

Audio/Video Working Group  
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Proposed RTP Control Protocol Extended Reports (RTCP XR)  
VoIP Metrics Management Information Base  
[draft-ietf-avt-rtcp-xr-mib-00.txt](#)

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## Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it defines objects for managing Real-Time Transport Control Protocol Extended Reports (RTCP XR) VoIP Metrics ([RFC3611](#)).

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## [1.](#) The Internet-Standard Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to [section 7 of RFC 3410](#) [[RFC3410](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIV2, which is described in STD 58, [RFC 2578](#) [[RFC2578](#)], STD 58, [RFC 2579](#) [[RFC2579](#)] and STD 58, [RFC 2580](#) [[RFC2580](#)].

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## [2. Overview](#)

An "RTP System" may be a host end-system that runs an application program that sends or receives RTP data packets, or it may be an intermediate-system that forwards RTP packets. RTP Control Protocol (RTCP) packets are sent by senders and receivers to convey information about RTP packet transmission and reception [[RFC3550](#)]. RTP monitors may collect RTCP information on senders and receivers to and from an RTP host or intermediate-system.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#).

### [2.1 Components](#)

The RTCP XR MIB is structured around "Session," "Receiver" and "Sender" conceptual abstractions.

2.1.1 An RTP Session is an association of two or more participants communicating with RTP. For each participant, the session is defined by a particular pair of destination transport addresses (one network address plus a port pair for RTP and RTCP). The destination transport addresses may be common for all participants, as in the case of IP multicast, or may be different for each, as in the case of individual unicast addresses plus a common port pair," as defined in

[section 3 of \[RFC3550\]](#).

2.1.2 A "Sender" is identified within an RTP session by a 32-bit numeric "Synchronization Source," or "SSRC", value and is "...the source of a stream of RTP packets" as defined in [section 3 of \[RFC3550\]](#). The sender is also a source of RTCP Sender Report packets as specified in [section 6 of \[RFC3550\]](#).

2.1.3 A "Receiver" of a "stream of RTP packets" can be a unicast or multicast Receiver as described in 2.1.1, above. An RTP Receiver has an SSRC value that is unique to the session. An RTP Receiver is a source of RTCP Receiver Reports as specified in [section 6 of \[RFC3550\]](#).

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## [2.2](#) Applicability of the MIB to RTP System Implementations

The RTCP XR MIB may be used in RTP Host Systems (end systems), see [section 3 of \[RFC3550\]](#) that are supporting Voice over IP (VoIP host systems).

2.2.1 VoIP host Systems are end-systems that may use the RTCP XR MIB to collect RTP Voice over IP session data that the host is sending or receiving; these data may be used by a network manager to detect and diagnose faults that occur over the lifetime of a VoIP session as in a "help-desk" scenario.

2.2.2 Monitors of RTP Voice over IP sessions may be third-party or may be located in the RTP host. Monitors may use the RTCP XR MIB to collect Voice over IP session statistical data; these data may be used by a network manager for planning and other network-management purposes. A Monitor may use the RTCP XR MIB to collect data to permit a network manager to diagnose faults in VoIP sessions.

2.2.3 Many host systems will want to keep track of streams beyond what they are sending and receiving. In a host monitor system, a host agent would use RTP data from the host to maintain data about streams it is sending and receiving, and RTCP data to collect data about other hosts in the session.

### [2.3](#) The Structure of the RTCP XR MIB

There is one table in the RTCP XR MIB. The `rtpXrVoipTable` contains objects that describe completed sessions at the host or monitor.

`rtpXrVoipIndex` is a global object that permits a network management application to obtain a unique index for conceptual row creation in the `rtpSessionTable`. In this way the SNMP Set operation MAY be used to configure a monitor.

### [2.4](#) Relationship to the RAQMON Architecture

## [3.](#) Definitions

```
RTCPXR-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
    Counter32, Counter64, Gauge32, mib-2, Integer32,
    MODULE-IDENTITY,
    OBJECT-TYPE, Unsigned32                FROM SNMPv2-SMI
    OBJECT-GROUP, MODULE-COMPLIANCE       FROM SNMPv2-CONF
    InterfaceIndex                        FROM IF-MIB
    ItuPerceivedSeverity                   FROM ITU-ALARM-TC;
```

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```
rtcpXrMIB MODULE-IDENTITY
```

```
    LAST-UPDATED "200409120000Z"
```

```
    ORGANIZATION
```

```
        "IETF AVT Working Group"
```

```
    DESCRIPTION
```

```
        "The managed objects of RTCP XR systems.
```

```
        Refer to RFC 3611, Real Time Control Protocol Extended
        Reports (RTCP XR) Section 4.7 VoIP Metrics"
```

REVISION "200409120000Z"  
DESCRIPTION "Initial version of this MIB.  
Published as [draft-ietf-avt-rtcpXrmib-00.txt](#)."

::= { mib-2 TBD }

--

-- OBJECTS

--

rtcpXrMIBObjects OBJECT IDENTIFIER ::= { rtcpXrMIB 1 }

rtcpXrConformance OBJECT IDENTIFIER ::= { rtcpXrMIB 2 }

rtcpXrEvents OBJECT IDENTIFIER ::= { rtcpXrMIB 3 }

--

-- RTCP Extended Reports - Voice over IP Metrics

--

-- Description

-- This MIB provides basic voice quality monitoring capabilities  
-- for Voice-over-packet systems. The MIB contains 5 tables of  
-- information:-

-- a table with one entry for each voice terminationPoint

-- a table that defines the parameters associated with voice  
-- coders

-- a table of call records with call identifying and quality  
-- information

-- a table of extended call records with additional metrics

-- a table of Termination Point groups with one entry per  
-- logical group

rtcpXrVoipTable OBJECT-TYPE

SYNTAX SEQUENCE OF rtcpXrVoipEntry

ACCESS not-accessible

STATUS current

DESCRIPTION

"Table of information about a receiver or receivers of RTCP XR  
session data. RTP hosts that receive RTCP XR session packets  
MUST create an entry in this table for that receiver/sender  
pair. RTP hosts that send RTCP XR session packets MAY create  
an entry in this table for each receiver to their stream  
using RTCP XR feedback from the RTP group. "

::= { rtcpXrMIBObjects 1 }

rtcpXrVoipEntry OBJECT-TYPE

SYNTAX rtcpXrVoipEntry

STATUS current

DESCRIPTION

"An entry in the table of call records. A row in this table is created for each RTP session endpoint participating."

INDEX { rtcpXrVoipIndex }

::= { rtcpXrVoipTable 1 }

rtcpXrVoipEntry ::= SEQUENCE {

rtcpXrVoipIndex	INTEGER,
rtcpXrVoipCallIdentifier	OCTET STRING,
rtcpXrVoipSessionIdentifier	OCTET STRING,
rtcpXrVoipSourceIPAddress	OCTET STRING,
rtcpXrVoipSourceIdentifier	OCTET STRING,
rtcpXrVoipDestinationIPAddress	OCTET STRING,
rtcpXrVoipDestinationIdentifier	OCTET STRING,
rtcpXrVoipVocoderType	OCTET STRING,
rtcpXrVoipFrameSize	INTEGER,
rtcpXrVoipSmampleRate	INTEGER,
rtcpXrVoipCallDurationMs	INTEGER,
rtcpXrVoipNetworkLossRate	INTEGER,
rtcpXrVoipAverageDiscardRate	INTEGER,
rtcpXrVoipBurstLossDensity	INTEGER,
rtcpXrVoipBurstLenMs	INTEGER,
rtcpXrVoipGapLossDensity	INTEGER,
rtcpXrVoipGapLenMs	INTEGER,
rtcpXrVoipAverageOneWayDelay	INTEGER,
rtcpXrVoipEndSystemDelay	INTEGER,
rtcpXrVoipNoiseLeveldBm	INTEGER,
rtcpXrVoipSignalLeveldBm	INTEGER,
rtcpXrVoipLocalRERLdB	INTEGER,
rtcpXrVoipConversationalR	INTEGER,
rtcpXrVoipListeningR	INTEGER,
rtcpXrVoipListeningMOSLQ	INTEGER,
rtcpXrVoipConversationalMOSCQ	INTEGER,
rtcpXrVoipPlcType	INTEGER,
rtcpXrVoipJitterBufferAdaptationMode	INTEGER,
rtcpXrVoipJitterBufferAdaptationRate	INTEGER,
rtcpXrVoipJitterBufferAverageDelay	INTEGER,
rtcpXrVoipJitterBufferMaximumDelay	INTEGER,
rtcpXrVoipJitterBufferSize	INTEGER

}

rtcpXrVoipIndex OBJECT-TYPE

SYNTAX INTEGER (0..65535)  
STATUS current  
DESCRIPTION  
    "Index for this call."  
 ::= { rtcpXrVoipEntry 1 }

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rtcpXrVoipCallIdentifier OBJECT-TYPE  
SYNTAX OCTET STRING  
STATUS optional  
DESCRIPTION  
    "Call identifier for this call."  
 ::= { rtcpXrVoipEntry 2 }

rtcpXrVoipSessionIdentifier OBJECT-TYPE  
SYNTAX OCTET STRING  
STATUS optional  
DESCRIPTION  
    "Unique identifier for this session. Where a billing record  
    correlation identifier is not available for a particular call,  
    another identifier such as SSRC can be used."  
 ::= { rtcpXrVoipEntry 3 }

rtcpXrVoipSourceIPAddress OBJECT-TYPE  
SYNTAX OCTET STRING  
STATUS optional  
DESCRIPTION  
    "Source IP address for this session."  
 ::= { rtcpXrVoipEntry 4 }

rtcpXrVoipSourceIdentifierType OBJECT-TYPE  
SYNTAX INTEGER { dialedNumber(0),  
                                    urlId (1)            }  
DESCRIPTION  
    "Defines the type of address in parameter  
    rtcpXrVoipSourceIdentifier"  
 ::= { rtcpXrVoipEntry 5 }

rtcpXrVoipSourceIdentifier OBJECT-TYPE  
SYNTAX OCTET STRING  
STATUS optional  
DESCRIPTION



"Alternate identifier to the IP address. This can be E.164,  
DN, or URL."  
 ::= { rtcpXrVoipEntry 6 }

rtcpXrVoipDestinationIPAddress OBJECT-TYPE  
SYNTAX OCTET STRING  
STATUS current  
DESCRIPTION  
"Source IP address for this session."  
 ::= { rtcpXrVoipEntry 7 }

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rtcpXrVoipDestinationIdentifierType OBJECT-TYPE  
SYNTAX INTEGER { dialedNumber(0),  
urlId (1) }  
DESCRIPTION  
"Defines the type of address in parameter  
rtcpXrVoipDestinationIdentifier"  
 ::= { rtcpXrVoipEntry 8 }

rtcpXrVoipDestinationIdentifier OBJECT-TYPE  
SYNTAX OCTET STRING  
STATUS current  
DESCRIPTION  
"Alternate identifier to the IP address. This can be E.164,  
DN, or URL."  
 ::= { rtcpXrVoipEntry 9 }

rtcpXrVoipVocoderType OBJECT-TYPE  
SYNTAX OCTET STRING  
STATUS current  
DESCRIPTION  
"Vocoder type used on this call."  
 ::= { rtcpXrVoipEntry 10 }

rtcpXrVoipFrameSize OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
"Companion information to vocoder type. This represents the  
size of the frames within the RTP packets at the time the

information is capture."  
 ::= { rtcpXrVoipEntry 11 }

rtcpXrVoipSampleRate OBJECT-TYPE  
SYNTAX OCTET STRING  
STATUS current  
DESCRIPTION  
"Companion information to vocoder type. This represents the  
rate at which the frames where sampled."  
 ::= { rtcpXrVoipEntry 12 }

rtcpXrVoipCallDurationMs OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
"Duration of call in milliseconds."  
 ::= { rtcpXrVoipEntry 13 }

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rtcpXrVoipStartTimestamp OBJECT-TYPE  
SYNTAX INTEGER  
ACCESS read-only  
STATUS mandatory  
DESCRIPTION  
"The timestamp captured at the start of the session."  
 ::= { rtcpXrVoipEntry 14 }

rtcpXrVoipEndTimestamp OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
"The timestamp captured at the end of the session."  
 ::= { rtcpXrVoipEntry 15 }

rtcpXrVoipNetworkLossRate OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
"Average rate of network packet loss ([RFC3611 Section 4.7](#))."  
 ::= { rtcpXrVoipEntry 16 }

rtcpXrVoipAverageDiscardRate OBJECT-TYPE

SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
"Average rate of discards due to jitter([RFC3611 Section 4.7](#))."  
::= { rtcpXrVoipEntry 17 }

rtcpXrVoipBurstLossDensity OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
"Density of loss and discarded packets during burst periods.  
(see [RFC3611 Section 4.7](#))."  
::= { rtcpXrVoipEntry 18 }

rtcpXrVoipBurstLenMs OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
"Average length of bursts in milliseconds ([RFC3611  
Section 4.7](#))."  
::= { rtcpXrVoipEntry 19 }

rtcpXrVoipGapLossDensity OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
"Density of loss and discarded packets during gap periods  
(see [RFC3611 Section 4.7](#))."  
::= { rtcpXrVoipEntry 20 }

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rtcpXrVoipGapLenMs OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
"Average length of gaps in milliseconds (see [RFC3611  
Section 4.7](#))."  
::= { rtcpXrVoipEntry 21 }

rtcpXrVoipAverageOneWayDelay OBJECT-TYPE

SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
    "Average (symmetric) one way RTCP delay on call. A value of zero may indicate that this value has not yet been determined. (see [RFC3611 Section 4.7](#))."  
 ::= { rtcpXrVoipEntry 22 }

rtcpXrVoipEndSystemDelay OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
    "Average end system delay on call. A value of zero may indicate that this value has not yet been determined (see [RFC3611 Section 4.7](#))."  
 ::= { rtcpXrVoipEntry 23 }

rtcpXrVoipNoiseLeveldBm OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
    "Measured received silent period noise level in dBm (see [RFC3611 Section 4.7](#))."  
 ::= { rtcpXrVoipEntry 24 }

rtcpXrVoipSignalLeveldBm OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
    "Measured received signal level during talkspurts in dBm (see [RFC3611 Section 4.7](#))."  
 ::= { rtcpXrVoipEntry 25 }

rtcpXrVoipLocalRERLdB OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
    "Residual Echo Return Loss measured at this endpoint (see [RFC3611 Section 4.7](#))."  
 ::= { rtcpXrVoipEntry 26 }

rtcpXrVoipConversationalRCQ OBJECT-TYPE

SYNTAX INTEGER

STATUS current

DESCRIPTION

"Conversational quality R factor for this call  
(see [RFC3611 Section 4.7](#))."

::= { rtcpXrVoipEntry 27 }

rtcpXrVoipListeningMOSLQ OBJECT-TYPE

SYNTAX INTEGER

STATUS current

DESCRIPTION

"Estimated listening quality MOS for this call  
(see [RFC3611 Section 4.7](#))."

::= { rtcpXrVoipEntry 28 }

rtcpXrVoipConversationalMOSQC OBJECT-TYPE

SYNTAX INTEGER

STATUS current

DESCRIPTION

"Estimated conversational quality MOS for this call  
(see [RFC3611 Section 4.7](#))."

::= { rtcpXrVoipEntry 29 }

rtcpXrVoipPlcType OBJECT-TYPE

SYNTAX INTEGER { disabled(1),  
                  enhanced(2),  
                  standard(3),  
                  unspecified (4)}

STATUS current

DESCRIPTION

"Defines type of packet loss concealment used on this call  
(see [RFC3611 Section 4.7](#))."

::= { rtcpXrVoipEntry 30 }

rtcpXrVoipJitterBufferAdaptationMode OBJECT-TYPE

SYNTAX INTEGER { reserved (1),  
                  nonAdaptive (2),  
                  adaptive (3),  
                  unknown (4) }

STATUS current

DESCRIPTION

"Defines if jitter buffer is in fixed or adaptive mode  
(see [RFC3611 Section 4.7](#))."

::= { rtcpXrVoipEntry 31 }

rtcpXrVoipJitterBufferAdaptationRate OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
    "Estimated adaptation rate of jitter buffer  
    (see [RFC3611 Section 4.7](#))."  
 ::= { rtcpXrVoipEntry 32 }

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rtcpXrVoipJitterBufferAverageDelay OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
    "Average size of jitter buffer in mS  
    (see [RFC3611 Section 4.7](#))."  
 ::= { rtcpXrVoipEntry 33 }

rtcpXrVoipJitterBufferMaximumDelay OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
    "Maximum delay through jitter buffer at current size in mS  
    (see [RFC3611 Section 4.7](#))."  
 ::= { rtcpXrVoipEntry 34 }

rtcpXrVoipJitterBufferSize OBJECT-TYPE  
SYNTAX INTEGER  
STATUS current  
DESCRIPTION  
    "Absolute maximum size jitter buffer can reach in mS  
    (see [RFC3611 Section 4.7](#))."  
 ::= { rtcpXrVoipEntry 35 }

-- Notifications

rtcpXrVoipNotifications OBJECT IDENTIFIER ::= { rtcpXrEvents 0 }

```
--
-- RTCP XR Threshold Violation Notification
--
-- RTCP XR issues event notification when two conditions are met:
--   1) The notification is enabled for a specified endpoint
--   2) The voice quality falls below the specified threshold
--
```

```
rtcpXrVoipThresholdViolation TRAP-TYPE
    ENTERPRISE rtcpXrVoipNotifications
    VARIABLES { rtcpXrVoipAlertSeverity, rtcpXrVoipAlertType,
                rtcpXrVoipIndex}
    DESCRIPTION
        "Notification that voice quality has changed
         Sent immediately when the condition is detected."
    ::= 1
```

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```
--
-- Definition of Alert Severity: import from Alarm MIB
--
```

```
rtcpXrVoipAlertSeverity OBJECT-TYPE
    SYNTAX ItuPerceivedSeverity
    STATUS current
    DESCRIPTION
        "The severity of the alert as defined in ITU-T X.733."
    ::= { rtcpXrVoipEntry 36 }
```

```
--
--
-- The definition of the syntax is as follows:
--
--   ItuPerceivedSeverity ::= TEXTUAL-CONVENTION
--       STATUS current
--       DESCRIPTION
--           "ITU perceived severity values"
--       REFERENCE
```

```

--          "ITU Recommendation M.3100, 'Generic Network
--          Information Model', 1995
--          ITU Recommendation X.733, 'Information Technology
--          - Open Systems Interconnection - System Management:
--          Alarm Reporting Function', 1992"
--      SYNTAX INTEGER
--          {
--              cleared          (1),
--              indeterminate    (2),
--              critical          (3),
--              major            (4),
--              minor            (5),
--              warning          (6)
--          }
--
--      In use with these alarms, the cleared value will not be used
--      due the size of alarms.

```

```

rtcpXrVoipAlertType OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-only
    STATUS current
    DESCRIPTION
        "Text description of the type of alert. Where possible,
        this parameter should be populated with the correct
        rtcpXrVoipEventsEntry"
    ::= { rtcpXrVoipEntry 37 }

```

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#### 4. Security Considerations

In most cases, MIBs are not themselves security risks; if SNMP security is operating as intended, the use of a MIB to view information about a system, or to change some parameter at the system, is a tool, not a threat.

None of the read-only objects in this MIB reports a password, though some SDES [[RFC3550](#)] items such as the CNAME [[RFC3550](#)], the canonical name, may be deemed sensitive depending on the security policies of a particular enterprise. If access to these objects is not limited by an appropriate access control policy, these objects can provide an



attacker with information about a system's configuration and the services that that system is providing. Some enterprises view their network and system configurations, as well as information about usage and performance, as corporate assets; such enterprises may wish to restrict SNMP access to most of the objects in the MIB.

Confidentiality of RTP and RTCP data packets is defined in [section 9](#) of the RTP specification [[RFC3550](#)]. Encryption may be performed on RTP packets, RTCP packets, or both. Encryption of RTCP packets may pose a problem for third-party monitors though "For RTCP, it is allowed to split a compound RTCP packet into two lower-layer packets, one to be encrypted and one to be sent in the clear. For example, SDES information might be encrypted while reception reports were sent in the clear to accommodate third-party monitors [[RFC3550](#)]."

SNMPv1 by itself is not a secure environment. Even if the network itself is secure (for example by using IPSec), there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB. It is recommended that the implementers consider the security features as provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model [RFC 2574](#) [[RFC2574](#)] and the View-based Access Control Model [RFC 2575](#) [[RFC2575](#)] is recommended. It is then a customer/user responsibility to ensure that the SNMP entity giving access to an instance of this MIB, is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

## [5.](#) Acknowledgements

## [6.](#) Intellectual Property

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## 7. Normative References

- [RFC3550] Shulzrinne, H., Casner, S., Frederick, R. and V. Jacobson, "RTP: A Transport Protocol for real-time applications," [RFC 3550](#), July 2003.
  
- [RFC3611] Friedman, T., Caceres, R., Clark, A., "RTP Control Protocol Reporting Extensions (RTCP XR)," [RFC 3611](#), [October/November] 2003
  
- [RFC2571] Harrington, D., Presuhn, R. and B. Wijnen, "An Architecture for Describing SNMP Management Frameworks", [RFC 2571](#), December 1999.
  
- [RFC1155] Rose, M. and K. McCloghrie, "Structure and Identification of Management Information for TCP/IP-based Internets", STD 16, [RFC 1155](#), May 1990.
  
- [RFC1212] Rose, M. and K. McCloghrie, "Concise MIB Definitions", STD 16, [RFC 1212](#), April 1991.
  
- [RFC1215] Rose, M., "A Convention for Defining Traps for use with the SNMP", [RFC 1215](#), April 1991.
  
- [RFC2578] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M. and S. Waldbusser, "Structure of Management Information Version 2 (SMIv2)", STD 58, [RFC 2578](#),

December 1999.

- [RFC2579] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M. and S. Waldbusser, "Textual Conventions for SMIV2", STD 58, [RFC 2579](#), December 1999.
- [RFC2580] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M. and S. Waldbusser, "Conformance Statements for SMIV2", STD 58, [RFC 2580](#), December 1999.
- [RFC1157] Case, J., Fedor, M., Schoffstall, M. and J. Davin, "Simple Network Management Protocol", STD 15, [RFC 1157](#), May 1990.

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[draft-ietf-avt-rtcpxmib-00.txt](#)

October 2004

- [RFC1901] Case, J., McCloghrie, K., Rose, M. and S. Waldbusser, "Introduction to Community-based SNMPv2", [RFC 1901](#), April 1996.
- [RFC1906] Case, J., McCloghrie, K., Rose, M. and S. Waldbusser, "Transport Mappings for Version 2 of the Simple Network Management Protocol (SNMPv2)", [RFC 1906](#), April 1996.
- [RFC2572] Case, J., Harrington D., Presuhn R. and B. Wijnen, "Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)", [RFC 2572](#), December 1999.
- [RFC2574] Blumenthal, U. and B. Wijnen, "User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)", [RFC 2574](#), December 1999.
- [RFC1905] Case, J., McCloghrie, K., Rose, M. and S. Waldbusser, "Protocol Operations for Version 2 of the Simple Network Management Protocol (SNMPv2)", [RFC 1905](#), April 1996.

- [RFC2573] Levi, D., Meyer, P. and B. Stewart, "SNMPv3 Applications", [RFC 2573](#), December 1999.
- [RFC2575] Wijnen, B., Presuhn, R. and K. McCloghrie, "View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)", [RFC 2575](#), December 1999.
- [RFC2570] Case, J., Mundy, R., Partain, D. and B. Stewart, "Introduction to Version 3 of the Internet-standard Network Management Framework", [RFC 2570](#), December 1999.

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