller" type="xs:boolean"/>
      <xs:element name="LocalContactURI" type="xs:anyURI"/>
      <xs:element name="RemoteContactURI" type="xs:anyURI"/>
      <xs:element name="LocalUserAgent" type="xs:string"/>
      <xs:element name="RemoteUserAgent" type="xs:string"/>
      <!-- PAI = P-Asserted-Identity -->
      <xs:element name="LocalPAI" type="xs:anyURI" minOccurs="0"/>
      <xs:element name="RemotePAI" type="xs:anyURI" minOccurs="0"/>
      <xs:element name="ConfURI" type="xs:anyURI" minOccurs="0"/>
      <xs:element ref="v2:CallPriority" minOccurs="0"/>
      <xs:element ref="v2:MediationServerBypassFlag" minOccurs="0"/>
      <xs:element ref="v2:TrunkingPeer" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>

```



```

<xs:element ref="v2:MediaBypassWarningFlag" minOccurs="0"/>
<xs:sequence minOccurs="0">
  <xs:element ref="v2:Separator" />
  <xs:element ref="v2:RegisteredInside" minOccurs="0"/>
  <xs:sequence minOccurs="0">
    <xs:element ref="v2:Separator" />
    <xs:any namespace="##other" processContents="lax"
      minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:sequence>
</xs:sequence>
<xs:attribute name="CallId" type="xs:string" use="required"/>
<xs:attribute name="FromTag" type="xs:string" use="required"/>
<xs:attribute name="ToTag" type="xs:string" use="required"/>
<xs:attribute name="Start" type="xs:dateTime" use="required"/>
<xs:attribute name="End" type="xs:dateTime" use="required"/>
<xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>

<!--
  DIALOG CATEGORY
-->
<xs:simpleType name="DialogCategoryType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="OCS"/>
    <xs:enumeration value="TRUNK"/>
  </xs:restriction>
</xs:simpleType>
</xs:schema>

```

The schema for **ms-rtcp-metrics.medialine.xsd** is as follows:

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:tns="ms-rtcp-metrics" xmlns:v2="ms-rtcp-metrics.v2"
  xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="ms-rtcp-metrics"
  elementFormDefault="qualified" version="2.0" attributeFormDefault="unqualified">
  <xs:import namespace="ms-rtcp-metrics.v2"/></xs:import>
  <!--
    MEDIA LINE REPORT TYPE
  -->
  <xs:complexType name="MediaLineType">
    <xs:sequence>
      <xs:element name="Description" type="tns:MediaLineDescriptionType"/>
      <xs:element name="InboundStream" type="tns:StreamType" minOccurs="0"/>
      <xs:element name="OutboundStream" type="tns:StreamType" minOccurs="0"/>
      <xs:element name="LocalConversationalMOS" type="xs:float" minOccurs="0"/>
      <xs:element name="RemoteConversationalMOS" type="xs:float" minOccurs="0"/>
      <xs:element name="LocalConversationalMOSAlg" type="xs:string" minOccurs="0"/>
      <xs:element name="RemoteConversationalMOSAlg" type="xs:string" minOccurs="0"/>
      <xs:element ref="v2:AppliedBandwidthLimit" minOccurs="0" />
      <xs:element ref="v2:AppliedBandwidthSource" minOccurs="0" />
      <xs:element ref="v2:LocalClientEvent" minOccurs="0"/>
      <xs:element ref="v2:RemoteClientEvent" minOccurs="0"/>
      <xs:element ref="v2:OpaqueCoreEndpointData" minOccurs="0" />
      <xs:element ref="v2:OpaqueChannelData" minOccurs="0" />
      <xs:sequence minOccurs="0">
        <xs:element ref="v2:Separator" />
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
          maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:sequence>
  </xs:complexType>
  <!-- Label values : "main-audio", "main-video", "panoramic-video" -->
  <xs:attribute name="Label" type="xs:string" use="required"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  MEDIA LINE TYPE
-->

```

```

-->
<xs:complexType name="MediaLineDescriptionType">
  <xs:sequence>
    <xs:element name="Connectivity" type="tns:ConnectivityType" minOccurs="0"/>
    <!-- Security values : "None", "SRTP","V1" -->
    <xs:element name="Security" type="xs:string" minOccurs="0"/>
    <xs:element name="Offerer" type="xs:boolean" minOccurs="0"/>
    <xs:element name="Transport" type="tns:TransportType" minOccurs="0"/>
    <xs:element name="NetworkConnectivityInfo" type="tns:NetworkConnectivityInfoType"
minOccurs="0"/>
    <xs:element name="LocalAddr" type="tns:AddrType"/>
    <xs:element name="RemoteAddr" type="tns:AddrType"/>
    <!-- Microphone or USB Phone or Camera device name -->
    <xs:element name="CaptureDev" type="tns:DeviceType" minOccurs="0"/>
    <!-- Speakers or USB Phone device name -->
    <xs:element name="RenderDev" type="tns:DeviceType" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
Device TYPE
-->
<xs:complexType name="DeviceType">
  <xs:sequence>
    <xs:element name="Name" type="xs:string" minOccurs="0"/>
    <xs:element name="Driver" type="xs:string" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
STREAM DIRECTIONAL METRICS TYPE
-->
<xs:complexType name="StreamType">
  <xs:sequence>
    <xs:element name="Network" type="tns:NetworkMetricsType" minOccurs="0"/>
    <xs:element name="Payload" type="tns:PayloadMetricsType"/>
    <xs:element name="QualityEstimates" type="tns:QualityEstimatesType" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:attribute name="Id" type="xs:unsignedInt" use="required"/>
  <xs:attribute name="Start" type="xs:dateTime"/>
  <xs:attribute name="End" type="xs:dateTime"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
  <!--Id = SSRC -->
</xs:complexType>

<xs:complexType name="NetworkMetricsType">
  <xs:sequence>
    <!-- DiffServ CodePoint -->
    <xs:element name="DSCP" type="xs:byte" minOccurs="0"/>
    <!-- VLAN is described via 12 bits -->
    <xs:element name="VLAN" type="xs:int" minOccurs="0"/>
    <xs:element name="Jitter" type="tns:JitterType" minOccurs="0"/>
    <xs:element name="PacketLoss" type="tns:PacketLossType" minOccurs="0"/>
    <xs:element name="BurstGapLoss" type="tns:BurstGapLossType" minOccurs="0"/>
    <xs:element name="Delay" type="tns:DelayType" minOccurs="0"/>
    <xs:element name="Utilization" type="tns:NetworkUtilizationType" minOccurs="0"/>
    <xs:element ref="v2:RatioConcealedSamplesAvg" minOccurs="0"/>
    <xs:element ref="v2:RatioStretchedSamplesAvg" minOccurs="0"/>
    <xs:element ref="v2:RatioCompressedSamplesAvg" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
</xs:complexType>

```

```

        </xs:sequence>
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    ICE TYPE
-->
<xs:complexType name="ConnectivityType">
    <xs:sequence>
        <xs:element name="Ice" type="tns:IceStatusType" minOccurs="0"/>
        <xs:element name="IceWarningFlags" type="xs:unsignedInt" minOccurs="0"/>
        <xs:element name="RelayAddress" type="tns:AddrType" minOccurs="0"
maxOccurs="unbounded"/>
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    ICE CONNECTIVITY TYPE
-->
<xs:simpleType name="IceStatusType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="FAILED"/>
        <xs:enumeration value="DIRECT"/>
        <xs:enumeration value="RELAY"/>
        <xs:enumeration value="HTTP-PROXY"/>
    </xs:restriction>
</xs:simpleType>
<!--
    NETWORK UTILIZATION TYPE
-->
<xs:complexType name="NetworkUtilizationType">
    <xs:sequence>
        <xs:element name="Packets" type="xs:int" minOccurs="0"/>
        <xs:element name="BandwidthEst" type="xs:int" minOccurs="0"/>
        <xs:element name="BandwidthAlloc" type="xs:int" minOccurs="0"/>
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    PAYLOAD METRICS TYPE
-->
<xs:complexType name="PayloadMetricsType">
    <xs:choice>
        <xs:element name="Audio" type="tns:AudioPayloadMetricsType"/>
        <xs:element name="Video" type="tns:VideoPayloadMetricsType"/>
        <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded"/>
    </xs:choice>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    AUDIO METRICS TYPE
-->
<xs:complexType name="AudioPayloadMetricsType">
    <xs:sequence>
        <xs:element name="PayloadType" type="xs:int" minOccurs="0"/>
        <xs:element name="PayloadDescription" type="xs:string" minOccurs="0"/>
        <xs:element name="SampleRate" type="xs:int" minOccurs="0"/>
        <xs:element name="FrameDuration" type="xs:int" minOccurs="0"/>
        <xs:element name="FrameOctets" type="xs:int" minOccurs="0"/>
        <xs:element name="FramesPerPacket" type="xs:int" minOccurs="0"/>
        <xs:element name="PacketsPerSecond" type="xs:int" minOccurs="0"/>
        <xs:element name="FMTP" type="xs:string" minOccurs="0"/>
        <xs:element name="Signal" type="tns:SignalType" minOccurs="0"/>
        <xs:element name="JitterBuffer" type="tns:JitterBufferType" minOccurs="0"/>

```

```

        <xs:element name="SilenceSupress" type="tns:SilenceSuppressionStateType"
minOccurs="0"/>
        <xs:element ref="v2:AudioFECUsed" minOccurs="0"/>
        <!--OpaqueAudioData will be removed once everyone move to OpaqueChannelData-->
        <xs:element ref="v2:OpaqueAudioData" minOccurs="0" />
        <xs:sequence minOccurs="0">
            <xs:element ref="v2:Separator" />
            <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:sequence>
</xs:complexType>
<!--
    VIDEO METRICS TYPE
-->
<xs:complexType name="VideoPayloadMetricsType">
    <xs:sequence>
        <xs:element name="PayloadType" type="xs:int" minOccurs="0"/>
        <xs:element name="PayloadDescription" type="xs:string" minOccurs="0"/>
        <xs:element name="Resolution" type="xs:string" minOccurs="0"/>
        <xs:element name="VideoBitRateAvg" type="xs:int" minOccurs="0"/>
        <xs:element name="VideoBitRateMax" type="xs:int" minOccurs="0"/>
        <xs:element name="VideoFrameRateAvg" type="xs:float" minOccurs="0"/>
        <xs:element name="VideoPacketLossRate" type="xs:float" minOccurs="0"/>
        <xs:element name="VideoFrameLossRate" type="xs:float" minOccurs="0"/>
        <xs:element name="VideoFrameEncodingTime" type="xs:float" minOccurs="0"/>
        <xs:element name="VideoFrameDecodingTime" type="xs:float" minOccurs="0"/>
        <xs:element name="VideoFEC" type="xs:boolean" minOccurs="0"/>
        <xs:element name="FrozenVideoFreq" type="xs:float" minOccurs="0"/>
        <xs:element name="FrozenPeriodPercentAvg" type="xs:float" minOccurs="0"/>
        <xs:element name="ConsecutivePacketLossAvg" type="xs:float" minOccurs="0"/>
        <xs:element name="RateMatchLevel" type="xs:float" minOccurs="0"/>
        <xs:element ref="v2:VideoAllocateBWAvg" minOccurs="0"/>
        <xs:element ref="v2:VideoLocalFrameLossPercentageAvg" minOccurs="0"/>
        <xs:sequence minOccurs="0">
            <xs:element ref="v2:Separator" />
            <xs:element ref="v2:VideoResolutionDistribution" minOccurs="0" />
            <xs:element ref="v2:VideoRateMatchingLevelDistribution" minOccurs="0" />
            <xs:sequence minOccurs="0">
                <xs:element ref="v2:Separator" />
                <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
            </xs:sequence>
        </xs:sequence>
    </xs:sequence>
</xs:complexType>
<!--
    SILENCE SUPPRESSION STATE TYPE
-->
<xs:simpleType name="SilenceSuppressionStateType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="ON"/>
        <xs:enumeration value="OFF"/>
    </xs:restriction>
</xs:simpleType>
<!--
    ADDR TYPE
-->
<xs:complexType name="AddrType">
    <xs:sequence>
        <xs:element name="IPAddr" type="xs:string"/>
        <xs:element name="Port" type="xs:unsignedShort" minOccurs="0"/>
        <xs:element name="Inside" type="xs:boolean" minOccurs="0"/>
        <xs:element name="SubnetMask" type="xs:string" minOccurs="0"/>
        <xs:element ref="v2:MACAddr" minOccurs="0"></xs:element>
        <xs:sequence minOccurs="0">
            <xs:element ref="v2:Separator"></xs:element>
            <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:sequence>
</xs:complexType>

```

```

        </xs:sequence>
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    JITTER BUFFER TYPE
-->
<xs:complexType name="JitterBufferType">
    <xs:sequence>
        <xs:element name="Type" type="tns:JitterBufferAdaptiveType" minOccurs="0"/>
        <xs:element name="Rate" type="xs:int" minOccurs="0"/>
        <xs:element name="Nominal" type="xs:int" minOccurs="0"/>
        <xs:element name="Max" type="xs:int" minOccurs="0"/>
        <xs:element name="AbsMax" type="xs:int" minOccurs="0"/>
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    JITTER BUFFER ADAPTIVE TYPE
-->
<xs:simpleType name="JitterBufferAdaptiveType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="UNKNOWN"/>
        <xs:enumeration value="RESERVED"/>
        <xs:enumeration value="NON-ADAPTIVE"/>
        <xs:enumeration value="ADAPTIVE"/>
    </xs:restriction>
</xs:simpleType>
<!--
    PACKET LOSS TYPE
-->
<xs:complexType name="PacketLossType">
    <xs:sequence>
        <xs:element name="LossRate" type="xs:float" minOccurs="0"/>
        <xs:element name="LossRateMax" type="xs:float" minOccurs="0"/>
        <xs:element name="DiscardRate" type="xs:float" minOccurs="0"/>
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    BURST GAP LOSS TYPE
-->
<xs:complexType name="BurstGapLossType">
    <xs:sequence>
        <xs:element name="BurstDensity" type="xs:float" minOccurs="0"/>
        <xs:element name="BurstDuration" type="xs:int" minOccurs="0"/>
        <xs:element name="GapDensity" type="xs:float" minOccurs="0"/>
        <xs:element name="GapDuration" type="xs:int" minOccurs="0"/>
        <xs:element name="MinGapThreshold" type="xs:int" minOccurs="0"/>
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    DELAY TYPE
-->
<xs:complexType name="DelayType">
    <xs:sequence>
        <xs:element name="RoundTrip" type="xs:int" minOccurs="0"/>
        <xs:element name="RoundTripMax" type="xs:int" minOccurs="0"/>
        <xs:element name="EndSystem" type="xs:int" minOccurs="0"/>
        <xs:element name="OneWay" type="xs:int" minOccurs="0"/>
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>

```

```

    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    JITTER TYPE
-->
<xs:complexType name="JitterType">
  <xs:sequence>
    <xs:element name="InterArrival" type="xs:int" minOccurs="0"/>
    <xs:element name="InterArrivalMax" type="xs:int" minOccurs="0"/>
    <xs:element name="MeanAbs" type="xs:int" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    SIGNAL TYPE
-->
<xs:complexType name="SignalType">
  <xs:sequence>
    <xs:element name="SignalLevel" type="xs:int" minOccurs="0" />
    <xs:element name="NoiseLevel" type="xs:int" minOccurs="0" />
    <xs:element name="EchoReturn" type="xs:int" minOccurs="0" />
    <xs:element name="SpeakerFeedbackMicIn" type="xs:int" minOccurs="0"/>
    <xs:element name="SpeechLevelMicIn" type="xs:int" minOccurs="0"/>
    <xs:element name="SpeechLevelPostProcess" type="xs:int" minOccurs="0"/>
    <xs:element name="SignalLevelLoudSpeaker" type="xs:int" minOccurs="0"/>
    <xs:element name="BackGroundNoiseMicIn" type="xs:int" minOccurs="0"/>
    <xs:element name="BackGroundNoiseSent" type="xs:int" minOccurs="0"/>
    <xs:element name="LocalSpeechToEcho" type="xs:int" minOccurs="0"/>
    <xs:element name="SpeakerGlitchRate" type="xs:int" minOccurs="0"/>
    <xs:element name="MicGlitchRate" type="xs:int" minOccurs="0"/>
    <xs:element name="SpeakerClipRate" type="xs:int" minOccurs="0"/>
    <xs:element name="MicClipRate" type="xs:int" minOccurs="0"/>
    <xs:element name="RxAGCSignalLevel" type="xs:int" minOccurs="0"/>
    <xs:element name="RxAGCNoiseLevel" type="xs:int" minOccurs="0"/>
    <xs:element ref="v2:InitialSignalLevelRMS" minOccurs="0"/>
    <xs:element ref="v2:AudioTimestampDriftRateMic" minOccurs="0"/>
    <xs:element ref="v2:AudioTimestampDriftRateSpk" minOccurs="0"/>
    <xs:element ref="v2:AudioTimestampErrorMicMs" minOccurs="0"/>
    <xs:element ref="v2:AudioTimestampErrorSpkMs" minOccurs="0"/>
    <xs:element ref="v2:VsEntryCauses" minOccurs="0"/>
    <xs:element ref="v2:EchoEventCauses" minOccurs="0"/>
    <xs:element ref="v2:EchoPercentMicIn" minOccurs="0"/>
    <xs:element ref="v2:EchoPercentSend" minOccurs="0"/>
    <xs:element ref="v2:RxAvgAGCGain" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator"></xs:element>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    QUALITY ESTIMATES TYPE
-->
<xs:complexType name="QualityEstimatesType">
  <xs:choice>
    <xs:element name="Audio" type="tns:AudioQualityEstimatesType"/>
    <xs:element name="Video" type="tns:VideoQualityEstimatesType"/>
    <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded"/>
  </xs:choice>
</xs:complexType>
<!--
    AUDIO QUALITY ESTIMATES TYPE
-->
<xs:complexType name="AudioQualityEstimatesType">

```

```

    <xs:sequence>
      <xs:element name="RecvListenMOS" type="xs:float" minOccurs="0"/>
      <xs:element name="RecvListenMOSMin" type="xs:float" minOccurs="0"/>
      <xs:element name="RecvListenMOSAlg" type="xs:string" minOccurs="0"/>
      <xs:element name="SendListenMOS" type="xs:float" minOccurs="0"/>
      <xs:element name="SendListenMOSMin" type="xs:float" minOccurs="0"/>
      <xs:element name="SendListenMOSAlg" type="xs:string" minOccurs="0"/>
      <xs:element name="NetworkMOS" type="tns:NetworkAudioMOSType" minOccurs="0"/>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
  </xs:complexType>
  <!--
    NETWORK AUDIO MOS FACTOR TYPE
  -->
  <xs:complexType name="NetworkAudioMOSType">
    <xs:sequence>
      <xs:element name="OverallAvg" type="xs:float" minOccurs="0"/>
      <xs:element name="OverallMin" type="xs:float" minOccurs="0"/>
      <xs:element name="DegradationAvg" type="xs:float" minOccurs="0"/>
      <xs:element name="DegradationMax" type="xs:float" minOccurs="0"/>
      <xs:element name="DegradationJitterAvg" type="xs:float" minOccurs="0"/>
      <xs:element name="DegradationPacketLossAvg" type="xs:float" minOccurs="0"/>
      <xs:element ref="v2:NetworkMOSAlg" minOccurs="0"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v2:Separator" />
      </xs:sequence>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
  <!--
    VIDEO QUALITY ESTIMATES TYPE
  -->
  <xs:complexType name="VideoQualityEstimatesType">
    <xs:sequence>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
  </xs:complexType>
  <!--
    TRANSPORT TYPE
  -->
  <xs:simpleType name="TransportType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="UDP"/>
      <xs:enumeration value="TCP"/>
    </xs:restriction>
  </xs:simpleType>

  <!--
    NETWORK CONNECTIVITY TYPE
  -->
  <xs:complexType name="NetworkConnectivityInfoType">
    <xs:sequence>
      <xs:element name="NetworkConnection" type="tns:NetworkConnectionType"
minOccurs="0"/>
      <xs:element name="VPN" type="xs:boolean" minOccurs="0"/>
      <xs:element name="LinkSpeed" type="xs:float" minOccurs="0"/>
      <xs:element ref="v2:BSSID" minOccurs="0"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v2:Separator"/>
      </xs:sequence>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>

```

```

    <xs:anyAttribute namespace="##other" processContents="lax"/>
  </xs:complexType>

  <!--
    ETHERNET CONNECTION TYPE
  -->
  <xs:simpleType name="NetworkConnectionType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="wired"/>
      <xs:enumeration value="wifi"/>
    </xs:restriction>
  </xs:simpleType>

  <!--
    ENDPOINT TYPE
  -->
  <xs:complexType name="EndpointType">
    <xs:sequence>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:attribute name="Name" type="xs:string" use="required"/>
    <xs:attribute name="ProfileId" type="xs:string" use="optional"/>
    <xs:attribute ref="v2:OS" use="optional"/>
    <xs:attribute ref="v2:CPUName" use="optional"/>
    <xs:attribute ref="v2:CPUNumberOfCores" use="optional"/>
    <xs:attribute ref="v2:CPUProcessorSpeed" use="optional"/>
    <xs:attribute ref="v2:VirtualizationFlag" use="optional"/>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
    <!-- Name = Computer Name-->
    <!-- ProfileId = Endpoint Report GUID - Note: this attribute is optional-->
  </xs:complexType>
</xs:schema>

```

The schema for **ms-rtcp-metrics.v2.xsd** is as follows:

```

<?xml version="1.0" encoding="UTF-8"?>
  <xs:schema xmlns:tns="ms-rtcp-metrics.v2" xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="ms-rtcp-metrics.v2" elementFormDefault="qualified" version="1.2"
attributeFormDefault="unqualified">

    <!--Schema version-->
    <xs:attribute name="SchemaVersion" type="xs:string"/>

    <!--The following are part of dialog info-->

    <xs:element name="CallPriority" type="xs:short"/>
    <xs:element name="MediationServerBypassFlag" type="xs:boolean"/>
    <xs:element name="TrunkingPeer" type="xs:string"/>
    <xs:element name="BSSID" type="xs:string"/>
    <xs:element name="MediaBypassWarningFlag" type="xs:int"/>
    <xs:element name="RegisteredInside" type="xs:boolean"/>

    <!--The following are media metrics-->

    <xs:element name="AppliedBandwidthLimit" type="xs:int"/>
    <xs:element name="AppliedBandwidthSource" type="xs:string"/>
    <xs:element name="InitialSignalLevelRMS" type="xs:float"/>
    <xs:element name="AudioFECUsed" type="xs:boolean"/>
    <xs:element name="VideoAllocateBWAvg" type="xs:int"/>
    <xs:element name="VideoLocalFrameLossPercentageAvg" type="xs:float"/>

    <!--The following are AEC metrics-->
    <xs:element name="AudioTimestampDriftRateMic" type="xs:float"/>
    <xs:element name="AudioTimestampDriftRateSpk" type="xs:float"/>
    <xs:element name="AudioTimestampErrorMicMs" type="xs:float"/>

```



```

<xs:element name="AudioTimestampErrorSpkMs" type="xs:float"/>
<xs:element name="VsEntryCauses" type="xs:unsignedByte"/>
<xs:element name="EchoEventCauses" type="xs:unsignedByte"/>
<xs:element name="EchoPercentMicIn" type="xs:float"/>
<xs:element name="EchoPercentSend" type="xs:float"/>
<xs:element name="RxAvgAGCGain" type="xs:int"/>

<!--The following are healer metrics-->
<xs:element name="RatioConcealedSamplesAvg" type="xs:float"/>
<xs:element name="RatioStretchedSamplesAvg" type="xs:float"/>
<xs:element name="RatioCompressedSamplesAvg" type="xs:float"/>

<!--The following are Network MOS related-->
<xs:element name="NetworkMOSAlg" type="xs:string"/>

<!--The following are endpoint information-->
<xs:attribute name="OS" type="xs:string"/>
<!--
Bit flag indicate if the system is running in a virtualized environment:
0x00: None
0x01: HyperV
0x02: VMWare
0x04: Virtual PC
0x08: Xen PC
-->
<xs:attribute name="VirtualizationFlag" type="xs:byte"/>
<xs:attribute name="CPUNumberOfCores" type="xs:short"/>
<xs:attribute name="CPUProcessorSpeed" type="xs:int"/>
<xs:attribute name="CPUName" type="xs:string"/>
<xs:element name="MACAddr" type="xs:string"/>

<!--The following are client event count-->
<xs:element name="LocalClientEvent" type="tns:ClientEventType"/>
<xs:element name="RemoteClientEvent" type="tns:ClientEventType"/>
<xs:complexType name="ClientEventType">
  <xs:sequence>
    <xs:element name="NetworkSendQualityEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="NetworkReceiveQualityEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="NetworkDelayEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="NetworkBandwidthLowEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="CPUInsufficientEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceHalfDuplexAECEEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceRenderNotFunctioningEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceCaptureNotFunctioningEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceGlitchesEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceLowSNREventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceLowSpeechLevelEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceClippingEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceEchoEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceNearEndToEchoRatioEventRatio"
      type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceMultipleEndpointsEventCount"
      type="xs:short" minOccurs="0"/>
    <xs:element name="DeviceHowlingEventCount"
      type="xs:short" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="tns:Separator"/>
    </xs:sequence>
  </xs:sequence>
</xs:complexType>

```

```

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

<xs:element name="VideoResolutionDistribution"
    type="tns:VideoResolutionDistributionType"/>

<xs:complexType name="VideoResolutionDistributionType">
    <xs:sequence>
        <xs:element name="CIFQuality" type="xs:unsignedByte" />
        <xs:element name="VGAQuality" type="xs:unsignedByte" />
        <xs:element name="HD720Quality" type="xs:unsignedByte" />
        <xs:sequence minOccurs="0">
            <xs:element ref="tns:Separator"/>
            <xs:any namespace="##any" processContents="lax" minOccurs="0"
                maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:sequence>
</xs:complexType>
<xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<xs:element name="VideoRateMatchingLevelDistribution"
    type="tns:VideoRateMatchingLevelDistributionType"/>

<xs:complexType name="VideoRateMatchingLevelDistributionType">
    <xs:sequence>
        <xs:element name="None_Drop" type="xs:unsignedByte" />
        <xs:element name="B Drop" type="xs:unsignedByte" />
        <xs:element name="BP Drop" type="xs:unsignedByte" />
        <xs:element name="BPSP Drop" type="xs:unsignedByte" />
        <xs:element name="BPSP_I Drop" type="xs:unsignedByte" />
        <xs:sequence minOccurs="0">
            <xs:element ref="tns:Separator"/>
            <xs:any namespace="##any" processContents="lax" minOccurs="0"
                maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:sequence>
</xs:complexType>
<xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<xs:element name="OpaqueClientPlatformData"
    type="tns:OpaqueClientPlatformDataType" />
<xs:element name="OpaqueServerPlatformData"
    type="tns:OpaqueServerPlatformDataType" />
<xs:element name="OpaqueCoreEndpointData"
    type="tns:OpaqueCoreEndpointDataType" />
<xs:element name="OpaqueConferenceData"
    type="tns:OpaqueConferenceDataType" />
<xs:element name="OpaqueChannelData" type="tns:OpaqueChannelDataType" />

<xs:element name="OpaqueAudioData" type="v2:OpaqueAudioDataType" />

<!--OPAQUE MEDIALINE DATA TYPE-->
<xs:complexType name="OpaqueCoreEndpointDataType">
    <xs:sequence>
        <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
</xs:complexType>
<xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>

<!--OPAQUE CHANNEL DATA TYPE-->
<xs:complexType name="OpaqueChannelDataType" >
    <xs:sequence>
        <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
</xs:complexType>
<xs:anyAttribute namespace="##any" processContents="lax" />

```

```

</xs:complexType>

<!--OPAQUE CLIENT PLATFORM DATA TYPE-->
<xs:complexType name="OpaqueClientPlatformDataType">
  <xs:sequence>
    <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>

<!--OPAQUE SERVER PLATFORM DATA TYPE-->
<xs:complexType name="OpaqueServerPlatformDataType">
  <xs:sequence>
    <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>

<!--OPAQUE CONFERENCE DATA TYPE-->
<xs:complexType name="OpaqueConferenceDataType">
  <xs:sequence>
    <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>

<!--OPAQUE AUDIO DATA TYPE (this should be removed once nobody refer to it)-->
<xs:complexType name="OpaqueAudioDataType">
  <xs:sequence>
    <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>

<!--Separator is used for forward/backward compatibility-->
<xs:element name="Separator">
  <xs:complexType></xs:complexType>
</xs:element>
</xs:schema>

```

6.4 Microsoft Lync Server 2013 Schema

This section follows the product behavior described in footnote [<317>](#). The schema has been split into four related schema definition files:

- ms-rtcp-metrics.xsd
- ms-rtcp-metrics.medialine.xsd
- ms-rtcp-metrics.v2.xsd
- ms-rtcp-metrics.v3.xsd

The schema for **ms-rtcp-metrics.xsd** is as follows:

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:tns="ms-rtcp-metrics" xmlns:v2="ms-rtcp-metrics.v2" xmlns:v3="ms-rtcp-
metrics.v3" xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="ms-rtcp-metrics"
elementFormDefault="qualified" version="1.2" attributeFormDefault="unqualified">
  <xs:import namespace="ms-rtcp-metrics.v2"></xs:import>
  <xs:import namespace="ms-rtcp-metrics.v3"></xs:import>
  <xs:include schemaLocation="ms-rtcp-metrics.medialine.xsd"></xs:include>
  <!--
    RTCP METRICS STATEMENT
  -->

```

```

<xs:element name="VQReportEvent" type="tns:VQReportEventType"/>
<!--
  RTPC REPORT TYPE
-->
<xs:complexType name="VQReportEventType">
  <xs:choice>
    <xs:element name="VQSessionReport" type="tns:SessionReportType" maxOccurs="unbounded"/>
    <xs:element name="VQSessionIntervalReport" type="tns:SessionReportType"
maxOccurs="unbounded"/>
    <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded"/>
  </xs:choice>
  <xs:attribute name="Version" type="xs:string" use="optional"/>
  <xs:attribute ref="v2:SchemaVersion" use="optional"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  VQ SESSION REPORT TYPE
-->
<xs:complexType name="SessionReportType">
  <xs:sequence>
    <xs:element name="LocationProfile" type="xs:string" minOccurs="0"/>
    <xs:element name="Pool" type="xs:string" minOccurs="0"/>
    <xs:element name="Endpoint" type="tns:EndpointType"/>
    <xs:element name="DialogInfo" type="tns:DialogInfoType"/>
    <xs:element name="MediaLine" type="tns:MediaLineType" maxOccurs="unbounded"/>
    <xs:element ref="v2:OpaqueClientPlatformData" minOccurs="0" />
    <xs:element ref="v2:OpaqueServerPlatformData" minOccurs="0" />
    <xs:element ref="v2:OpaqueConferenceData" minOccurs="0" />
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:attribute name="SessionId" type="xs:string" use="required"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
  <!-- SessionId = DialogID -->
</xs:complexType>
<!--
  DIALOG INFO TYPE
-->
<xs:complexType name="DialogInfoType">
  <xs:sequence>
    <xs:element name="DialogCategory" type="tns:DialogCategoryType" minOccurs="0"/>
    <xs:element name="CorrelationID" type="xs:string" minOccurs="0"/>
    <xs:element name="FromURI" type="xs:anyURI"/>
    <xs:element name="ToURI" type="xs:anyURI"/>
    <xs:element name="Caller" type="xs:boolean"/>
    <xs:element name="LocalContactURI" type="xs:anyURI"/>
    <xs:element name="RemoteContactURI" type="xs:anyURI"/>
    <xs:element name="LocalUserAgent" type="xs:string"/>
    <xs:element name="RemoteUserAgent" type="xs:string"/>
    <!-- PAI = P-Asserted-Identity -->
    <xs:element name="LocalPAI" type="xs:anyURI" minOccurs="0"/>
    <xs:element name="RemotePAI" type="xs:anyURI" minOccurs="0"/>
    <xs:element name="ConfURI" type="xs:anyURI" minOccurs="0"/>
    <xs:element ref="v2:CallPriority" minOccurs="0"/>
    <xs:element ref="v2:MediationServerBypassFlag" minOccurs="0"/>
    <xs:element ref="v2:TrunkingPeer" minOccurs="0"/>
    <xs:element ref="v2:MediaBypassWarningFlag" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:element ref="v2:RegisteredInside" minOccurs="0"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v2:Separator" />
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:sequence>
  </xs:sequence>
</xs:complexType>

```

```

    </xs:sequence>
    <xs:attribute name="CallId" type="xs:string" use="required"/>
    <xs:attribute name="FromTag" type="xs:string" use="required"/>
    <xs:attribute name="ToTag" type="xs:string" use="required"/>
    <xs:attribute name="Start" type="xs:dateTime" use="required"/>
    <xs:attribute name="End" type="xs:dateTime" use="required"/>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
  </xs:complexType>

<!--
  DIALOG CATEGORY
-->
<xs:simpleType name="DialogCategoryType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="OCS"/>
    <xs:enumeration value="TRUNK"/>
  </xs:restriction>
</xs:simpleType>
</xs:schema>

```

The schema for **ms-rtcp-metrics.medialine.xsd** is as follows:

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:tns="ms-rtcp-metrics" xmlns:v2="ms-rtcp-metrics.v2" xmlns:v3="ms-rtcp-
metrics.v3" xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="ms-rtcp-metrics"
elementFormDefault="qualified" version="2.0" attributeFormDefault="unqualified">
  <xs:import namespace="ms-rtcp-metrics.v2"></xs:import>
  <xs:import namespace="ms-rtcp-metrics.v3"></xs:import>
  <!--
    MEDIA LINE REPORT TYPE
  -->
  <xs:complexType name="MediaLineType">
    <xs:sequence>
      <xs:element name="Description" type="tns:MediaLineDescriptionType"/>
      <xs:element name="InboundStream" type="tns:StreamType" minOccurs="0"/>
      <xs:element name="OutboundStream" type="tns:StreamType" minOccurs="0"/>
      <xs:element name="LocalConversationalMOS" type="xs:float" minOccurs="0"/>
      <xs:element name="RemoteConversationalMOS" type="xs:float" minOccurs="0"/>
      <xs:element name="LocalConversationalMOSAlg" type="xs:string" minOccurs="0"/>
      <xs:element name="RemoteConversationalMOSAlg" type="xs:string" minOccurs="0"/>
      <xs:element ref="v2:AppliedBandwidthLimit" minOccurs="0" />
      <xs:element ref="v2:AppliedBandwidthSource" minOccurs="0" />
      <xs:element ref="v2:LocalClientEvent" minOccurs="0"/>
      <xs:element ref="v2:RemoteClientEvent" minOccurs="0"/>
      <xs:element ref="v2:OpaqueCoreEndpointData" minOccurs="0" />
      <xs:element ref="v2:OpaqueChannelData" minOccurs="0" />
      <xs:sequence minOccurs="0">
        <xs:element ref="v2:Separator" />
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:sequence>
    <!-- Label values : "main-audio", "main-video", "panoramic-video", "data", -->
    <!-- Additional Label values in v3 : "main-video1", "main-video2", "main-video3", "main-
video4", "main-video5", "main-video6", -->
    <xs:attribute name="Label" type="xs:string" use="required"/>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
  </xs:complexType>
  <!--
    MEDIA LINE TYPE
  -->
  <xs:complexType name="MediaLineDescriptionType">
    <xs:sequence>
      <xs:element name="Connectivity" type="tns:ConnectivityType" minOccurs="0"/>
      <!-- Security values : "None", "SRTP", "V1" -->
      <xs:element name="Security" type="xs:string" minOccurs="0"/>
      <xs:element name="Offerer" type="xs:boolean" minOccurs="0"/>

```

```

    <xs:element name="Transport" type="tns:TransportType" minOccurs="0"/>
    <xs:element name="NetworkConnectivityInfo" type="tns:NetworkConnectivityInfoType"
minOccurs="0"/>
    <xs:element name="LocalAddr" type="tns:AddrType"/>
    <xs:element name="RemoteAddr" type="tns:AddrType"/>
    <!-- Microphone or USB Phone or Camera device name -->
    <xs:element name="CaptureDev" type="tns:DeviceType" minOccurs="0"/>
    <!-- Speakers or USB Phone device name -->
    <xs:element name="RenderDev" type="tns:DeviceType" minOccurs="0"/>
    <xs:element ref="v3:ReflexiveLocalIPAddress" minOccurs="0"/>
    <xs:element ref="v3:MidCallReport" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
</xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  Device TYPE
-->
<xs:complexType name="DeviceType">
  <xs:sequence>
    <xs:element name="Name" type="xs:string" minOccurs="0"/>
    <xs:element name="Driver" type="xs:string" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  STREAM DIRECTIONAL METRICS TYPE
-->
<xs:complexType name="StreamType">
  <xs:sequence>
    <xs:element name="Network" type="tns:NetworkMetricsType" minOccurs="0"/>
    <xs:element name="Payload" type="tns:PayloadMetricsType" />
    <xs:element name="QualityEstimates" type="tns:QualityEstimatesType" minOccurs="0"/>
    <!-- Support reporting multiple payloads per stream-->
    <xs:element ref="v3:AdditionalPayload" minOccurs="0" maxOccurs="unbounded"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"></xs:element>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:attribute name="Id" type="xs:unsignedInt" use="required"/>
  <xs:attribute name="Start" type="xs:dateTime"/>
  <xs:attribute name="End" type="xs:dateTime"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
  <!-- Id = SSRC -->
</xs:complexType>

<xs:complexType name="NetworkMetricsType">
  <xs:sequence>
    <!-- DiffServ CodePoint -->
    <xs:element name="DSCP" type="xs:byte" minOccurs="0"/>
    <!-- VLAN is described via 12 bits -->
    <xs:element name="VLAN" type="xs:int" minOccurs="0"/>
    <xs:element name="Jitter" type="tns:JitterType" minOccurs="0"/>
    <xs:element name="PacketLoss" type="tns:PacketLossType" minOccurs="0"/>
    <xs:element name="BurstGapLoss" type="tns:BurstGapLossType" minOccurs="0"/>
    <xs:element name="Delay" type="tns:DelayType" minOccurs="0"/>
    <xs:element name="Utilization" type="tns:NetworkUtilizationType" minOccurs="0"/>
    <xs:element ref="v2:RatioConcealedSamplesAvg" minOccurs="0"/>
    <xs:element ref="v2:RatioStretchedSamplesAvg" minOccurs="0"/>
    <xs:element ref="v2:RatioCompressedSamplesAvg" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />

```

```

    <xs:element ref="v3:ConcealRatioMax" minOccurs="0"/>
    <xs:element ref="v3:ConcealRatioSd" minOccurs="0"/>
    <xs:element ref="v3:HealerPacketDropRatio" minOccurs="0"/>
    <xs:element ref="v3:HealerFECPacketUsedRatio" minOccurs="0"/>
    <xs:element ref="v3:MaxCompressedSamples" minOccurs="0"/>
    <xs:element name="LossCongestionPercent" type="xs:float" minOccurs="0"/>
    <xs:element name="DelayCongestionPercent" type="xs:float" minOccurs="0"/>
    <xs:element name="ContentionDetectedPercent" type="xs:float" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
</xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  ICE TYPE
-->
<xs:complexType name="ConnectivityType">
  <xs:sequence>
    <xs:element name="Ice" type="tns:IceStatusType" minOccurs="0"/>
    <xs:element name="IceWarningFlags" type="xs:unsignedInt" minOccurs="0"/>
    <xs:element name="RelayAddress" type="tns:AddrType" minOccurs="0"
maxOccurs="unbounded"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:attribute ref="v2:RtpLatched" use="optional"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  ICE CONECTIVITY TYPE
-->
<xs:simpleType name="IceStatusType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="FAILED"/>
    <xs:enumeration value="DIRECT"/>
    <xs:enumeration value="RELAY"/>
    <xs:enumeration value="HTTP-PROXY"/>
  </xs:restriction>
</xs:simpleType>
<!--
  NETWORK UTILIZATION TYPE
-->
<xs:complexType name="NetworkUtilizationType">
  <xs:sequence>
    <xs:element name="Packets" type="xs:int" minOccurs="0"/>
    <xs:element name="BandwidthEst" type="xs:int" minOccurs="0"/>
    <xs:element name="BandwidthAlloc" type="xs:int" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  PAYLOAD METRICS TYPE
-->
<xs:complexType name="PayloadMetricsType">
  <xs:choice>
    <xs:element name="Audio" type="tns:AudioPayloadMetricsType"/>
    <xs:element name="Video" type="tns:VideoPayloadMetricsType"/>
    <xs:element name="ApplicationSharing" type="v3:ApplicationSharingPayloadMetricsType" />
    <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded"/>
  </xs:choice>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  AUDIO METRICS TYPE
-->

```

```

<xs:complexType name="AudioPayloadMetricsType">
  <xs:sequence>
    <xs:element name="PayloadType" type="xs:int" minOccurs="0"/>
    <xs:element name="PayloadDescription" type="xs:string" minOccurs="0"/>
    <xs:element name="SampleRate" type="xs:int" minOccurs="0"/>
    <xs:element name="FrameDuration" type="xs:int" minOccurs="0"/>
    <xs:element name="FrameOctets" type="xs:int" minOccurs="0"/>
    <xs:element name="FramesPerPacket" type="xs:int" minOccurs="0"/>
    <xs:element name="PacketsPerSecond" type="xs:int" minOccurs="0"/>
    <!-- <xs:element name="RatioHealedSamplesAvg" type="xs:float" minOccurs="0"/> -->
    <xs:element name="FMTP" type="xs:string" minOccurs="0"/>
    <xs:element name="Signal" type="tns:SignalType" minOccurs="0"/>
    <xs:element name="JitterBuffer" type="tns:JitterBufferType" minOccurs="0"/>
    <xs:element name="SilenceSupress" type="tns:SilenceSuppressionStateType"
minOccurs="0"/>
    <xs:element ref="v2:AudioFECUsed" minOccurs="0"/>
    <!--OpaqueAudioData will be removed once everyone move to OpaqueChannelData-->
    <xs:element ref="v2:OpaqueAudioData" minOccurs="0" />
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:element ref="v3:DecodeStereoPercent" minOccurs="0"/>
      <xs:element ref="v3:AecRenderStereoPercent" minOccurs="0"/>
      <xs:element ref="v3:AudioPostFECPLR" minOccurs="0"/>
      <xs:element ref="v3:EncodeStereoPercent" minOccurs="0"/>
      <xs:element ref="v3:AecCaptureStereoPercent" minOccurs="0"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v3:Separator3" />
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:sequence>
  </xs:sequence>
</xs:complexType>
<!--
  VIDEO METRICS TYPE
-->
<xs:complexType name="VideoPayloadMetricsType">
  <xs:sequence>
    <xs:element name="PayloadType" type="xs:int" minOccurs="0"/>
    <xs:element name="PayloadDescription" type="xs:string" minOccurs="0"/>
    <xs:element name="Resolution" type="xs:string" minOccurs="0"/>
    <xs:element name="VideoBitRateAvg" type="xs:int" minOccurs="0"/>
    <xs:element name="VideoBitRateMax" type="xs:int" minOccurs="0"/>
    <xs:element name="VideoFrameRateAvg" type="xs:float" minOccurs="0"/>
    <xs:element name="VideoPacketLossRate" type="xs:float" minOccurs="0"/>
    <xs:element name="VideoFrameLossRate" type="xs:float" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="VideoFrameEncodingTime" type="xs:float" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="VideoFrameDecodingTime" type="xs:float" minOccurs="0"/>
    <xs:element name="VideoFEC" type="xs:boolean" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="FrozenVideoFreq" type="xs:float" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="FrozenPeriodPercentAvg" type="xs:float" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="ConsecutivePacketLossAvg" type="xs:float" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="RateMatchLevel" type="xs:float" minOccurs="0"/>
    <xs:element ref="v2:VideoAllocateBWAvg" minOccurs="0"/>
    <xs:element ref="v2:VideoLocalFrameLossPercentageAvg" minOccurs="0"/>
    <!--OpaqueVideoData will be removed once everyone move to OpaqueChannelData-->
    <xs:element ref="v2:OpaqueVideoData" minOccurs="0" />
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <!-- The following two metrics should really be labelled v3 -->
      <xs:element ref="v2:VideoResolutionDistribution" minOccurs="0" />
      <xs:element ref="v2:VideoRateMatchingLevelDistribution" minOccurs="0" />
    </xs:sequence minOccurs="0">
  </xs:sequence>

```



```

<!-- New v3 Video Receive Metrics go here -->
<xs:element ref="v2:Separator" />
<xs:element ref="v3:SendCodecTypes" minOccurs="0"/>
<xs:element ref="v3:SendFrameRateAverage" minOccurs="0"/>
<xs:element ref="v3:SendBitRateMaximum" minOccurs="0"/>
<xs:element ref="v3:SendBitRateAverage" minOccurs="0"/>
<xs:element ref="v3:SendVideoStreamsMax" minOccurs="0"/>
<xs:element ref="v3:SendResolutionWidth" minOccurs="0"/>
<xs:element ref="v3:SendResolutionHeight" minOccurs="0"/>

<xs:element ref="v3:RecvCodecTypes" minOccurs="0"/>
<xs:element ref="v3:RecvResolutionWidth" minOccurs="0"/>
<xs:element ref="v3:RecvResolutionHeight" minOccurs="0"/>
<xs:element ref="v3:RecvFrameRateAverage" minOccurs="0"/>
<xs:element ref="v3:RecvBitRateMaximum" minOccurs="0"/>
<xs:element ref="v3:RecvBitRateAverage" minOccurs="0"/>
<xs:element ref="v3:RecvVideoStreamsMax" minOccurs="0"/>
<xs:element ref="v3:RecvVideoStreamsMin" minOccurs="0"/>
<xs:element ref="v3:RecvVideoStreamsMode" minOccurs="0"/>
<xs:element ref="v3:VideoPostFECPLR" minOccurs="0"/>
<xs:element ref="v3:DynamicCapabilityPercent" minOccurs="0"/>
<xs:element ref="v3:ResolutionMin" minOccurs="0"/>
<xs:element ref="v3:LowBitRateCallPercent" minOccurs="0"/>
<xs:element ref="v3:LowFrameRateCallPercent" minOccurs="0"/>
<xs:element ref="v3:LowResolutionCallPercent" minOccurs="0"/>

<!-- Added to support multiple video payloads in single stream-->
<xs:element ref="v3:DurationSeconds" minOccurs="0"/>
<xs:element ref="v3:IsAggregatedData" minOccurs="0"/>
<xs:element ref="v3:UseForCallClassification" minOccurs="0"/>

<xs:sequence minOccurs="0">
  <xs:element ref="v3:Separator3" />
  <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
</xs:sequence>
</xs:sequence>
</xs:sequence>
</xs:sequence>
</xs:complexType>
<!--
  SILENCE SUPPRESSION STATE TYPE
-->
<xs:simpleType name="SilenceSuppressionStateType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="ON"/>
    <xs:enumeration value="OFF"/>
  </xs:restriction>
</xs:simpleType>
<!--
  ADDR TYPE
-->
<xs:complexType name="AddrType">
  <xs:sequence>
    <xs:element name="IPAddr" type="xs:string"/>
    <xs:element name="Port" type="xs:unsignedShort" minOccurs="0"/>
    <xs:element name="Inside" type="xs:boolean" minOccurs="0"/>
    <xs:element name="SubnetMask" type="xs:string" minOccurs="0"/>
    <xs:element ref="v2:MACAddr" minOccurs="0"/></xs:element>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator"/></xs:element>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  JITTER BUFFER TYPE

```

```

-->
<xs:complexType name="JitterBufferType">
  <xs:sequence>
    <xs:element name="Type" type="tns:JitterBufferAdaptiveType" minOccurs="0"/>
    <xs:element name="Rate" type="xs:int" minOccurs="0"/>
    <xs:element name="Nominal" type="xs:int" minOccurs="0"/>
    <xs:element name="Max" type="xs:int" minOccurs="0"/>
    <xs:element name="AbsMax" type="xs:int" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  JITTER BUFFER ADAPTIVE TYPE
-->
<xs:simpleType name="JitterBufferAdaptiveType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="UNKNOWN"/>
    <xs:enumeration value="RESERVED"/>
    <xs:enumeration value="NON-ADAPTIVE"/>
    <xs:enumeration value="ADAPTIVE"/>
  </xs:restriction>
</xs:simpleType>
<!--
  PACKET LOSS TYPE
-->
<xs:complexType name="PacketLossType">
  <xs:sequence>
    <xs:element name="LossRate" type="xs:float" minOccurs="0"/>
    <xs:element name="LossRateMax" type="xs:float" minOccurs="0"/>
    <xs:element name="DiscardRate" type="xs:float" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  BURST GAP LOSS TYPE
-->
<xs:complexType name="BurstGapLossType">
  <xs:sequence>
    <xs:element name="BurstDensity" type="xs:float" minOccurs="0"/>
    <xs:element name="BurstDuration" type="xs:int" minOccurs="0"/>
    <xs:element name="GapDensity" type="xs:float" minOccurs="0"/>
    <xs:element name="GapDuration" type="xs:int" minOccurs="0"/>
    <xs:element name="MinGapThreshold" type="xs:int" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  DELAY TYPE
-->
<xs:complexType name="DelayType">
  <xs:sequence>
    <xs:element name="RoundTrip" type="xs:int" minOccurs="0"/>
    <xs:element name="RoundTripMax" type="xs:int" minOccurs="0"/>
    <xs:element name="EndSystem" type="xs:int" minOccurs="0"/>
    <xs:element name="OneWay" type="xs:int" minOccurs="0"/>
    <xs:element ref="v3:RelativeOneWay" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  JITTER TYPE

```

```

-->
<xs:complexType name="JitterType">
  <xs:sequence>
    <xs:element name="InterArrival" type="xs:int" minOccurs="0"/>
    <xs:element name="InterArrivalMax" type="xs:int" minOccurs="0"/>
    <xs:element name="MeanAbs" type="xs:int" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  SIGNAL TYPE
-->
<xs:complexType name="SignalType">
  <xs:sequence>
    <xs:element name="SignalLevel" type="xs:int" minOccurs="0" />
    <xs:element name="NoiseLevel" type="xs:int" minOccurs="0" />
    <xs:element name="EchoReturn" type="xs:int" minOccurs="0" />
    <!-- <xs:element name="RxAvgGain" type="xs:int" minOccurs="0"/> -->
    <!--This is obsolete in w14-->
    <xs:element name="SpeakerFeedbackMicIn" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="SpeechLevelMicIn" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="SpeechLevelPostProcess" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="SignalLevelLoudSpeaker" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="BackGroundNoiseMicIn" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="BackGroundNoiseSent" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="LocalSpeechToEcho" type="xs:int" minOccurs="0"/>
    <xs:element name="SpeakerGlitchRate" type="xs:int" minOccurs="0"/>
    <xs:element name="MicGlitchRate" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="SpeakerClipRate" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="MicClipRate" type="xs:int" minOccurs="0"/>
    <xs:element name="RxAGCSignalLevel" type="xs:int" minOccurs="0"/>
    <xs:element name="RxAGCNoiseLevel" type="xs:int" minOccurs="0"/>
    <xs:element ref="v2:InitialSignalLevelRMS" minOccurs="0"/></xs:element>
    <xs:element ref="v2:AudioTimestampDriftRateMic" minOccurs="0"/></xs:element>
    <xs:element ref="v2:AudioTimestampDriftRateSpk" minOccurs="0"/></xs:element>
    <xs:element ref="v2:AudioTimestampErrorMicMs" minOccurs="0"/></xs:element>
    <xs:element ref="v2:AudioTimestampErrorSpkMs" minOccurs="0"/></xs:element>
    <xs:element ref="v2:VsEntryCauses" minOccurs="0"/></xs:element>
    <xs:element ref="v2:EchoEventCauses" minOccurs="0"/></xs:element>
    <xs:element ref="v2:EchoPercentMicIn" minOccurs="0"/></xs:element>
    <xs:element ref="v2:EchoPercentSend" minOccurs="0"/></xs:element>
    <xs:element ref="v2:RxAvgAGCGain" minOccurs="0"/></xs:element>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator"/>
      <xs:element ref="v3:RecvSignalLevelCh1" minOccurs="0"/>
      <xs:element ref="v3:RecvSignalLevelCh2" minOccurs="0"/>
      <xs:element ref="v3:RecvNoiseLevelCh1" minOccurs="0"/>
      <xs:element ref="v3:RecvNoiseLevelCh2" minOccurs="0"/>
      <xs:element ref="v3:SendSignalLevelCh1" minOccurs="0"/>
      <xs:element ref="v3:SendSignalLevelCh2" minOccurs="0"/>
      <xs:element ref="v3:SendNoiseLevelCh1" minOccurs="0"/>
      <xs:element ref="v3:SendNoiseLevelCh2" minOccurs="0"/>
    </xs:sequence>
    <xs:element ref="v3:Separator3"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
</xs:sequence>
</xs:complexType>
<xs:anyAttribute namespace="##other" processContents="lax"/>

```

```

</xs:complexType>
<!--
    QUALITY ESTIMATES TYPE
-->
<xs:complexType name="QualityEstimatesType">
  <xs:choice>
    <xs:element name="Audio" type="tns:AudioQualityEstimatesType"/>
    <xs:element name="Video" type="tns:VideoQualityEstimatesType"/>
    <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded"/>
  </xs:choice>
</xs:complexType>
<!--
    AUDIO QUALITY ESTIMATES TYPE
-->
<xs:complexType name="AudioQualityEstimatesType">
  <xs:sequence>
    <xs:element name="RecvListenMOS" type="xs:float" minOccurs="0"/>
    <xs:element name="RecvListenMOSMin" type="xs:float" minOccurs="0"/>
    <xs:element name="RecvListenMOSAlg" type="xs:string" minOccurs="0"/>
    <xs:element name="SendListenMOS" type="xs:float" minOccurs="0"/>
    <xs:element name="SendListenMOSMin" type="xs:float" minOccurs="0"/>
    <xs:element name="SendListenMOSAlg" type="xs:string" minOccurs="0"/>
    <xs:element name="NetworkMOS" type="tns:NetworkAudioMOSType" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    NETWORK AUDIO MOS FACTOR TYPE
-->
<xs:complexType name="NetworkAudioMOSType">
  <xs:sequence>
    <xs:element name="OverallAvg" type="xs:float" minOccurs="0"/>
    <xs:element name="OverallMin" type="xs:float" minOccurs="0"/>
    <xs:element name="DegradationAvg" type="xs:float" minOccurs="0"/>
    <xs:element name="DegradationMax" type="xs:float" minOccurs="0"/>
    <xs:element name="DegradationJitterAvg" type="xs:float" minOccurs="0"/>
    <xs:element name="DegradationPacketLossAvg" type="xs:float" minOccurs="0"/>
    <xs:element ref="v2:NetworkMOSAlg" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    VIDEO QUALITY ESTIMATES TYPE
-->
<xs:complexType name="VideoQualityEstimatesType">
  <xs:sequence>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    TRANSPORT TYPE
-->
<xs:simpleType name="TransportType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="UDP"/>
    <xs:enumeration value="TCP"/>
  </xs:restriction>
</xs:simpleType>

<!--
NETWORK CONNECTIVITY TYPE
-->

```

```

<xs:complexType name="NetworkConnectivityInfoType">
  <xs:sequence>
    <xs:element name="NetworkConnection" type="tns:NetworkConnectionType" minOccurs="0"/>
    <xs:element name="VPN" type="xs:boolean" minOccurs="0"/>
    <xs:element name="LinkSpeed" type="xs:float" minOccurs="0"/>
    <xs:element ref="v2:BSSID" minOccurs="0"/></xs:element>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator"/></xs:element>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>

<!--
  ETHERNET CONNECTION TYPE
-->
<xs:simpleType name="NetworkConnectionType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="wired"/>
    <xs:enumeration value="wifi"/>
  </xs:restriction>
</xs:simpleType>

<!--
  ENDPOINT TYPE
-->
<xs:complexType name="EndpointType">
  <xs:sequence>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:attribute name="Name" type="xs:string" use="required"/>
  <xs:attribute name="ProfileId" type="xs:string" use="optional"/>
  <xs:attribute ref="v2:OS" use="optional"/>
  <xs:attribute ref="v2:CPUName" use="optional"/>
  <xs:attribute ref="v2:CPUNumberOfCores" use="optional"/>
  <xs:attribute ref="v2:CPUProcessorSpeed" use="optional"/>
  <xs:attribute ref="v2:VirtualizationFlag" use="optional"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
  <!-- Name = Computer Name-->
  <!-- ProfileId = Endpoint Report GUID - Note: this attribute is optional-->
</xs:complexType>
</xs:schema>

```

The schema for **ms-rtcp-metrics.v2.xsd** is as follows:

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:v2="ms-rtcp-metrics.v2" xmlns:v3="ms-rtcp-metrics.v3"
xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="ms-rtcp-metrics.v2"
elementFormDefault="qualified" version="1.2" attributeFormDefault="unqualified">
<xs:import namespace="ms-rtcp-metrics.v3"/></xs:import>

<!--Schema version-->
<xs:attribute name="SchemaVersion" type="xs:string"/>

<!--The following are part of dialog info-->

<xs:element name="CallPriority" type="xs:short"/>
<xs:element name="RegisteredInside" type="xs:boolean"/>
<xs:element name="MediationServerBypassFlag" type="xs:boolean"/>
<xs:element name="TrunkingPeer" type="xs:string"/>
<xs:element name="BSSID" type="xs:string"/>
<xs:element name="MediaBypassWarningFlag" type="xs:int"/>

<!--The following are ICE metrics-->

```

```

<xs:attribute name="RtpLatched" type="xs:boolean"/>

<!--The following are media metrics-->

<xs:element name="AppliedBandwidthLimit" type="xs:int"/>
<xs:element name="AppliedBandwidthSource" type="xs:string"/>
<xs:element name="InitialSignalLevelRMS" type="xs:float"/>
<xs:element name="AudioFECUsed" type="xs:boolean"/>
<xs:element name="VideoAllocateBWAvg" type="xs:int"/>
<xs:element name="VideoLocalFrameLossPercentageAvg" type="xs:float"/>

<!--The following are AEC metrics-->
<xs:element name="AudioTimestampDriftRateMic" type="xs:float"/>
<xs:element name="AudioTimestampDriftRateSpk" type="xs:float"/>
<xs:element name="AudioTimestampErrorMicMs" type="xs:float"/>
<xs:element name="AudioTimestampErrorSpkMs" type="xs:float"/>
<xs:element name="VsEntryCauses" type="xs:unsignedByte"/>
<xs:element name="EchoEventCauses" type="xs:unsignedByte"/>
<xs:element name="EchoPercentMicIn" type="xs:float"/>
<xs:element name="EchoPercentSend" type="xs:float"/>
<xs:element name="RxAvgAGCGain" type="xs:int"/>

<!--The following are healer metrics-->
<xs:element name="RatioConcealedSamplesAvg" type="xs:float"/>
<xs:element name="RatioStretchedSamplesAvg" type="xs:float"/>
<xs:element name="RatioCompressedSamplesAvg" type="xs:float"/>

<!--The following are Network MOS related-->
<xs:element name="NetworkMOSAlg" type="xs:string"/>

<!--The following are endpoint information-->

<xs:attribute name="OS" type="xs:string"/>
<!--
Bit flag indicate if the system is running in a virtualized environment:
0x00: None
0x01: HyperV
0x02: VMWare
0x04: Virtual PC
0x08: Xen PC
-->
<xs:attribute name="VirtualizationFlag" type="xs:byte"/>
<xs:attribute name="CPUNumberOfCores" type="xs:short"/>
<xs:attribute name="CPUProcessorSpeed" type="xs:int"/>
<xs:attribute name="CPUName" type="xs:string"/>
<xs:element name="MACAddr" type="xs:string"/>

<!--The following are client event count-->
<xs:element name="LocalClientEvent" type="v2:ClientEventType"/>
<xs:element name="RemoteClientEvent" type="v2:ClientEventType"/>
<xs:complexType name="ClientEventType">
  <xs:sequence>
    <xs:element name="NetworkSendQualityEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="NetworkReceiveQualityEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="NetworkDelayEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="NetworkBandwidthLowEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="CPUInsufficientEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceHalfDuplexAECEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceRenderNotFunctioningEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceCaptureNotFunctioningEventRatio" type="xs:float"
minOccurs="0"/>
    <xs:element name="DeviceGlitchesEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceLowSNREventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceLowSpeechLevelEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceClippingEventRatio" type="xs:float" minOccurs="0"/>
  

```

```

<xs:element name="DeviceEchoEventRatio" type="xs:float" minOccurs="0"/>
<xs:element name="DeviceNearEndToEchoRatioEventRatio" type="xs:float" minOccurs="0"/>
<xs:element name="DeviceMultipleEndpointsEventCount" type="xs:short" minOccurs="0"/>
<xs:element name="DeviceHowlingEventCount" type="xs:short" minOccurs="0"/>
<xs:sequence minOccurs="0">
  <xs:element ref="v2:Separator"/>
  <xs:element ref="v3:DeviceRenderZeroVolumeEventRatio" type="xs:float" minOccurs="0"/>
  <xs:element ref="v3:DeviceRenderMuteEventRatio" type="xs:float" minOccurs="0"/>
  <xs:sequence minOccurs="0">
    <xs:element ref="v3:Separator3"/>
    <xs:any namespace="##any" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
</xs:sequence>
</xs:sequence>
<xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>

<!--The following are video metrics-->
<xs:element name="VideoResolutionDistribution" type="v2:VideoResolutionDistributionType"/>

<xs:complexType name="VideoResolutionDistributionType">
  <xs:sequence>
    <xs:element name="CIFQuality" type="xs:unsignedByte" />
    <xs:element name="VGAQuality" type="xs:unsignedByte" />
    <xs:element name="HD720Quality" type="xs:unsignedByte" />
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator"/>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<xs:element name="VideoRateMatchingLevelDistribution"
type="v2:VideoRateMatchingLevelDistributionType"/>
<xs:complexType name="VideoRateMatchingLevelDistributionType">
  <xs:sequence>
    <xs:element name="None Drop" type="xs:unsignedByte" />
    <xs:element name="B Drop" type="xs:unsignedByte" />
    <xs:element name="BP Drop" type="xs:unsignedByte" />
    <xs:element name="BPSP Drop" type="xs:unsignedByte" />
    <xs:element name="BPSP Drop" type="xs:unsignedByte" />
    <xs:element name="BPSP Drop" type="xs:unsignedByte" />
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator"/>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<!--The following are debugging blob, it's for internal use only-->

<xs:element name="OpaqueClientPlatformData" type="v2:OpaqueClientPlatformDataType" />
<xs:element name="OpaqueServerPlatformData" type="v2:OpaqueServerPlatformDataType" />
<xs:element name="OpaqueCoreEndpointData" type="v2:OpaqueCoreEndpointDataType" />
<xs:element name="OpaqueConferenceData" type="v2:OpaqueConferenceDataType" />
<xs:element name="OpaqueChannelData" type="v2:OpaqueChannelDataType" />

<!--These two elements should be removed once nobody refer to it. (Instead, everyone should
use OpaqueChannelData)-->
<xs:element name="OpaqueAudioData" type="v2:OpaqueAudioDataType" />
<xs:element name="OpaqueVideoData" type="v2:OpaqueVideoDataType" />

<!--OPAQUE MEDIALINE DATA TYPE-->
<xs:complexType name="OpaqueCoreEndpointDataType">

```

```

    <xs:sequence>
      <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
  </xs:complexType>
  <!--OPAQUE CHANNEL DATA TYPE-->
  <xs:complexType name="OpaqueChannelDataType" >
    <xs:sequence>
      <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
  </xs:complexType>
  <!--OPAQUE CLIENT PLATFORM DATA TYPE-->
  <xs:complexType name="OpaqueClientPlatformDataType">
    <xs:sequence>
      <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
  </xs:complexType>
  <!--OPAQUE SERVER PLATFORM DATA TYPE-->
  <xs:complexType name="OpaqueServerPlatformDataType">
    <xs:sequence>
      <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
  </xs:complexType>
  <!--OPAQUE CONFERENCE DATA TYPE-->
  <xs:complexType name="OpaqueConferenceDataType">
    <xs:sequence>
      <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
  </xs:complexType>
  <!--OPAQUE VIDEO DATA TYPE (this should be removed once nobody refer to it)-->
  <xs:complexType name="OpaqueVideoDataType">
    <xs:sequence>
      <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
  </xs:complexType>
  <!--OPAQUE AUDIO DATA TYPE (this should be removed once nobody refer to it)-->
  <xs:complexType name="OpaqueAudioDataType">
    <xs:sequence>
      <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
  </xs:complexType>

  <!--Separator is used for forward/backward compatibility-->
  <xs:element name="Separator">
    <xs:complexType></xs:complexType>
  </xs:element>
</xs:schema>

```

The schema for **ms-rtcp-metrics.v3.xsd** is as follows:

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:tns="ms-rtcp-metrics" xmlns:v2="ms-rtcp-metrics.v2" xmlns:v3="ms-rtcp-
metrics.v3" xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="ms-rtcp-
metrics.v3" elementFormDefault="qualified" version="1.2" attributeFormDefault="unqualified">

  <!--Core Metrics-->
  <xs:element name="WifiDriverDeviceDesc" type="xs:string"/>
  <xs:element name="WifiDriverVersion" type="xs:string"/>

```



```

<!--ClientEvent Metrics-->
<xs:element name="NetworkConnectionDetails" type="xs:string"/>
<xs:element name="DeviceRenderZeroVolumeEventRatio" type="xs:float"/>
<xs:element name="DeviceRenderMuteEventRatio" type="xs:float"/>

<!--Platform Metrics-->

<!--Audio Metrics-->
<xs:element name="DecodeStereoPercent" type="xs:float"/>
<xs:element name="AecRenderStereoPercent" type="xs:float"/>
<xs:element name="AudioPostFECPLR" type="xs:float"/>
<xs:element name="EncodeStereoPercent" type="xs:float"/>
<xs:element name="AecCaptureStereoPercent" type="xs:float"/>
<xs:element name="RecvSignalLevelCh1" type="xs:int"/>
<xs:element name="RecvSignalLevelCh2" type="xs:int"/>
<xs:element name="RecvNoiseLevelCh1" type="xs:int"/>
<xs:element name="RecvNoiseLevelCh2" type="xs:int"/>
<xs:element name="SendSignalLevelCh1" type="xs:int"/>
<xs:element name="SendSignalLevelCh2" type="xs:int"/>
<xs:element name="SendNoiseLevelCh1" type="xs:int"/>
<xs:element name="SendNoiseLevelCh2" type="xs:int"/>
<xs:element name="ConcealRatioMax" type="xs:float"/>
<xs:element name="ConcealRatioSd" type="xs:float"/>
<xs:element name="HealerPacketDropRatio" type="xs:float"/>
<xs:element name="HealerFECPacketUsedRatio" type="xs:float"/>
<xs:element name="MaxCompressedSamples" type="xs:float"/>

<!--Jitter Metrics-->
<xs:element name="InterArrivalSD" type="xs:float"/>

<!--Video Metrics-->
<xs:element name="SendCodecTypes" type="xs:string"/>
<xs:element name="SendResolutionWidth" type="xs:int"/>
<xs:element name="SendResolutionHeight" type="xs:int"/>
<xs:element name="SendFrameRateAverage" type="xs:float"/>
<xs:element name="SendBitRateMaximum" type="xs:int"/>
<xs:element name="SendBitRateAverage" type="xs:int"/>
<xs:element name="SendVideoStreamsMax" type="xs:int"/>

<xs:element name="RecvCodecTypes" type="xs:string"/>
<xs:element name="RecvResolutionWidth" type="xs:int"/>
<xs:element name="RecvResolutionHeight" type="xs:int"/>
<xs:element name="RecvFrameRateAverage" type="xs:float"/>
<xs:element name="RecvBitRateMaximum" type="xs:int"/>
<xs:element name="RecvBitRateAverage" type="xs:int"/>
<xs:element name="RecvVideoStreamsMax" type="xs:int"/>
<xs:element name="RecvVideoStreamsMin" type="xs:int"/>
<xs:element name="RecvVideoStreamsMode" type="xs:int"/>
<xs:element name="VideoPostFECPLR" type="xs:float"/>

<xs:element name="RelativeOneWay" type="v3:MetricAggregationType"/>

<xs:element name="BandwidthEstMin" type="xs:int"/>
<xs:element name="BandwidthEstMax" type="xs:int"/>
<xs:element name="BandwidthEstStdDev" type="xs:int"/>
<xs:element name="BandwidthEstAvge" type="xs:int"/>
<xs:element name="LowBandwidthForMultiview" type="xs:float"/>

<xs:element name="LossCongestionPercent" type="xs:float"/>
<xs:element name="DelayCongestionPercent" type="xs:float"/>
<xs:element name="ContentionDetectedPercent" type="xs:float"/>

<!-- New VDSP in M4 -->
<xs:element name="DynamicCapabilityPercent" type="xs:float"/>
<xs:element name="ResolutionMin" type="xs:string"/>
<xs:element name="LowBitRateCallPercent" type="xs:float"/>
<xs:element name="LowFrameRateCallPercent" type="xs:float"/>
<xs:element name="LowResolutionCallPercent" type="xs:float"/>

```

```

<!-- Support multiple video payloads in single stream -->
<xs:element name="AdditionalPayload" type="tns:PayloadMetricsType" />
<xs:element name="DurationSeconds" type="xs:float"/>
<xs:element name="IsAggregatedData" type="xs:boolean" default="true"/>
<xs:element name="UseForCallClassification" type="xs:boolean" default="true" />

<!-- New Description elements -->
<xs:element name="ReflexiveLocalIPAddress" type="tns:AddrType"/>
<xs:element name="MidCallReport" type="xs:boolean" default="false" />

<xs:complexType name="ApplicationSharingPayloadMetricsType">
  <xs:sequence>
    <xs:element name="PayloadDescription" type="xs:string" minOccurs="0"/>
    <xs:element name="AverageRectangleHeight" type="xs:int" minOccurs="0"/>
    <xs:element name="AverageRectangleWidth" type="xs:int" minOccurs="0"/>
    <xs:element name="ApplicationShared" type="xs:string" minOccurs="0"/>
    <xs:element name="RDPTileProcessingLatency" type="v3:MetricAggregationType"
minOccurs="0"/>
    <xs:element name="CaptureTileRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="SpoiledTilePercent" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="ScrapingFrameRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="IncomingTileRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="IncomingFrameRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="OutgoingTileRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="OutgoingFrameRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="OpaqueAppSharingData" type="v2:OpaqueChannelDataType" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"/>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<xs:complexType name="MetricAggregationType">
  <xs:sequence>
    <xs:element name="Total" type="xs:float" minOccurs="0"/>
    <xs:element name="Average" type="xs:float" minOccurs="0"/>
    <xs:element name="Max" type="xs:float" minOccurs="0"/>
    <xs:element name="Burst" type="v3:MetricBurstGapType" minOccurs="0"/>
    <xs:element name="Gap" type="v3:MetricBurstGapType" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"/>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<!--Metrics Burst and Gap Type calculation-->
<xs:complexType name="MetricBurstGapType">
  <xs:sequence>
    <xs:element name="Occurrences" type="xs:int" minOccurs="0"/>
    <xs:element name="Density" type="xs:float" minOccurs="0"/>
    <xs:element name="Duration" type="xs:float" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"/>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<xs:element name="TraceRoute" type="v3:TraceRouteType"/>

<xs:complexType name="TraceRouteType">
  <xs:sequence>

```

```

<xs:element name="Hop" type="xs:int" minOccurs="1"/>
<xs:element name="IPAddress" type="xs:string" minOccurs="0"/>
<xs:element name="RTT" type="xs:int" minOccurs="0"/>
<xs:sequence minOccurs="0">
  <xs:element ref="v3:Separator3"/>
  <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
</xs:sequence>
<xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<!--Separator is used for forward/backward compatibility-->
<xs:element name="Separator3">
  <xs:complexType></xs:complexType>
</xs:element>
</xs:schema>

```

6.5 Microsoft Skype for Business Server Schema

This section follows the product behavior described in footnote [<318>](#). The schema has been split into four related schema definition files:

- ms-rtcp-metrics.xsd
- ms-rtcp-metrics.medialine.xsd
- ms-rtcp-metrics.v2.xsd
- ms-rtcp-metrics.v3.xsd
- ms-rtcp-metrics.v4.xsd

Additionally, a new schema has been introduced:

- ms-cqf.xsd

The schema for **ms-rtcp-metrics.xsd** is as follows:

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:tns="ms-rtcp-metrics" xmlns:v2="ms-rtcp-metrics.v2" xmlns:v3="ms-rtcp-
metrics.v3" xmlns:v4="ms-rtcp-metrics.v4" xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="ms-rtcp-metrics" elementFormDefault="qualified" version="1.2"
attributeFormDefault="unqualified">
  <xs:import namespace="ms-rtcp-metrics.v2"></xs:import>
  <xs:import namespace="ms-rtcp-metrics.v3"></xs:import>
  <xs:import namespace="ms-rtcp-metrics.v4"></xs:import>
  <xs:include schemaLocation="ms-rtcp-metrics.medialine.xsd"></xs:include>
  <!--
    RTCP METRICS STATEMENT
  -->
  <xs:element name="VQReportEvent" type="tns:VQReportEventType"/>
  <!--
    RTCP REPORT TYPE
  -->
  <xs:complexType name="VQReportEventType">
    <xs:choice>
      <xs:element name="VQSessionReport" type="tns:SessionReportType" maxOccurs="unbounded"/>
      <xs:element name="VQSessionIntervalReport" type="tns:SessionReportType"
maxOccurs="unbounded"/>
      <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded"/>
    </xs:choice>
    <xs:attribute name="Version" type="xs:string" use="optional"/>
    <xs:attribute ref="v2:SchemaVersion" use="optional"/>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
  </xs:complexType>

```

```

</xs:complexType>
<!--
    VQ SESSION REPORT TYPE
-->
<xs:complexType name="SessionReportType">
  <xs:sequence>
    <xs:element name="LocationProfile" type="xs:string" minOccurs="0"/>
    <xs:element name="Pool" type="xs:string" minOccurs="0"/>
    <xs:element name="Endpoint" type="tns:EndpointType"/>
    <xs:element name="DialogInfo" type="tns:DialogInfoType"/>
    <xs:element name="MediaLine" type="tns:MediaLineType" minOccurs="1"
maxOccurs="unbounded"/>
    <xs:element ref="v2:OpaqueClientPlatformData" minOccurs="0" />
    <xs:element ref="v2:OpaqueServerPlatformData" minOccurs="0" />
    <xs:element ref="v2:OpaqueConferenceData" minOccurs="0" />
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:attribute name="SessionId" type="xs:string" use="required"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
  <!-- SessionId = DialogID -->
</xs:complexType>
<!--
    DIALOG INFO TYPE
-->
<xs:complexType name="DialogInfoType">
  <xs:sequence>
    <xs:element name="DialogCategory" type="tns:DialogCategoryType" minOccurs="0"/>
    <xs:element name="CorrelationID" type="xs:string" minOccurs="0"/>
    <xs:element name="FromURI" type="xs:anyURI"/>
    <xs:element name="ToURI" type="xs:anyURI"/>
    <xs:element name="Caller" type="xs:boolean"/>
    <xs:element name="LocalContactURI" type="xs:anyURI"/>
    <xs:element name="RemoteContactURI" type="xs:anyURI"/>
    <xs:element name="LocalUserAgent" type="xs:string"/>
    <xs:element name="RemoteUserAgent" type="xs:string"/>
    <!-- PAI = P-Asserted-Identity -->
    <xs:element name="LocalPAI" type="xs:anyURI" minOccurs="0"/>
    <xs:element name="RemotePAI" type="xs:anyURI" minOccurs="0"/>
    <xs:element name="ConfURI" type="xs:anyURI" minOccurs="0"/>
    <xs:element ref="v2:CallPriority" minOccurs="0"/>
    <xs:element ref="v2:MediationServerBypassFlag" minOccurs="0"/>
    <xs:element ref="v2:TrunkingPeer" minOccurs="0"/>
    <xs:element ref="v2:MediaBypassWarningFlag" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:element ref="v2:RegisteredInside" minOccurs="0"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v2:Separator" />
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:sequence>
  </xs:sequence>
  <xs:attribute name="CallId" type="xs:string" use="required"/>
  <xs:attribute name="FromTag" type="xs:string" use="required"/>
  <xs:attribute name="ToTag" type="xs:string" use="required"/>
  <xs:attribute name="Start" type="xs:dateTime" use="required"/>
  <xs:attribute name="End" type="xs:dateTime" use="required"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>

<!--
    DIALOG CATEGORY
-->
<xs:simpleType name="DialogCategoryType">

```

```

    <xs:restriction base="xs:string">
      <xs:enumeration value="OCS"/>
      <xs:enumeration value="TRUNK"/>
    </xs:restriction>
  </xs:simpleType>
</xs:schema>

```

The schema for **ms-rtcp-metrics.medialine.xsd** is as follows:

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:tns="ms-rtcp-metrics" xmlns:v2="ms-rtcp-metrics.v2" xmlns:v3="ms-rtcp-
metrics.v3" xmlns:v4="ms-rtcp-metrics.v4" xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="ms-rtcp-metrics" elementFormDefault="qualified" version="2.0"
attributeFormDefault="unqualified">
  <xs:import namespace="ms-rtcp-metrics.v2"></xs:import>
  <xs:import namespace="ms-rtcp-metrics.v3"></xs:import>
  <xs:import namespace="ms-rtcp-metrics.v4"></xs:import>
  <!--
    MEDIA LINE REPORT TYPE
  -->
  <xs:complexType name="MediaLineType">
    <xs:sequence>
      <xs:element name="Description" type="tns:MediaLineDescriptionType"/>
      <xs:element name="InboundStream" type="tns:StreamType" minOccurs="0"/>
      <xs:element name="OutboundStream" type="tns:StreamType" minOccurs="0"/>
      <xs:element name="LocalConversationalMOS" type="xs:float" minOccurs="0"/>
      <xs:element name="RemoteConversationalMOS" type="xs:float" minOccurs="0"/>
      <xs:element name="LocalConversationalMOSAlg" type="xs:string" minOccurs="0"/>
      <xs:element name="RemoteConversationalMOSAlg" type="xs:string" minOccurs="0"/>
      <xs:element ref="v2:AppliedBandwidthLimit" minOccurs="0" />
      <xs:element ref="v2:AppliedBandwidthSource" minOccurs="0" />
      <xs:element ref="v2:LocalClientEvent" minOccurs="0"/>
      <xs:element ref="v2:RemoteClientEvent" minOccurs="0"/>
      <xs:element ref="v2:OpaqueCoreEndpointData" minOccurs="0" />
      <xs:element ref="v2:OpaqueChannelData" minOccurs="0" />
      <xs:sequence minOccurs="0">
        <xs:element ref="v2:Separator" />
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:sequence>
  </xs:complexType>
  <!-- Label values : "main-audio", "main-video", "panoramic-video", "data", -->
  <!-- Additional Label values in v3 : "main-video1", "main-video2", "main-video3", "main-
video4", "main-video5", "main-video6", -->
  <xs:attribute name="Label" type="xs:string" use="required"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    MEDIA LINE TYPE
  -->
  <xs:complexType name="MediaLineDescriptionType">
    <xs:sequence>
      <xs:element name="Connectivity" type="tns:ConnectivityType" minOccurs="0"/>
      <!-- Security values : "None", "SRTP", "V1" -->
      <xs:element name="Security" type="xs:string" minOccurs="0"/>
      <xs:element name="Offerer" type="xs:boolean" minOccurs="0"/>
      <xs:element name="Transport" type="tns:TransportType" minOccurs="0"/>
      <xs:element name="NetworkConnectivityInfo" type="tns:NetworkConnectivityInfoType"
minOccurs="0"/>
      <xs:element name="LocalAddr" type="tns:AddrType"/>
      <xs:element name="RemoteAddr" type="tns:AddrType"/>
      <!-- Microphone or USB Phone or Camera device name -->
      <xs:element name="CaptureDev" type="tns:DeviceType" minOccurs="0"/>
      <!-- Speakers or USB Phone device name -->
      <xs:element name="RenderDev" type="tns:DeviceType" minOccurs="0"/>
      <xs:element ref="v3:ReflexiveLocalIPAddress" minOccurs="0"/>
      <xs:element ref="v3:MidCallReport" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>

```

```

<xs:sequence minOccurs="0">
  <xs:element ref="v3:Separator3"></xs:element>
  <xs:element ref="v4:WifiRadioType" minOccurs="0"/>
  <xs:element ref="v4:WifiRSSI" minOccurs="0"/>
  <xs:element ref="v4:SSID" minOccurs="0"/>
  <xs:element ref="v4:WifiChannel" minOccurs="0"/>
  <xs:element ref="v4:ActivePowerProfile" minOccurs="0"/>
  <xs:element ref="v4:WifiHandovers" minOccurs="0"/>
  <xs:element ref="v4:WifiChannelSwitches" minOccurs="0"/>
  <xs:element ref="v4:WifiChannelReassociations" minOccurs="0"/>
  <xs:element ref="v4:RecvQoSMarking" minOccurs="0"/>
  <xs:element ref="v4:SendQoSMarking" minOccurs="0"/>
  <xs:element ref="v4:WifiRadioFrequency" minOccurs="0"/>
  <xs:element ref="v4:WifiMTU" minOccurs="0"/>
  <xs:element ref="v4:WifiSupportFlags" minOccurs="0"/>
  <xs:element ref="v4:WifiStatusFlags" minOccurs="0"/>
  <xs:element ref="v4:WifiTunnelType" minOccurs="0"/>
  <xs:element ref="v4:WifiSignalStrength" minOccurs="0"/>
  <xs:element ref="v4:WifiBatteryCharge" minOccurs="0"/>
  <xs:element ref="v4:ConnectionName" minOccurs="0"/>
  <xs:element ref="v4:DNSSuffix" minOccurs="0"/>
  <xs:element ref="v4:LastRTPSendTime" minOccurs="0"/>
  <xs:element ref="v4:LastRTCPSendTime" minOccurs="0"/>
  <xs:element ref="v4:LastRTPReceiveTime" minOccurs="0"/>
  <xs:element ref="v4:LastRTPReceiveTime" minOccurs="0"/>
  <xs:sequence minOccurs="0">
    <xs:element ref="v4:Separator4"></xs:element>
    <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
</xs:sequence>
</xs:sequence>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  Device TYPE
-->
<xs:complexType name="DeviceType">
  <xs:sequence>
    <xs:element name="Name" type="xs:string" minOccurs="0"/>
    <xs:element name="Driver" type="xs:string" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  STREAM DIRECTIONAL METRICS TYPE
-->
<xs:complexType name="StreamType">
  <xs:sequence>
    <xs:element name="Network" type="tns:NetworkMetricsType" minOccurs="0"/>
    <xs:element name="Payload" type="tns:PayloadMetricsType" />
    <xs:element name="QualityEstimates" type="tns:QualityEstimatesType" minOccurs="0"/>
    <!-- Support reporting multiple payloads per stream-->
    <xs:element ref="v3:AdditionalPayload" minOccurs="0" maxOccurs="unbounded"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"></xs:element>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:attribute name="Id" type="xs:unsignedInt" use="required"/>
  <xs:attribute name="Start" type="xs:dateTime"/>
  <xs:attribute name="End" type="xs:dateTime"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
  <!-- Id = SSRC -->
</xs:complexType>

<xs:complexType name="NetworkMetricsType">

```

```

<xs:sequence>
  <!-- DiffServ CodePoint -->
  <xs:element name="DSCP" type="xs:byte" minOccurs="0"/>
  <!-- VLAN is described via 12 bits -->
  <xs:element name="VLAN" type="xs:int" minOccurs="0"/>
  <xs:element name="Jitter" type="tns:JitterType" minOccurs="0"/>
  <xs:element name="PacketLoss" type="tns:PacketLossType" minOccurs="0"/>
  <xs:element name="BurstGapLoss" type="tns:BurstGapLossType" minOccurs="0"/>
  <xs:element name="Delay" type="tns:DelayType" minOccurs="0"/>
  <xs:element name="Utilization" type="tns:NetworkUtilizationType" minOccurs="0"/>
  <xs:element ref="v2:RatioConcealedSamplesAvg" minOccurs="0"/>
  <xs:element ref="v2:RatioStretchedSamplesAvg" minOccurs="0"/>
  <xs:element ref="v2:RatioCompressedSamplesAvg" minOccurs="0"/>
  <xs:sequence minOccurs="0">
    <xs:element ref="v2:Separator" />
    <xs:element ref="v3:ConcealRatioMax" minOccurs="0"/>
    <xs:element ref="v3:ConcealRatioSd" minOccurs="0"/>
    <xs:element ref="v3:HealerPacketDropRatio" minOccurs="0"/>
    <xs:element ref="v3:HealerFECPacketUsedRatio" minOccurs="0"/>
    <xs:element ref="v3:MaxCompressedSamples" minOccurs="0"/>
    <xs:element ref="v3:LossCongestionPercent" minOccurs="0"/>
    <xs:element ref="v3:DelayCongestionPercent" minOccurs="0"/>
    <xs:element ref="v3:ContentionDetectedPercent" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3" />
      <xs:element ref="v4:WifiRetransmissionRate" minOccurs="0"/>
      <xs:element ref="v4:WifiSendRate" minOccurs="0"/>
      <xs:element ref="v4:WifiReceiveRate" minOccurs="0"/>
      <xs:element ref="v4:WifiRetryCount" minOccurs="0"/>
      <xs:element ref="v4:WifiTransmittedFrameCount" minOccurs="0"/>
      <xs:element ref="v4:WifiMaxSendSpeed" minOccurs="0"/>
      <xs:element ref="v4:WifiMaxReceiveSpeed" minOccurs="0"/>
      <xs:element ref="v4:QoSMarkedRate" minOccurs="0"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v4:Separator4" />
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:sequence>
  </xs:sequence>

  </xs:sequence>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
ICE TYPE
-->
<xs:complexType name="ConnectivityType">
  <xs:sequence>
    <xs:element name="Ice" type="tns:IceStatusType" minOccurs="0"/>
    <xs:element name="IceWarningFlags" type="xs:unsignedInt" minOccurs="0"/>
    <xs:element name="RelayAddress" type="tns:AddrType" minOccurs="0"
maxOccurs="unbounded"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:attribute ref="v2:RtpLatched" use="optional"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
ICE CONECTIVITY TYPE
-->
<xs:simpleType name="IceStatusType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="FAILED"/>
    <xs:enumeration value="DIRECT"/>
    <xs:enumeration value="RELAY"/>
    <xs:enumeration value="HTTP-PROXY"/>
  </xs:restriction>

```

```

</xs:simpleType>
<!--
NETWORK UTILIZATION TYPE
-->
<xs:complexType name="NetworkUtilizationType">
  <xs:sequence>
    <xs:element name="Packets" type="xs:int" minOccurs="0"/>
    <xs:element name="BandwidthEst" type="xs:int" minOccurs="0"/>
    <xs:element name="BandwidthAlloc" type="xs:int" minOccurs="0"/>
    <xs:element ref="v3:BandwidthEstMin" minOccurs="0"/>
    <xs:element ref="v3:BandwidthEstMax" minOccurs="0"/>
    <xs:element ref="v3:BandwidthEstStdDev" minOccurs="0"/>
    <xs:element ref="v3:BandwidthEstAvge" minOccurs="0"/>
    <xs:element ref="v3:LowBandwidthForMultiview" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
PAYLOAD METRICS TYPE
-->
<xs:complexType name="PayloadMetricsType">
  <xs:choice>
    <xs:element name="Audio" type="tns:AudioPayloadMetricsType"/>
    <xs:element name="Video" type="tns:VideoPayloadMetricsType"/>
    <xs:element name="ApplicationSharing" type="v3:ApplicationSharingPayloadMetricsType" />
    <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded"/>
  </xs:choice>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
AUDIO METRICS TYPE
-->
<xs:complexType name="AudioPayloadMetricsType">
  <xs:sequence>
    <xs:element name="PayloadType" type="xs:int" minOccurs="0"/>
    <xs:element name="PayloadDescription" type="xs:string" minOccurs="0"/>
    <xs:element name="SampleRate" type="xs:int" minOccurs="0"/>
    <xs:element name="FrameDuration" type="xs:int" minOccurs="0"/>
    <xs:element name="FrameOctets" type="xs:int" minOccurs="0"/>
    <xs:element name="FramesPerPacket" type="xs:int" minOccurs="0"/>
    <xs:element name="PacketsPerSecond" type="xs:int" minOccurs="0"/>
    <!-- <xs:element name="RatioHealedSamplesAvg" type="xs:float" minOccurs="0"/> -->
    <xs:element name="FMTP" type="xs:string" minOccurs="0"/>
    <xs:element name="Signal" type="tns:SignalType" minOccurs="0"/>
    <xs:element name="JitterBuffer" type="tns:JitterBufferType" minOccurs="0"/>
    <xs:element name="SilenceSupress" type="tns:SilenceSuppressionStateType"
minOccurs="0"/>
    <xs:element ref="v2:AudioFECUsed" minOccurs="0"/>
    <!--OpaqueAudioData will be removed once everyone move to OpaqueChannelData-->
    <xs:element ref="v2:OpaqueAudioData" minOccurs="0" />
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:element ref="v3:DecodeStereoPercent" minOccurs="0"/>
      <xs:element ref="v3:AecRenderStereoPercent" minOccurs="0"/>
      <xs:element ref="v3:AudioPostFECPLR" minOccurs="0"/>
      <xs:element ref="v3:EncodeStereoPercent" minOccurs="0"/>
      <xs:element ref="v3:AecCaptureStereoPercent" minOccurs="0"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v3:Separator3" />
        <xs:element ref="v4:JitterBufferSizeAvg" minOccurs="0"/>
        <xs:element ref="v4:JitterBufferSizeMax" minOccurs="0"/>
        <xs:element ref="v4:JitterBufferSizeMin" minOccurs="0"/>
        <xs:element ref="v4:JitterBufferSizeSD" minOccurs="0"/>
        <xs:element ref="v4:NetworkJitterAvg" minOccurs="0"/>
      </xs:sequence>
    </xs:sequence>
  </xs:sequence>

```



```

    <xs:element ref="v4:NetworkJitterMax" minOccurs="0"/>
    <xs:element ref="v4:NetworkJitterMin" minOccurs="0"/>
    <xs:element ref="v4:NetworkJitterSD" minOccurs="0"/>
    <xs:element ref="v4:PacketReorderRatio" minOccurs="0"/>
    <xs:element ref="v4:PacketReorderDepthAvg" minOccurs="0"/>
    <xs:element ref="v4:PacketReorderDepthMax" minOccurs="0"/>
    <xs:element ref="v4:BurstLossLength1" minOccurs="0"/>
    <xs:element ref="v4:BurstLossLength2" minOccurs="0"/>
    <xs:element ref="v4:BurstLossLength3" minOccurs="0"/>
    <xs:element ref="v4:BurstLossLength4" minOccurs="0"/>
    <xs:element ref="v4:BurstLossLength5" minOccurs="0"/>
    <xs:element ref="v4:BurstLossLength6" minOccurs="0"/>
    <xs:element ref="v4:BurstLossLength7" minOccurs="0"/>
    <xs:element ref="v4:BurstLossLength8OrHigher" minOccurs="0"/>
    <xs:element ref="v4:FECRecvOnPercent" minOccurs="0"/>
    <xs:element ref="v4:FECRecvDistance1" minOccurs="0"/>
    <xs:element ref="v4:FECRecvDistance2" minOccurs="0"/>
    <xs:element ref="v4:FECRecvDistance3" minOccurs="0"/>
    <xs:element ref="v4:FECRecvDistance4" minOccurs="0"/>
    <xs:element ref="v4:FECRecvDistance5" minOccurs="0"/>
    <xs:element ref="v4:FECRecvDistance6" minOccurs="0"/>
    <xs:element ref="v4:FECRecvDistance7" minOccurs="0"/>
    <xs:element ref="v4:FECRecvDistance8OrHigher" minOccurs="0"/>
    <xs:element ref="v4:FECRecvScheme" minOccurs="0"/>
    <xs:element ref="v4:FECRecvRedundancy" minOccurs="0"/>
    <xs:element ref="v4:HealerPushCount" minOccurs="0"/>
    <xs:element ref="v4:HealerPullCount" minOccurs="0"/>
    <xs:element ref="v4:SendMutePercent" minOccurs="0"/>
    <xs:element ref="v4:CaptureOffloadedEffectsAudio" minOccurs="0"/>
    <xs:element ref="v4:RenderOffloadedEffectsAudio" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v4:Separator4" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
</xs:sequence>
</xs:sequence>
</xs:complexType>
<!--
  VIDEO METRICS TYPE
-->
<xs:complexType name="VideoPayloadMetricsType">
  <xs:sequence>
    <xs:element name="PayloadType" type="xs:int" minOccurs="0"/>
    <xs:element name="PayloadDescription" type="xs:string" minOccurs="0"/>
    <xs:element name="Resolution" type="xs:string" minOccurs="0"/>
    <xs:element name="VideoBitRateAvg" type="xs:int" minOccurs="0"/>
    <xs:element name="VideoBitRateMax" type="xs:int" minOccurs="0"/>
    <xs:element name="VideoFrameRateAvg" type="xs:float" minOccurs="0"/>
    <xs:element name="VideoPacketLossRate" type="xs:float" minOccurs="0"/>
    <xs:element name="VideoFrameLossRate" type="xs:float" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="VideoFrameEncodingTime" type="xs:float" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="VideoFrameDecodingTime" type="xs:float" minOccurs="0"/>
    <xs:element name="VideoFEC" type="xs:boolean" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="FrozenVideoFreq" type="xs:float" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="FrozenPeriodPercentAvg" type="xs:float" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="ConsecutivePacketLossAvg" type="xs:float" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="RateMatchLevel" type="xs:float" minOccurs="0"/>
    <xs:element ref="v2:VideoAllocateBWAvg" minOccurs="0"/>
    <xs:element ref="v2:VideoLocalFrameLossPercentageAvg" minOccurs="0"/>
    <!--OpaqueVideoData will be removed once everyone move to OpaqueChannelData-->
    <xs:element ref="v2:OpaqueVideoData" minOccurs="0" />
  </xs:sequence>

```

```

<xs:sequence minOccurs="0">
  <xs:element ref="v2:Separator" />
  <!-- The following two metrics should really be labelled v3 -->
  <xs:element ref="v2:VideoResolutionDistribution" minOccurs="0" />
  <xs:element ref="v2:VideoRateMatchingLevelDistribution" minOccurs="0" />
  <xs:sequence minOccurs="0">
    <!-- New v3 Video Receive Metrics go here -->
    <xs:element ref="v2:Separator" />
    <xs:element ref="v3:SendCodecTypes" minOccurs="0"/>
    <xs:element ref="v3:SendFrameRateAverage" minOccurs="0"/>
    <xs:element ref="v3:SendBitRateMaximum" minOccurs="0"/>
    <xs:element ref="v3:SendBitRateAverage" minOccurs="0"/>
    <xs:element ref="v3:SendVideoStreamsMax" minOccurs="0"/>
    <xs:element ref="v3:SendResolutionWidth" minOccurs="0"/>
    <xs:element ref="v3:SendResolutionHeight" minOccurs="0"/>

    <xs:element ref="v3:RecvCodecTypes" minOccurs="0"/>
    <xs:element ref="v3:RecvResolutionWidth" minOccurs="0"/>
    <xs:element ref="v3:RecvResolutionHeight" minOccurs="0"/>
    <xs:element ref="v3:RecvFrameRateAverage" minOccurs="0"/>
    <xs:element ref="v3:RecvBitRateMaximum" minOccurs="0"/>
    <xs:element ref="v3:RecvBitRateAverage" minOccurs="0"/>
    <xs:element ref="v3:RecvVideoStreamsMax" minOccurs="0"/>
    <xs:element ref="v3:RecvVideoStreamsMin" minOccurs="0"/>
    <xs:element ref="v3:RecvVideoStreamsMode" minOccurs="0"/>
    <xs:element ref="v3:VideoPostFECPLR" minOccurs="0"/>

    <xs:element ref="v3:DynamicCapabilityPercent" minOccurs="0"/>
    <xs:element ref="v3:ResolutionMin" minOccurs="0"/>
    <xs:element ref="v3:LowBitRateCallPercent" minOccurs="0"/>
    <xs:element ref="v3:LowFrameRateCallPercent" minOccurs="0"/>
    <xs:element ref="v3:LowResolutionCallPercent" minOccurs="0"/>

    <!-- Added to support multiple video payloads in single stream-->
    <xs:element ref="v3:DurationSeconds" minOccurs="0"/>
    <xs:element ref="v3:IsAggregatedData" minOccurs="0"/>
    <xs:element ref="v3:UseForCallClassification" minOccurs="0"/>

    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3" />
      <xs:element ref="v4:RecvReorderBufferTotalPackets" minOccurs="0" />
      <xs:element ref="v4:RecvReorderBufferReorderedPackets" minOccurs="0" />
      <xs:element ref="v4:RecvReorderBufferReorderedPacketsSuccessfullyOrdered"
minOccurs="0" />
      <xs:element ref="v4:RecvReorderBufferPacketsDroppedDueToBufferExhaustion"
minOccurs="0" />
      <xs:element ref="v4:RecvReorderBufferMaxSuccessfullyOrderedExtent" minOccurs="0"
/>
      <xs:element ref="v4:RecvReorderBufferMaxSuccessfullyOrderedLateTime"
minOccurs="0" />
      <xs:element ref="v4:RecvReorderBufferPacketsDroppedDueToTimeout" minOccurs="0" />
      <xs:sequence minOccurs="0">
        <xs:element ref="v4:Separator4" />
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:sequence>
  </xs:sequence>
</xs:sequence>
</xs:complexType>
<!--
  SILENCE SUPPRESSION STATE TYPE
-->
<xs:simpleType name="SilenceSuppressionStateType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="ON"/>
    <xs:enumeration value="OFF"/>
  </xs:restriction>

```

```

</xs:simpleType>
<!--
  ADDR TYPE
-->
<xs:complexType name="AddrType">
  <xs:sequence>
    <xs:element name="IPAddr" type="xs:string"/>
    <xs:element name="Port" type="xs:unsignedShort" minOccurs="0"/>
    <xs:element name="Inside" type="xs:boolean" minOccurs="0"/>
    <xs:element name="SubnetMask" type="xs:string" minOccurs="0"/>
    <xs:element ref="v2:MACAddr" minOccurs="0"/></xs:element>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator"/></xs:element>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  JITTER BUFFER TYPE
-->
<xs:complexType name="JitterBufferType">
  <xs:sequence>
    <xs:element name="Type" type="tns:JitterBufferAdaptiveType" minOccurs="0"/>
    <xs:element name="Rate" type="xs:int" minOccurs="0"/>
    <xs:element name="Nominal" type="xs:int" minOccurs="0"/>
    <xs:element name="Max" type="xs:int" minOccurs="0"/>
    <xs:element name="AbsMax" type="xs:int" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  JITTER BUFFER ADAPTIVE TYPE
-->
<xs:simpleType name="JitterBufferAdaptiveType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="UNKNOWN"/>
    <xs:enumeration value="RESERVED"/>
    <xs:enumeration value="NON-ADAPTIVE"/>
    <xs:enumeration value="ADAPTIVE"/>
  </xs:restriction>
</xs:simpleType>
<!--
  PACKET LOSS TYPE
-->
<xs:complexType name="PacketLossType">
  <xs:sequence>
    <xs:element name="LossRate" type="xs:float" minOccurs="0"/>
    <xs:element name="LossRateMax" type="xs:float" minOccurs="0"/>
    <xs:element name="DiscardRate" type="xs:float" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  BURST GAP LOSS TYPE
-->
<xs:complexType name="BurstGapLossType">
  <xs:sequence>
    <xs:element name="BurstDensity" type="xs:float" minOccurs="0"/>
    <xs:element name="BurstDuration" type="xs:int" minOccurs="0"/>
    <xs:element name="GapDensity" type="xs:float" minOccurs="0"/>
    <xs:element name="GapDuration" type="xs:int" minOccurs="0"/>
    <xs:element name="MinGapThreshold" type="xs:int" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>

```

```

</xs:complexType>
<!--
    DELAY TYPE
-->
<xs:complexType name="DelayType">
  <xs:sequence>
    <xs:element name="RoundTrip" type="xs:int" minOccurs="0"/>
    <xs:element name="RoundTripMax" type="xs:int" minOccurs="0"/>
    <xs:element name="EndSystem" type="xs:int" minOccurs="0"/>
    <xs:element name="OneWay" type="xs:int" minOccurs="0"/>
    <xs:element ref="v3:RelativeOneWay" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    JITTER TYPE
-->
<xs:complexType name="JitterType">
  <xs:sequence>
    <xs:element name="InterArrival" type="xs:int" minOccurs="0"/>
    <xs:element name="InterArrivalMax" type="xs:int" minOccurs="0"/>
    <xs:element name="MeanAbs" type="xs:int" minOccurs="0"/>
    <xs:element ref="v3:InterArrivalSD" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
    SIGNAL TYPE
-->
<xs:complexType name="SignalType">
  <xs:sequence>
    <xs:element name="SignalLevel" type="xs:int" minOccurs="0" />
    <xs:element name="NoiseLevel" type="xs:int" minOccurs="0" />
    <xs:element name="EchoReturn" type="xs:int" minOccurs="0" />
    <!-- <xs:element name="RxAvgGain" type="xs:int" minOccurs="0"/> -->
    <!--This is obsolete in w14-->
    <xs:element name="SpeakerFeedbackMicIn" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="SpeechLevelMicIn" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="SpeechLevelPostProcess" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="SignalLevelLoudSpeaker" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="BackGroundNoiseMicIn" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="BackGroundNoiseSent" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="LocalSpeechToEcho" type="xs:int" minOccurs="0"/>
    <xs:element name="SpeakerGlitchRate" type="xs:int" minOccurs="0"/>
    <xs:element name="MicGlitchRate" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="SpeakerClipRate" type="xs:int" minOccurs="0"/>
    <!--This is obsolete in w14-->
    <xs:element name="MicClipRate" type="xs:int" minOccurs="0"/>
    <xs:element name="RxAGCSignalLevel" type="xs:int" minOccurs="0"/>
    <xs:element name="RxAGCNoiseLevel" type="xs:int" minOccurs="0"/>
    <xs:element ref="v2:InitialSignalLevelRMS" minOccurs="0"></xs:element>
    <xs:element ref="v2:AudioTimestampDriftRateMic" minOccurs="0"></xs:element>
  </xs:sequence>

```

```

<xs:element ref="v2:AudioTimestampDriftRateSpk" minOccurs="0"/></xs:element>
<xs:element ref="v2:AudioTimestampErrorMicMs" minOccurs="0"/></xs:element>
<xs:element ref="v2:AudioTimestampErrorSpkMs" minOccurs="0"/></xs:element>
<xs:element ref="v2:VsEntryCauses" minOccurs="0"/></xs:element>
<xs:element ref="v2:EchoEventCauses" minOccurs="0"/></xs:element>
<xs:element ref="v2:EchoPercentMicIn" minOccurs="0"/></xs:element>
<xs:element ref="v2:EchoPercentSend" minOccurs="0"/></xs:element>
<xs:element ref="v2:RxAvgAGCGain" minOccurs="0"/></xs:element>
<xs:sequence minOccurs="0">
  <xs:element ref="v2:Separator"/>
  <xs:element ref="v3:RecvSignalLevelCh1" minOccurs="0"/>
  <xs:element ref="v3:RecvSignalLevelCh2" minOccurs="0"/>
  <xs:element ref="v3:RecvNoiseLevelCh1" minOccurs="0"/>
  <xs:element ref="v3:RecvNoiseLevelCh2" minOccurs="0"/>
  <xs:element ref="v3:SendSignalLevelCh1" minOccurs="0"/>
  <xs:element ref="v3:SendSignalLevelCh2" minOccurs="0"/>
  <xs:element ref="v3:SendNoiseLevelCh1" minOccurs="0"/>
  <xs:element ref="v3:SendNoiseLevelCh2" minOccurs="0"/>
  <xs:sequence minOccurs="0">
    <xs:element ref="v3:Separator3"/>
    <xs:element ref="v4:RenderSignalLevel" minOccurs="0"/>
    <xs:element ref="v4:RenderNoiseLevel" minOccurs="0"/>
    <xs:element ref="v4:RenderLoopbackSignalLevel" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v4:Separator4" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
</xs:sequence>
</xs:sequence>
</xs:sequence>
</xs:sequence>
<xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  QUALITY ESTIMATES TYPE
-->
<xs:complexType name="QualityEstimatesType">
  <xs:choice>
    <xs:element name="Audio" type="tns:AudioQualityEstimatesType"/>
    <xs:element name="Video" type="tns:VideoQualityEstimatesType"/>
    <xs:any namespace="##other" processContents="lax" maxOccurs="unbounded"/>
  </xs:choice>
</xs:complexType>
<!--
  AUDIO QUALITY ESTIMATES TYPE
-->
<xs:complexType name="AudioQualityEstimatesType">
  <xs:sequence>
    <xs:element name="RecvListenMOS" type="xs:float" minOccurs="0"/>
    <xs:element name="RecvListenMOSMin" type="xs:float" minOccurs="0"/>
    <xs:element name="RecvListenMOSAlg" type="xs:string" minOccurs="0"/>
    <xs:element name="SendListenMOS" type="xs:float" minOccurs="0"/>
    <xs:element name="SendListenMOSMin" type="xs:float" minOccurs="0"/>
    <xs:element name="SendListenMOSAlg" type="xs:string" minOccurs="0"/>
    <xs:element name="NetworkMOS" type="tns:NetworkAudioMOSType" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  NETWORK AUDIO MOS FACTOR TYPE
-->
<xs:complexType name="NetworkAudioMOSType">
  <xs:sequence>
    <xs:element name="OverallAvg" type="xs:float" minOccurs="0"/>
    <xs:element name="OverallMin" type="xs:float" minOccurs="0"/>
    <xs:element name="DegradationAvg" type="xs:float" minOccurs="0"/>
    <xs:element name="DegradationMax" type="xs:float" minOccurs="0"/>
    <xs:element name="DegradationJitterAvg" type="xs:float" minOccurs="0"/>
  </xs:sequence>
</xs:complexType>

```

```

    <xs:element name="DegradationPacketLossAvg" type="xs:float" minOccurs="0"/>
    <xs:element ref="v2:NetworkMOSAlg" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator" />
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  VIDEO QUALITY ESTIMATES TYPE
-->
<xs:complexType name="VideoQualityEstimatesType">
  <xs:sequence>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<!--
  TRANSPORT TYPE
-->
<xs:simpleType name="TransportType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="UDP"/>
    <xs:enumeration value="TCP"/>
  </xs:restriction>
</xs:simpleType>

<!--
NETWORK CONNECTIVITY TYPE
-->
<xs:complexType name="NetworkConnectivityInfoType">
  <xs:sequence>
    <xs:element name="NetworkConnection" type="tns:NetworkConnectionType" minOccurs="0"/>
    <xs:element name="VPN" type="xs:boolean" minOccurs="0"/>
    <xs:element name="LinkSpeed" type="xs:float" minOccurs="0"/>
    <xs:element ref="v2:BSSID" minOccurs="0"/></xs:element>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator"/></xs:element>
      <xs:element ref="v3:NetworkConnectionDetails" minOccurs="0"/>
      <xs:element ref="v3:WifiDriverDeviceDesc" minOccurs="0"/>
      <xs:element ref="v3:WifiDriverVersion" minOccurs="0"/>
      <xs:element ref="v3:TraceRoute" minOccurs="0" maxOccurs="unbounded"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v3:Separator3"/>
        <xs:any namespace="##other" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>

<!--
ETHERNET CONNECTION TYPE
-->
<xs:simpleType name="NetworkConnectionType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="wired"/>
    <xs:enumeration value="wifi"/>
  </xs:restriction>
</xs:simpleType>

<!--
ENDPOINT TYPE
-->
<xs:complexType name="EndpointType">
  <xs:sequence>

```

```

    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:attribute name="Name" type="xs:string" use="required"/>
  <xs:attribute name="ProfileId" type="xs:string" use="optional"/>
  <xs:attribute ref="v2:OS" use="optional"/>
  <xs:attribute ref="v2:CPUName" use="optional"/>
  <xs:attribute ref="v2:CPUNumberOfCores" use="optional"/>
  <xs:attribute ref="v2:CPUProcessorSpeed" use="optional"/>
  <xs:attribute ref="v2:VirtualizationFlag" use="optional"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
  <!-- Name = Computer Name-->
  <!-- ProfileId = Endpoint Report GUID - Note: this attribute is optional-->
</xs:complexType>
</xs:schema>

```

The schema for **ms-rtcp-metrics.v2.xsd** is as follows:

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:v2="ms-rtcp-metrics.v2" xmlns:v3="ms-rtcp-metrics.v3" xmlns:v4="ms-rtcp-
metrics.v4" xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="ms-rtcp-metrics.v2"
elementFormDefault="qualified" version="1.2" attributeFormDefault="unqualified">
  <xs:import namespace="ms-rtcp-metrics.v3"></xs:import>
  <xs:import namespace="ms-rtcp-metrics.v4"></xs:import>

  <!--Schema version-->
  <xs:attribute name="SchemaVersion" type="xs:string"/>

  <!--The following are part of dialog info-->

  <xs:element name="CallPriority" type="xs:short"/>
  <xs:element name="RegisteredInside" type="xs:boolean"/>
  <xs:element name="MediationServerBypassFlag" type="xs:boolean"/>
  <xs:element name="TrunkingPeer" type="xs:string"/>
  <xs:element name="BSSID" type="xs:string"/>
  <xs:element name="MediaBypassWarningFlag" type="xs:int"/>

  <!--The following are ICE metrics-->
  <xs:attribute name="RtpLatched" type="xs:boolean"/>

  <!--The following are media metrics-->

  <xs:element name="AppliedBandwidthLimit" type="xs:int"/>
  <xs:element name="AppliedBandwidthSource" type="xs:string"/>
  <xs:element name="InitialSignalLevelRMS" type="xs:float"/>
  <xs:element name="AudioFECUsed" type="xs:boolean"/>
  <xs:element name="VideoAllocateBWAvg" type="xs:int"/>
  <xs:element name="VideoLocalFrameLossPercentageAvg" type="xs:float"/>

  <!--The following are AEC metrics-->
  <xs:element name="AudioTimestampDriftRateMic" type="xs:float"/>
  <xs:element name="AudioTimestampDriftRateSpk" type="xs:float"/>
  <xs:element name="AudioTimestampErrorMicMs" type="xs:float"/>
  <xs:element name="AudioTimestampErrorSpkMs" type="xs:float"/>
  <xs:element name="VsEntryCauses" type="xs:short"/>
  <xs:element name="EchoEventCauses" type="xs:unsignedByte"/>
  <xs:element name="EchoPercentMicIn" type="xs:float"/>
  <xs:element name="EchoPercentSend" type="xs:float"/>
  <xs:element name="RxAvgAGCGain" type="xs:int"/>

  <!--The following are healer metrics-->
  <xs:element name="RatioConcealedSamplesAvg" type="xs:float"/>
  <xs:element name="RatioStretchedSamplesAvg" type="xs:float"/>
  <xs:element name="RatioCompressedSamplesAvg" type="xs:float"/>

  <!--The following are Network MOS related-->

```

```

<xs:element name="NetworkMOSAlg" type="xs:string"/>

<!--The following are endpoint information-->

<xs:attribute name="OS" type="xs:string"/>
<!--
Bit flag indicate if the system is running in a virtualized environment:
    0x00: None
    0x01: HyperV
    0x02: VMWare
    0x04: Virtual PC
    0x08: Xen PC
-->
<xs:attribute name="VirtualizationFlag" type="xs:byte"/>
<xs:attribute name="CPUNumberOfCores" type="xs:short"/>
<xs:attribute name="CPUProcessorSpeed" type="xs:int"/>
<xs:attribute name="CPUName" type="xs:string"/>
<xs:element name="MACAddr" type="xs:string"/>

<!--The following are client event count-->
<xs:element name="LocalClientEvent" type="v2:ClientEventType"/>
<xs:element name="RemoteClientEvent" type="v2:ClientEventType"/>
<xs:complexType name="ClientEventType">
  <xs:sequence>
    <xs:element name="NetworkSendQualityEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="NetworkReceiveQualityEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="NetworkDelayEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="NetworkBandwidthLowEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="CPUInsufficientEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceHalfDuplexAECEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceRenderNotFunctioningEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceCaptureNotFunctioningEventRatio" type="xs:float"
minOccurs="0"/>
    <xs:element name="DeviceGlitchesEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceLowSNREventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceLowSpeechLevelEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceClippingEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceEchoEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceNearEndToEchoRatioEventRatio" type="xs:float" minOccurs="0"/>
    <xs:element name="DeviceMultipleEndpointsEventCount" type="xs:short" minOccurs="0"/>
    <xs:element name="DeviceHowlingEventCount" type="xs:short" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator"/>
      <xs:element ref="v3:DeviceRenderZeroVolumeEventRatio" minOccurs="0"/>
      <xs:element ref="v3:DeviceRenderMuteEventRatio" minOccurs="0"/>
      <xs:sequence minOccurs="0">
        <xs:element ref="v3:Separator3" />
        <xs:any namespace="##any" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:sequence>
  </xs:sequence>
</xs:complexType>

<!--The following are video metrics-->
<xs:element name="VideoResolutionDistribution" type="v2:VideoResolutionDistributionType"/>

<xs:complexType name="VideoResolutionDistributionType">
  <xs:sequence>
    <xs:element name="CIFQuality" type="xs:unsignedByte" />
    <xs:element name="VGAQuality" type="xs:unsignedByte" />
    <xs:element name="HD720Quality" type="xs:unsignedByte" />
    <xs:sequence minOccurs="0">
      <xs:element ref="v2:Separator"/>

```



```

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

<xs:element name="VideoRateMatchingLevelDistribution"
type="v2:VideoRateMatchingLevelDistributionType"/>
<xs:complexType name="VideoRateMatchingLevelDistributionType">
    <xs:sequence>
        <xs:element name="None Drop" type="xs:unsignedByte" />
        <xs:element name="B_Drop" type="xs:unsignedByte" />
        <xs:element name="BP_Drop" type="xs:unsignedByte" />
        <xs:element name="BPSP_Drop" type="xs:unsignedByte" />
        <xs:element name="BPSP_I_Drop" type="xs:unsignedByte" />
        <xs:sequence minOccurs="0">
            <xs:element ref="v2:Separator"/>
            <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:sequence>
</xs:complexType>
<xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<!--The following are debugging blob, it's for internal use only-->

<xs:element name="OpaqueClientPlatformData" type="v2:OpaqueClientPlatformDataType" />
<xs:element name="OpaqueServerPlatformData" type="v2:OpaqueServerPlatformDataType" />
<xs:element name="OpaqueCoreEndpointData" type="v2:OpaqueCoreEndpointDataType" />
<xs:element name="OpaqueConferenceData" type="v2:OpaqueConferenceDataType" />
<xs:element name="OpaqueChannelData" type="v2:OpaqueChannelDataType" />

<!--These two elements should be removed once nobody refer to it. (Instead, everyone should
use OpaqueChannelData)-->
<xs:element name="OpaqueAudioData" type="v2:OpaqueAudioDataType" />
<xs:element name="OpaqueVideoData" type="v2:OpaqueVideoDataType" />

<!--OPAQUE MEDIALINE DATA TYPE-->
<xs:complexType name="OpaqueCoreEndpointDataType">
    <xs:sequence>
        <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>
<!--OPAQUE CHANNEL DATA TYPE-->
<xs:complexType name="OpaqueChannelDataType" >
    <xs:sequence>
        <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>
<!--OPAQUE CLIENT PLATFORM DATA TYPE-->
<xs:complexType name="OpaqueClientPlatformDataType">
    <xs:sequence>
        <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>
<!--OPAQUE SERVER PLATFORM DATA TYPE-->
<xs:complexType name="OpaqueServerPlatformDataType">
    <xs:sequence>
        <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>
<!--OPAQUE CONFERENCE DATA TYPE-->
<xs:complexType name="OpaqueConferenceDataType">
    <xs:sequence>

```

```

        <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>
<!--OPAQUE VIDEO DATA TYPE (this should be removed once nobody refer to it)-->
<xs:complexType name="OpaqueVideoDataType">
    <xs:sequence>
        <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>
<!--OPAQUE AUDIO DATA TYPE (this should be removed once nobody refer to it)-->
<xs:complexType name="OpaqueAudioDataType">
    <xs:sequence>
        <xs:element name="OpaqueData" type="xs:string" minOccurs="0" />
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax" />
</xs:complexType>

<!--Separator is used for forward/backward compatibility-->
<xs:element name="Separator">
    <xs:complexType></xs:complexType>
</xs:element>

</xs:schema>

```

The schema for **ms-rtcp-metrics.v3.xsd** is as follows:

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:tns="ms-rtcp-metrics" xmlns:v2="ms-rtcp-metrics.v2" xmlns:v3="ms-rtcp-
metrics.v3" xmlns:v4="ms-rtcp-metrics.v4" xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="ms-rtcp-metrics.v3" elementFormDefault="qualified" version="1.2"
attributeFormDefault="unqualified">
    <xs:import namespace="ms-rtcp-metrics.v4"></xs:import>

    <!--Core Metrics-->
    <xs:element name="WifiDriverDeviceDesc" type="xs:string"/>
    <xs:element name="WifiDriverVersion" type="xs:string"/>

    <!--ClientEvent Metrics-->
    <xs:element name="NetworkConnectionDetails" type="xs:string"/>
    <xs:element name="DeviceRenderZeroVolumeEventRatio" type="xs:float"/>
    <xs:element name="DeviceRenderMuteEventRatio" type="xs:float"/>

    <!--Platform Metrics-->

    <!--Audio Metrics-->
    <xs:element name="DecodeStereoPercent" type="xs:float"/>
    <xs:element name="AecRenderStereoPercent" type="xs:float"/>
    <xs:element name="AudioPostFECPLR" type="xs:float"/>
    <xs:element name="EncodeStereoPercent" type="xs:float"/>
    <xs:element name="AecCaptureStereoPercent" type="xs:float"/>
    <xs:element name="RecvSignalLevelCh1" type="xs:int"/>
    <xs:element name="RecvSignalLevelCh2" type="xs:int"/>
    <xs:element name="RecvNoiseLevelCh1" type="xs:int"/>
    <xs:element name="RecvNoiseLevelCh2" type="xs:int"/>
    <xs:element name="SendSignalLevelCh1" type="xs:int"/>
    <xs:element name="SendSignalLevelCh2" type="xs:int"/>
    <xs:element name="SendNoiseLevelCh1" type="xs:int"/>
    <xs:element name="SendNoiseLevelCh2" type="xs:int"/>
    <xs:element name="ConcealRatioMax" type="xs:float"/>
    <xs:element name="ConcealRatioSd" type="xs:float"/>
    <xs:element name="HealerPacketDropRatio" type="xs:float"/>
    <xs:element name="HealerFECPacketUsedRatio" type="xs:float"/>
    <xs:element name="MaxCompressedSamples" type="xs:float"/>

```

```

<!--Jitter Metrics-->
<xs:element name="InterArrivalSD" type="xs:float"/>

<!--Video Metrics-->
<xs:element name="SendCodecTypes" type="xs:string"/>
<xs:element name="SendResolutionWidth" type="xs:int"/>
<xs:element name="SendResolutionHeight" type="xs:int"/>
<xs:element name="SendFrameRateAverage" type="xs:float"/>
<xs:element name="SendBitRateMaximum" type="xs:int"/>
<xs:element name="SendBitRateAverage" type="xs:int"/>
<xs:element name="SendVideoStreamsMax" type="xs:int"/>

<xs:element name="RecvCodecTypes" type="xs:string"/>
<xs:element name="RecvResolutionWidth" type="xs:int"/>
<xs:element name="RecvResolutionHeight" type="xs:int"/>
<xs:element name="RecvFrameRateAverage" type="xs:float"/>
<xs:element name="RecvBitRateMaximum" type="xs:int"/>
<xs:element name="RecvBitRateAverage" type="xs:int"/>
<xs:element name="RecvVideoStreamsMax" type="xs:int"/>
<xs:element name="RecvVideoStreamsMin" type="xs:int"/>
<xs:element name="RecvVideoStreamsMode" type="xs:int"/>
<xs:element name="VideoPostFECPLR" type="xs:float"/>

<xs:element name="RelativeOneWay" type="v3:MetricAggregationType"/>

<xs:element name="BandwidthEstMin" type="xs:int"/>
<xs:element name="BandwidthEstMax" type="xs:int"/>
<xs:element name="BandwidthEstStdDev" type="xs:int"/>
<xs:element name="BandwidthEstAvge" type="xs:int"/>
<xs:element name="LowBandwidthForMultiview" type="xs:float"/>

<xs:element name="LossCongestionPercent" type="xs:float"/>
<xs:element name="DelayCongestionPercent" type="xs:float"/>
<xs:element name="ContentionDetectedPercent" type="xs:float"/>

<xs:element name="DynamicCapabilityPercent" type="xs:float"/>
<xs:element name="ResolutionMin" type="xs:string"/>
<xs:element name="LowBitRateCallPercent" type="xs:float"/>
<xs:element name="LowFrameRateCallPercent" type="xs:float"/>
<xs:element name="LowResolutionCallPercent" type="xs:float"/>

<!-- Support multiple video payloads in single stream -->
<xs:element name="AdditionalPayload" type="tns:PayloadMetricsType" />
<xs:element name="DurationSeconds" type="xs:float"/>
<xs:element name="IsAggregatedData" type="xs:boolean" default="true"/>
<xs:element name="UseForCallClassification" type="xs:boolean" default="true" />

<!-- New Description elements -->
<xs:element name="ReflexiveLocalIPAddress" type="tns:AddrType"/>
<xs:element name="MidCallReport" type="xs:boolean" default="false" />

<xs:complexType name="ApplicationSharingPayloadMetricsType">
  <xs:sequence>
    <xs:element name="PayloadDescription" type="xs:string" minOccurs="0"/>
    <xs:element name="AverageRectangleHeight" type="xs:int" minOccurs="0"/>
    <xs:element name="AverageRectangleWidth" type="xs:int" minOccurs="0"/>
    <xs:element name="ApplicationShared" type="xs:string" minOccurs="0"/>
    <xs:element name="RDPTileProcessingLatency" type="v3:MetricAggregationType"
minOccurs="0"/>
    <xs:element name="CaptureTileRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="SpoiledTilePercent" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="ScrapingFrameRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="IncomingTileRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="IncomingFrameRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="OutgoingTileRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="OutgoingFrameRate" type="v3:MetricAggregationType" minOccurs="0"/>
    <xs:element name="OpaqueAppSharingData" type="v2:OpaqueChannelDataType" minOccurs="0"/>
  </xs:sequence minOccurs="0">

```

```

    <xs:element ref="v3:Separator3"/>
    <xs:element ref="v4:InitialFrameReceivedTime" minOccurs="0"/>
    <xs:element ref="v4:InitialFrameSentSize" minOccurs="0"/>
    <xs:element ref="v4:NumSharingStarted" minOccurs="0"/>
    <xs:element ref="v4:NumRemoteControlChanges" minOccurs="0"/>
    <xs:element name="SharerAppSharingEstablishTime" type="v4:AppSharingEstablishTime"
minOccurs="0"/>
    <xs:element name="ViewerAppSharingEstablishTime" type="v4:AppSharingEstablishTime"
minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v4:Separator4" />
      <xs:any namespace="##any" processContents="lax" minOccurs="0"
maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
</xs:sequence>
<xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<xs:complexType name="MetricAggregationType">
  <xs:sequence>
    <xs:element name="Total" type="xs:float" minOccurs="0"/>
    <xs:element name="Average" type="xs:float" minOccurs="0"/>
    <xs:element name="Max" type="xs:float" minOccurs="0"/>
    <xs:element name="Burst" type="v3:MetricBurstGapType" minOccurs="0"/>
    <xs:element name="Gap" type="v3:MetricBurstGapType" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"/>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<!--Metrics Burst and Gap Type calculation-->
<xs:complexType name="MetricBurstGapType">
  <xs:sequence>
    <xs:element name="Occurrences" type="xs:int" minOccurs="0"/>
    <xs:element name="Density" type="xs:float" minOccurs="0"/>
    <xs:element name="Duration" type="xs:float" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"/>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<xs:element name="TraceRoute" type="v3:TraceRouteType"/>

<xs:complexType name="TraceRouteType">
  <xs:sequence>
    <xs:element name="Hop" type="xs:int" minOccurs="1"/>
    <xs:element name="IPAddress" type="xs:string" minOccurs="0"/>
    <xs:element name="RTT" type="xs:int" minOccurs="0"/>
    <xs:sequence minOccurs="0">
      <xs:element ref="v3:Separator3"/>
      <xs:any namespace="##any" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>

<!--Separator is used for forward/backward compatibility-->
<xs:element name="Separator3">
  <xs:complexType></xs:complexType>
</xs:element>

```

```
</xs:schema>
```

The schema for **ms-rtcp-metrics.v4.xsd** is as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:tns="ms-rtcp-metrics" xmlns:v2="ms-rtcp-metrics.v2" xmlns:v3="ms-rtcp-
metrics.v3" xmlns:v4="ms-rtcp-metrics.v4" xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="ms-rtcp-metrics.v4" elementFormDefault="qualified" version="1.2"
attributeFormDefault="unqualified">

  <xs:element name="InitialFrameReceivedTime" type="xs:int"/>
  <xs:element name="InitialFrameSentSize" type="xs:int"/>
  <xs:element name="NumSharingStarted" type="xs:int"/>
  <xs:element name="NumRemoteControlChanges" type="xs:int"/>

  <xs:complexType name="AppSharingEstablishTime">
    <xs:sequence>
      <xs:element name="SignalingTime" type="xs:int"/>
      <xs:element name="MediaSetupTime" type="xs:int"/>
      <xs:element name="ProtocolConnectTime" type="xs:int"/>
    </xs:sequence>
    <xs:anyAttribute namespace="##any" processContents="lax"/>
  </xs:complexType>

  <xs:element name="RecvReorderBufferTotalPackets" type="xs:int" />
  <xs:element name="RecvReorderBufferReorderedPackets" type="xs:int" />
  <xs:element name="RecvReorderBufferReorderedPacketsSuccessfullyOrdered" type="xs:int" />
  <xs:element name="RecvReorderBufferPacketsDroppedDueToBufferExhaustion" type="xs:int" />
  <xs:element name="RecvReorderBufferMaxSuccessfullyOrderedExtent" type="xs:int" />
  <xs:element name="RecvReorderBufferMaxSuccessfullyOrderedLateTime" type="xs:int" />
  <xs:element name="RecvReorderBufferPacketsDroppedDueToTimeout" type="xs:int" />

  <xs:element name="RenderSignalLevel" type="xs:float"/>
  <xs:element name="RenderNoiseLevel" type="xs:float"/>
  <xs:element name="RenderLoopbackSignalLevel" type="xs:float"/>

  <xs:element name="JitterBufferSizeAvg" type="xs:int"/>
  <xs:element name="JitterBufferSizeMax" type="xs:int"/>
  <xs:element name="JitterBufferSizeMin" type="xs:int"/>
  <xs:element name="JitterBufferSizeSD" type="xs:int"/>
  <xs:element name="NetworkJitterAvg" type="xs:float"/>
  <xs:element name="NetworkJitterMax" type="xs:float"/>
  <xs:element name="NetworkJitterMin" type="xs:float"/>
  <xs:element name="NetworkJitterSD" type="xs:float"/>

  <xs:element name="PacketReorderRatio" type="xs:float"/>
  <xs:element name="PacketReorderDepthAvg" type="xs:int"/>
  <xs:element name="PacketReorderDepthMax" type="xs:int"/>

  <xs:element name="BurstLossLength1" type="xs:float"/>
  <xs:element name="BurstLossLength2" type="xs:float"/>
  <xs:element name="BurstLossLength3" type="xs:float"/>
  <xs:element name="BurstLossLength4" type="xs:float"/>
  <xs:element name="BurstLossLength5" type="xs:float"/>
  <xs:element name="BurstLossLength6" type="xs:float"/>
  <xs:element name="BurstLossLength7" type="xs:float"/>
  <xs:element name="BurstLossLength8OrHigher" type="xs:float"/>

  <xs:element name="FECRecvOnPercent" type="xs:float"/>
  <xs:element name="FECRecvDistance1" type="xs:float"/>
  <xs:element name="FECRecvDistance2" type="xs:float"/>
  <xs:element name="FECRecvDistance3" type="xs:float"/>
  <xs:element name="FECRecvDistance4" type="xs:float"/>
  <xs:element name="FECRecvDistance5" type="xs:float"/>
  <xs:element name="FECRecvDistance6" type="xs:float"/>
  <xs:element name="FECRecvDistance7" type="xs:float"/>
  <xs:element name="FECRecvDistance8OrHigher" type="xs:float"/>

```

```

<xs:element name="FECRecvScheme" type="xs:int"/>
<xs:element name="FECRecvRedundancy" type="xs:float"/>
<xs:element name="HealerPushCount" type="xs:int"/>
<xs:element name="HealerPullCount" type="xs:int"/>

<xs:element name="SendMutePercent" type="xs:float"/>

<xs:element name="CaptureOffloadedEffectsAudio" type="xs:int"/>
<xs:element name="RenderOffloadedEffectsAudio" type="xs:int"/>

<xs:element name="WifiRadioType" type="xs:unsignedByte"/>
<xs:element name="WifiRSSI" type="xs:int"/>
<xs:element name="SSID" type="xs:string"/>
<xs:element name="WifiChannel" type="xs:int"/>
<xs:element name="ActivePowerProfile" type="xs:int"/>
<xs:element name="WifiHandovers" type="xs:int"/>
<xs:element name="WifiChannelSwitches" type="xs:int"/>
<xs:element name="WifiChannelReassociations" type="xs:int"/>
<xs:element name="RecvQoSMarking" type="xs:unsignedByte"/>
<xs:element name="SendQoSMarking" type="xs:unsignedByte"/>
<xs:element name="WifiRadioFrequency" type="xs:int"/>
<xs:element name="WifiSendRate" type="xs:int"/>
<xs:element name="WifiReceiveRate" type="xs:int"/>
<xs:element name="WifiRetryCount" type="xs:long"/>
<xs:element name="WifiTransmittedFrameCount" type="xs:long"/>
<xs:element name="WifiMaxSendSpeed" type="xs:int"/>
<xs:element name="WifiMaxReceiveSpeed" type="xs:int"/>
<xs:element name="WifiMTU" type="xs:int"/>
<xs:element name="WifiSupportFlags" type="xs:int"/>
<xs:element name="WifiStatusFlags" type="xs:int"/>
<xs:element name="WifiTunnelType" type="xs:int"/>
<xs:element name="WifiSignalStrength" type="xs:int"/>
<xs:element name="WifiBatteryCharge" type="xs:int"/>
<xs:element name="ConnectionName" type="xs:string"/>
<xs:element name="DNSSuffix" type="xs:string"/>

<xs:element name="WifiRetransmissionRate" type="xs:float"/>
<xs:element name="QoSMarkedRate" type="xs:float"/>

<xs:element name="LastRTPSendTime" type="xs:dateTime"/>
<xs:element name="LastRTCPSendTime" type="xs:dateTime"/>
<xs:element name="LastRTPReceiveTime" type="xs:dateTime"/>
<xs:element name="LastRTCPReceiveTime" type="xs:dateTime"/>

<!-- Separator is used for forward/backward compatibility -->
<xs:element name="Separator4">
  <xs:complexType></xs:complexType>
</xs:element>
</xs:schema>

```

The schema for **ms-cqf.xsd** is as follows:

```

<?xml version="1.0" encoding="utf-8"?>
<xs:schema targetNamespace="ms-cqf" elementFormDefault="qualified" xmlns:mstns="ms-cqf"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="CallQualityFeedbackReport" type="mstns:CallQualityFeedbackReportType"/>
  <xs:complexType name="CallQualityFeedbackReportType">
    <xs:sequence>
      <xs:element name="ReportingUserURI" type="xs:anyURI" minOccurs="1" maxOccurs="1"/>
      <xs:element name="Rating" type="xs:int" minOccurs="1" maxOccurs="1"/>
      <xs:element name="Feedback" type="mstns:TextFeedbackType" minOccurs="0"
maxOccurs="1"/>
      <xs:element name="Tokens" type="mstns:TokenCollectionType" minOccurs="0"
maxOccurs="1"/>
      <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
  <xs:attribute name="CallId" type="xs:string" use="required"/>

```

```

    <xs:attribute name="FromTag" type="xs:string" use="required"/>
    <xs:attribute name="ToTag" type="xs:string" use="required"/>
    <xs:attribute name="Start" type="xs:dateTime"/>
    <xs:attribute name="End" type="xs:dateTime"/>
    <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<xs:complexType name="TextFeedbackType">
  <xs:sequence>
    <xs:element name="Text" type="xs:string"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <!--LanguageTag values from LanguageTag value defined within MS-LCID
  http://msdn.microsoft.com/en-us/library/cc233965.aspx -->
  <xs:attribute name="LanguageTag" type="xs:string"/>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
<xs:complexType name="TokenCollectionType">
  <xs:sequence>
    <xs:element name="Token" type="mstns:TokenValueType" minOccurs="1"
maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="TokenValueType">
  <xs:sequence>
    <xs:element name="Id" type="xs:int" minOccurs="1" maxOccurs="1"/>
    <xs:element name="Value" type="xs:int" minOccurs="1" maxOccurs="1"/>
    <xs:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##other" processContents="lax"/>
</xs:complexType>
</xs:schema>

```

7 Appendix B: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include updates to those products.

- Microsoft Office Communications Server 2007
- Microsoft Office Communicator 2007
- Microsoft Office Communications Server 2007 R2
- Microsoft Office Communicator 2007 R2
- Microsoft Lync Server 2010
- Microsoft Lync 2010
- Microsoft Lync Server 2013
- Microsoft Lync Client 2013/Skype for Business
- Microsoft Skype for Business 2016
- Microsoft Skype for Business Server 2015
- Microsoft Skype for Business 2019
- Microsoft Skype for Business Server 2019
- Microsoft Skype for Business 2021

Exceptions, if any, are noted in this section. If an update version, service pack or Knowledge Base (KB) number appears with a product name, the behavior changed in that update. The new behavior also applies to subsequent updates unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms "SHOULD" or "SHOULD NOT" implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term "MAY" implies that the product does not follow the prescription.

[<1> Section 2.2](#): Office Communications Server 2007, Office Communicator 2007: This behavior is not supported.

[<2> Section 2.2.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This namespace is not supported.

[<3> Section 2.2.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This namespace is not supported.

[<4> Section 2.2.1.1](#): Office Communications Server 2007, Office Communicator 2007: The Version attribute and the v2:SchemaVersion attribute are not supported. Office Communications Server 2007 R2, Office Communicator 2007 R2: The v2:SchemaVersion attribute is not supported.

[<5> Section 2.2.1.1.2](#): Office Communications Server 2007, Office Communicator 2007: This attribute is not supported.

[<6> Section 2.2.1.1.2](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This attribute is not supported.

<7> [Section 2.2.1.2](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: The **v2:OpaqueClientPlatformData**, **v2:OpaqueServerPlatformData**, **v2:OpaqueConferenceData**, and **v2:Separator** elements are not supported.

<8> [Section 2.2.1.2.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<9> [Section 2.2.1.2.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<10> [Section 2.2.1.2.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<11> [Section 2.2.1.2.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<12> [Section 2.2.1.3](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: The **v2:OS**, **v2:CPUName**, **v2:CUNumberOfCores**, **v2:CPUProcessorSpeed**, **v2:VirtualizationFlag**, and **namespace="#other"** attributes are not supported.

<13> [Section 2.2.1.3.2](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This attribute is not supported.

<14> [Section 2.2.1.3.2](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This attribute is not supported.

<15> [Section 2.2.1.3.2](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This attribute is not supported.

<16> [Section 2.2.1.3.2](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This attribute is not supported.

<17> [Section 2.2.1.3.2](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This attribute is not supported.

<18> [Section 2.2.1.4](#): Office Communications Server 2007, Office Communicator 2007: The DialogCategory, CorrelationID, v2:CallPriority, v2:MediationServerBypassFlag, v2:TrunkingPeer, and v2:MediaBypassWarningFlag elements are not supported. The DialogCategoryType is also not supported. Office Communications Server 2007 R2, Office Communicator 2007 R2: The v2:CallPriority, v2:MediationServerBypassFlag, v2:TrunkingPeer, and v2:MediaBypassWarningFlag elements are not supported.

<19> [Section 2.2.1.4.1](#): Office Communications Server 2007, Office Communicator 2007: This element is not supported.

<20> [Section 2.2.1.4.1](#): Office Communications Server 2007, Office Communicator 2007: This element is not supported.

<21> [Section 2.2.1.4.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<22> [Section 2.2.1.4.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<23> [Section 2.2.1.4.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<24> [Section 2.2.1.4.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<25> [Section 2.2.1.4.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<26> [Section 2.2.1.4.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<27> [Section 2.2.1.5](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: The **v2:AppliedBandwidthLimit**, **v2:AppliedBandwidthSource**, **v2:LocalClientEvent**, **v2:RemoteClientEvent**, **v2:OpaqueCoreEndpointData**, **v2:OpaqueChannelData**, and **v2:Separator** elements are not supported.

<28> [Section 2.2.1.5.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<29> [Section 2.2.1.5.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<30> [Section 2.2.1.5.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<31> [Section 2.2.1.5.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<32> [Section 2.2.1.5.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<33> [Section 2.2.1.5.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<34> [Section 2.2.1.5.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<35> [Section 2.2.1.5.2](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This value is not supported.

<36> [Section 2.2.1.6](#): Office Communications Server 2007, Office Communicator 2007: The **NetworkConnectivityInfo** element is not supported.

<37> [Section 2.2.1.6.1](#): Supported in Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2 only.

<38> [Section 2.2.1.6.1](#): Office Communications Server 2007, Office Communicator 2007: This element is not supported.

<39> [Section 2.2.1.6.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<40> [Section 2.2.1.6.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<41> [Section 2.2.1.6.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<42> [Section 2.2.1.6.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<58> [Section 2.2.1.7.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: The values in this table are not used.

<59> [Section 2.2.1.8](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: The **v2:BSSID** and **v2:Separator** elements are not supported.

<60> [Section 2.2.1.8.1](#): Office Communications Server 2007, Office Communicator 2007: The **NetworkConnectivityInfoType** type is not supported.

<61> [Section 2.2.1.8.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<62> [Section 2.2.1.8.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<63> [Section 2.2.1.8.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<64> [Section 2.2.1.8.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<65> [Section 2.2.1.8.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<66> [Section 2.2.1.8.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<67> [Section 2.2.1.8.1.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<68> [Section 2.2.1.8.1.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<69> [Section 2.2.1.9](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: The v2:MACAddr and v2:Separator elements are not supported.

<70> [Section 2.2.1.9.1](#): Supported in Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2 only.

<71> [Section 2.2.1.9.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<72> [Section 2.2.1.9.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<73> [Section 2.2.1.10](#): On Windows Vista operating system, the device name is the 'PKEY_DeviceInterface_FriendlyName' for the device. On all other versions of Windows, the device name is the value of the Description field of the 'DSPROPERTY_DIRECTSOUNDDEVICE_DESCRIPTION.

<74> [Section 2.2.1.10.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<75> Section 2.2.1.11.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<76> Section 2.2.1.12](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: The v2:RatioConcealedSamplesAvg, v2:RatioStretchedSamplesAvg, v2:RatioCompressSamplesAvg, and v2:Separator elements are not supported.

[<77> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: Available for **OutboundStream** only.

[<78> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<79> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<80> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<81> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<82> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<83> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<84> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<85> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<86> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<87> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<88> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<89> Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<90> [Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<91> [Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<92> [Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<93> [Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<94> [Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<95> [Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<96> [Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<97> [Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<98> [Section 2.2.1.12.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<99> [Section 2.2.1.13.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<100> [Section 2.2.1.14](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: The **v2:AudioFECUsed** and **v2:Separator** elements are not supported.

<101> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<102> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<103> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<104> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<105> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<136> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<137> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<138> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<139> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<140> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<141> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<142> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<143> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<144> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<145> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<146> [Section 2.2.1.14.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<147> [Section 2.2.1.15](#): Office Communications Server 2007, Office Communicator 2007: The **FrozenPeriodPercentAvg**, **ConsecutivePacketLossAvg**, **RateMatchLevel**, **v2:VideoAllocateBWAvg**, and **v2:VideoLocalFrameLossPercentageAvg** elements are not supported. Office Communications Server 2007 R2, Office Communicator 2007 R2: The **v2VideoAllocateBWAvg** and **v2:VideoLocalFrameLossPercentageAvg** elements are not supported.

<148> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007: This element is not supported.

<149> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007: This element is not supported.

<150> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007: This element is not supported.

[<151> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007: This element is not supported.

[<152> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<153> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<154> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<155> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<156> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<157> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<158> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<159> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<160> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<161> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<162> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<163> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<164> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<165> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<166> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<167> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<168> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<169> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<170> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<171> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<172> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<173> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<174> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<175> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<176> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<177> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<178> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<179> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<180> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<181> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

<182> [Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

[<183> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

[<184> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

[<185> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

[<186> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

[<187> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

[<188> Section 2.2.1.15.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

[<189> Section 2.2.1.15.1.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<190> Section 2.2.1.15.1.2](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<191> Section 2.2.1.16](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<192> Section 2.2.1.17](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: The **VideoResolutionDistribution** element is not supported.

[<193> Section 2.2.1.17.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: The **VideoResolutionDistribution** element is not supported.

[<194> Section 2.2.1.17.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<195> Section 2.2.1.17.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<196> Section 2.2.1.17.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<197> Section 2.2.1.17.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<198> Section 2.2.1.18](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: The VideoRateMatchingLevelDistribution element is not supported.

<199> [Section 2.2.1.18.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: The **VideoRateMatchingLevelDistribution** element is not supported.

<200> [Section 2.2.1.18.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<201> [Section 2.2.1.18.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

<202> [Section 2.2.1.18.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

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<206> [Section 2.2.1.19](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element and all its subelements are not supported.

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<208> [Section 2.2.1.19.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<209> [Section 2.2.1.19.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

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<213> [Section 2.2.1.19.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<214> [Section 2.2.1.19.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<215> [Section 2.2.1.19.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

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<232> [Section 2.2.1.19.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010, Lync Server 2013, Lync Client 2013/Skype for Business: This element is not supported.

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<235> [Section 2.2.1.19.1.2.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<236> [Section 2.2.1.19.1.2.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<237> [Section 2.2.1.19.1.2.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

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<248> [Section 2.2.1.26.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

<249> [Section 2.2.1.26.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

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<251> [Section 2.2.1.28](#): Office Communications Server 2007, Office Communicator 2007: The **SpeakerFeedbackMicIn**, **SpeechLevelMicIn**, **SpeechLevelPostProcess**, **SignalLevelLoudSpeaker**, **BackGroundNoiseMicIn**, **BackGroundNoiseSent**, **LocalSpeechToEcho**, **SpeakerGlitchRate**, **MicGlitchRate**, **SpeakerClipRate**, **MicGlitchRate**, **SpeakerClipRate**, **MicClipRate**, **RxAGCSignalLevel**, and **RxAGCNoiseLevel** elements are not supported.

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<252> [Section 2.2.1.28.1](#): Office Communications Server 2007, Office Communicator 2007: This element is not supported.

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[<271> Section 2.2.1.28.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

[<272> Section 2.2.1.28.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

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[<276> Section 2.2.1.28.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<277> Section 2.2.1.28.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

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[<279> Section 2.2.1.28.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<280> Section 2.2.1.28.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<281> Section 2.2.1.28.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<282> Section 2.2.1.28.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

[<283> Section 2.2.1.28.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2, Lync Server 2010, Lync 2010: This element is not supported.

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<298> [Section 2.2.1.29.1](#): Office Communications Server 2007, Office Communicator 2007, Office Communications Server 2007 R2, Office Communicator 2007 R2: This element is not supported.

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<314> [Section 6.1](#): This schema is supported in Office Communications Server 2007 and Office Communicator 2007 only.

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8 Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as Major, Minor, or None.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

- A document revision that incorporates changes to interoperability requirements.
- A document revision that captures changes to protocol functionality.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **None** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the relevant technical content is identical to the last released version.

The changes made to this document are listed in the following table. For more information, please contact dochelp@microsoft.com.

| Section | Description | Revision class |
|--|-------------------------------------|----------------|
| Z Appendix B: Product Behavior | Updated list of supported products. | Major |

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