

# SCTE • ISBE<sup>®</sup>

# S T A N D A R D S

---

**Data Standards Subcommittee**

---

**AMERICAN NATIONAL STANDARD**

**ANSI/ SCTE 165-07 2019**

**IPCablecom 1.5 Part 7: MTA MIB**

## NOTICE

The Society of Cable Telecommunications Engineers (SCTE) / International Society of Broadband Experts (ISBE) Standards and Operational Practices (hereafter called “documents”) are intended to serve the public interest by providing specifications, test methods and procedures that promote uniformity of product, interchangeability, best practices and ultimately the long-term reliability of broadband communications facilities. These documents shall not in any way preclude any member or non-member of SCTE•ISBE from manufacturing or selling products not conforming to such documents, nor shall the existence of such standards preclude their voluntary use by those other than SCTE•ISBE members.

SCTE•ISBE assumes no obligations or liability whatsoever to any party who may adopt the documents. Such adopting party assumes all risks associated with adoption of these documents, and accepts full responsibility for any damage and/or claims arising from the adoption of such documents.

Attention is called to the possibility that implementation of this document may require the use of subject matter covered by patent rights. By publication of this document, no position is taken with respect to the existence or validity of any patent rights in connection therewith. SCTE•ISBE shall not be responsible for identifying patents for which a license may be required or for conducting inquiries into the legal validity or scope of those patents that are brought to its attention.

Patent holders who believe that they hold patents which are essential to the implementation of this document have been requested to provide information about those patents and any related licensing terms and conditions. Any such declarations made before or after publication of this document are available on the SCTE•ISBE web site at <http://www.scte.org>.

All Rights Reserved

© Society of Cable Telecommunications Engineers, Inc.  
140 Philips Road  
Exton, PA 19341

Note: DOCSIS® and PacketCable™ are registered trademarks of Cable Television Laboratories, Inc., and used in this document with permission.

## Table of Contents

|          |                              |          |
|----------|------------------------------|----------|
| <b>1</b> | <b>SCOPE .....</b>           | <b>5</b> |
| <b>2</b> | <b>REFERENCES .....</b>      | <b>5</b> |
| 2.1      | NORMATIVE REFERENCES .....   | 5        |
| 2.2      | INFORMATIVE REFERENCES ..... | 5        |
| <b>3</b> | <b>ABBREVIATIONS .....</b>   | <b>5</b> |
| <b>4</b> | <b>REQUIREMENTS.....</b>     | <b>6</b> |

This page intentionally left blank.

# 1 SCOPE

This standard describes the IPCablecom 1.5 MTA MIB requirement.

# 2 REFERENCES

The following documents contain provisions which, through reference in this text, constitute provisions of this standard. At the time of Subcommittee approval, the editions indicated were valid. All documents are subject to revision, and while parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the documents listed below, they are reminded that newer editions of those documents might not be compatible with the referenced version.

## 2.1 Normative References

In order to claim compliance with this standard, it is necessary to conform to the following standards and other works as indicated, in addition to the other requirements of this standard. Intellectual property rights may be required to implement these references.

- [1] ANSI/SCTE 165-06 2019, IPCablecom 1.5 Part 6: MIBs Framework Specification.
- [2] ANSI/SCTE 165-03 2016, IPCablecom 1.5 Part 3: Network-Based Call Signaling Protocol.
- [3] ANSI/SCTE 165-05 2019, IPCablecom 1.5 Part 5: MTA Device Provisioning.
- [4] IETF RFC 3413, Simple Network Management Protocol (SNMP) Applications.
- [5] IETF STD 62, Simple Network Management Protocol Version 3 (SNMPv3), December 2002.
- [6] IETF RFC 3412, Message Processing and Dispatching for the Simple Network Management Protocol (SNMP).
- [7] ANSI/SCTE 165-08 2019, IPCablecom 1.5 Part 8: Signaling MIB.
- [8] IETF RFC 3414, User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3).
- [9] IETF RFC 3415, View-based Access Control Model (VACM) for Simple Network Management Protocol (SNMP).
- [10] ANSI/SCTE 165-10 2009, IPCablecom 1.5 Part 10: Security.
- [11] IETF RFC 1350/STD0033, The TFTP Protocol (Revision 2), July 1992.
- [12] IETF RFC 3617, Uniform Resource Identifier (URI) Scheme and Applicability Statement for the Trivial File Transfer Protocol (TFTP), October 2003.
- [13] IETF RFC 2616, Hypertext Transfer Protocol -- HTTP/1.1, June 1999.

## 2.2 Informative References

The following documents may provide valuable information to the reader but are not required when complying with this standard.

- [14] ANSI/SCTE 165-01 2019, IPCablecom 1.5 Part 1: Architecture Framework Technical Report.

# 3 ABBREVIATIONS

There are no abbreviations used in this document.

## 4 REQUIREMENTS

The MTA MIB MUST be implemented as defined below.

```
PKTC-MTA-MIB DEFINITIONS ::= BEGIN
    IMPORTS
        MODULE-IDENTITY,
        OBJECT-TYPE,
        Integer32, Counter32,
        BITS,IpAddress, NOTIFICATION-TYPE          FROM SNMPv2-SMI
        TruthValue, RowStatus, DisplayString,
        MacAddress, TEXTUAL-CONVENTION              FROM SNMPv2-TC
        OBJECT-GROUP, MODULE-COMPLIANCE,
        NOTIFICATION-GROUP                        FROM SNMPv2-CONF
        clabProjPacketCable                      FROM CLAB-DEF-MIB
        ifIndex                                  FROM IF-MIB
        SnmpAdminString                          FROM SNMP-FRAMEWORK-MIB
        sysDescr                                FROM SNMPv2-MIB;

pktcMtaMib MODULE-IDENTITY
    LAST-UPDATED      "200501280000Z" -- January 28, 2005
    ORGANIZATION      "Packet Cable OSS Group"
    CONTACT-INFO
        "Sumanth Channabasappa
        Postal: Cable Television Laboratories, Inc.
        858 Coal Creek Circle
        Louisville, Colorado 80027-9750
        U.S.A.
        Phone:  +1 303-661-9100
        Fax:    +1 303-661-9199
        E-mail: mibs@cablelabs.com"

    DESCRIPTION
        "This MIB module supplies the basic management objects
        for the MTA Device
        Acknowledgements:
        Angela Lyda          - Arris Interactive
        Chris Melle          - AT&T Broadband Labs
        Sasha Medvinsky      - Motorola
        Roy Spitzer          - Telogy Networks, Inc.
        Rick Vetter          - Motorola
        Eugene Nechamkin     - BroadCom Corp.
        Satish Kumar         - Texas Instruments
        Copyright 1999-2005 Cable Television Laboratories, Inc.
        All rights reserved."
    REVISION "200501280000Z "
    DESCRIPTION
        "This revision, published as part of the PacketCable 1.5
        MIB MTA Specification I01."
    ::= { clabProjPacketCable 1 }

-- Textual conventions
X509Certificate ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        "An X509 digital certificate encoded as an ASN.1 DER object."
    SYNTAX OCTET STRING (SIZE (0..4096))

--

-- PacketCable 1.5 only supports Embedded MTAs
--
=====
```

```
--
-- The MTA MIB only supports a single provisioning server.
--
=====

pktcMtaMibObjects      OBJECT IDENTIFIER ::= { pktcMtaMib 1 }
pktcMtaDevBase          OBJECT IDENTIFIER ::= { pktcMtaMibObjects 1 }
pktcMtaDevServer        OBJECT IDENTIFIER ::= { pktcMtaMibObjects 2 }
pktcMtaDevSecurity      OBJECT IDENTIFIER ::= { pktcMtaMibObjects 3 }

--
-- The following group describes the base objects in the MTA
--
pktcMtaDevResetNow  OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "Setting this object to true(1) causes the device to reset.
        Reading this object always returns false(2).  When
        pktcMtaDevResetNow is set to true, the following actions
        occur:
        1. All connections (if present) are flushed locally
        2. All current actions such as ringing immediately
           terminate
        3. Requests for notifications such as notification based
           on digit map recognition are flushed
        4. All endpoints are disabled.
        5. The provisioning flow is started at step MTA - 1."
    ::= { pktcMtaDevBase 1 }

pktcMtaDevSerialNumber  OBJECT-TYPE
    SYNTAX      SnmpAdminString(SIZE (0..128))
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object specifies the manufacturer's serial number
        for this MTA. The value of this object MUST be identical
        to the value specified in DHCP option 43 sub-option 4. "
    REFERENCE
        "PacketCable MTA Device Provisioning Specification;
        RFC 2132, DHCP Options and BOOTP Vendor Extensions"
    ::= { pktcMtaDevBase 2 }

pktcMtaDevHardwareVersion  OBJECT-TYPE
    SYNTAX      SnmpAdminString(SIZE (0..48))
    MAX-ACCESS   read-only
    STATUS       obsolete
    DESCRIPTION
        "The manufacturer's hardware version for this MTA."
    ::= { pktcMtaDevBase 3 }

pktcMtaDevMacAddress  OBJECT-TYPE
    SYNTAX      MacAddress
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object specifies the telephony MAC address for
        this device. The value of this object MUST be identical
        to the value specified in DHCP option 43 sub-option 11. "
    REFERENCE
        "PacketCable MTA Device Provisioning Specification;
        RFC 2132, DHCP Options and BOOTP Vendor Extensions"
```

```

        ::= { pktcMtaDevBase 4 }
pktcMtaDevFQDN          OBJECT-TYPE
    SYNTAX               SnmpAdminString
    MAX-ACCESS            read-only
    STATUS                 current
    DESCRIPTION
        "The Fully Qualified Domain Name for this MTA."
    ::= { pktcMtaDevBase 5 }

pktcMtaDevEndPntCount    OBJECT-TYPE
    SYNTAX               Integer32 (1..255)
    MAX-ACCESS            read-only
    STATUS                 current
    DESCRIPTION
        "The physical end points for this MTA."
    ::= { pktcMtaDevBase 6 }

pktcMtaDevEnabled        OBJECT-TYPE
    SYNTAX               TruthValue
    MAX-ACCESS            read-write
    STATUS                 current
    DESCRIPTION
        "This object contains the MTA Admin Status of this device.
        If this object is set to 'true', the MTA is
        administratively enabled and the MTA MUST be able to
        interact with PacketCable entities such as CMS,
        Provisioning Server, KDC, other MTAs and MGs on all
        PacketCable interfaces.
        If this object is set to 'false', the MTA is
        administratively disabled and the MTA MUST perform the
        following actions for all endpoints:
        - Shutdown all media sessions if present,
        - Shutdown NCS signaling by following the Restart in
          Progress procedures in the PacketCable NCS
          specification.
        Additionally, the MTA MUST maintain the SNMP Interface for
        management. Also, the MTA MUST NOT continue Kerberized Key
        Management with CMSes until this object is set to 'true'.
        Note: MTAs MUST renew the CMS kerberos tickets according
        to the PacketCable Security Specification"
    REFERENCE
        "PacketCable Security Specification;
        PacketCable MTA Device Provisioning Specification"
    ::= { pktcMtaDevBase 7 }

pktcMtaDevTypeIdentifier OBJECT-TYPE
    SYNTAX               SnmpAdminString
    MAX-ACCESS            read-only
    STATUS                 current
    DESCRIPTION
        "This is a copy of the device type identifier used in the
        DHCP option 60 exchanged between the MTA and the DHCP
        server."
    ::= { pktcMtaDevBase 8 }

pktcMtaDevProvisioningState OBJECT-TYPE
    SYNTAX               INTEGER {
        pass                (1),
        inProgress          (2),
        failConfigFileError (3),
        passWithWarnings    (4),
        passWithIncompleteParsing (5),
        failureInternalError (6),

```

```

        failOtherReason          (7)
    }
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "This object indicates the completion state of the
        MTA device provisioning process.

        pass:
        If the configuration file could be parsed successfully
        and the MTA is able to reflect the same in its
        MIB, the MTA MUST return the value 'pass'.

        inProgress:
        If the MTA is in the process of being provisioned,
        the MTA MUST return the value 'inProgress'.

        failConfigFileError:
        If the configuration file was in error due to incorrect
        values in the mandatory parameters, the MTA MUST reject
        the configuration file and the MTA MUST return the value
        'failConfigFileError'.

        passWithWarnings:
        If the configuration file had proper values for all the
        mandatory parameters but has errors in any of the optional
        parameters (this includes any vendor specific OIDs which
        are incorrect or not known to the MTA), the MTA MUST
        return the value 'passWithWarnings'.

        passWithIncompleteParsing:
        If the configuration file is valid, but the MTA cannot
        reflect the same in its configuration (for example, too
        many entries caused memory exhaustion), it must accept
        the CMS configuration entries related and the MTA MUST
        return the value 'passWithIncompleteParsing'.

        failureInternalError:
        If the configuration file cannot be parsed due to an
        internal error, the MTA MUST return the value
        'failureInternalError'.

        failureOtherReason:
        If the MTA cannot accept the configuration file for any
        other reason than the ones stated above, the MTA MUST
        return the value 'failureOtherReason'.

        When a final SNMP INFORM is sent as part of Step 25 of
        the MTA Provisioning process, this parameter is also
        included in the final INFORM message."
    REFERENCE
        "PacketCable MTA Device Provisioning Specification"
    ::= { pktcMtaDevBase 9 }

    pktcMtaDevHttpAccess          OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "This indicates whether HTTP file access is supported for
            MTA configuration file transfer."
    ::= { pktcMtaDevBase 10 }

```

```

pktcMtaDevProvisioningTimer OBJECT-TYPE
    SYNTAX      Integer32 (0..30)
    UNITS       "minutes"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "This object defines the time interval for the
        provisioning flow to complete. The MTA MUST finish
        all provisioning operations starting from the moment when
        an MTA receives its DHCP ACK and ending at the moment when
        the MTA downloads its configuration file (e.g., MTA5 to
        MTA23 for Secure Flow) within the period of time set by
        this object. Failure to comply with this condition
        constitutes the provisioning flow failure. If the
        object is set to 0, the MTA MUST ignore the provisioning
        timer condition."
    REFERENCE
        "PacketCable MTA Device Provisioning Specification."
    DEFVAL { 10 }
    ::= { pktcMtaDevBase 11 }

pktcMtaDevProvisioningCounter OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object is the count of the number of times the
        provisioning cycle has looped through step MTA-1 since
        the last reboot."
    ::= { pktcMtaDevBase 12 }

--

pktcMtaDevErrorOidsTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PktcMtaDevErrorOidsEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "If pktcMtaDevProvisioningState is reported with anything
        other than a pass(1) then this table is populated with the
        necessary information, each pertaining to observations of
        the configuration file. Even if different parameters
        share the same error ( Ex: All Realm Names are invalid ),
        all recognized errors must be reported as different
        instances."
    ::= { pktcMtaDevBase 13 }

pktcMtaDevErrorOidsEntry OBJECT-TYPE
    SYNTAX PktcMtaDevErrorOidsEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "This contains the necessary information an MTA must
        attempt to provide in case the configuration file
        is not parsed and/or accepted in its entirety."
    INDEX { pktcMtaDevErrorOidIndex }
    ::= { pktcMtaDevErrorOidsTable 1 }

PktcMtaDevErrorOidsEntry ::= SEQUENCE {
    pktcMtaDevErrorOidIndex      Integer32,
    pktcMtaDevErrorOid          SnmpAdminString,
    pktcMtaDevErrorGiven        SnmpAdminString,
    pktcMtaDevErrorReason       SnmpAdminString
}

```

```
pktcMtaDevErrorOidIndex OBJECT-TYPE
    SYNTAX Integer32(1..1024)
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "This is the index to pktcMtaDevErrorOidsEntry.
        This is an integer value and will start from the value 1
        and be incremented for each error encountered in the
        configuration file. The indices need not necessarily
        reflect the order of error occurrences in the
        configuration file."
    ::= { pktcMtaDevErrorOidsEntry 1 }

pktcMtaDevErrorOid OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "This is the OID associated with the particular error. If
        the error was not due to an identifiable OID, then this
        can be populated with impartial identifiers, in hexadecimal
        or numeric format."
    ::= { pktcMtaDevErrorOidsEntry 2 }

pktcMtaDevErrorGiven OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "If the error was due to the value associated
        with the corresponding pktcMtaDevErrorOid, then this
        contains the value of the OID as interpreted by the MTA in
        the configuration file provided. If the error was not due
        to the value of an OID this must be set to an empty
        string. This is provided to eliminate errors due to
        misrepresentation/misinterpretation of data."
    ::= { pktcMtaDevErrorOidsEntry 3 }

pktcMtaDevErrorReason OBJECT-TYPE
    SYNTAX SnmpAdminString
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This indicates the reason for the error,
        as per the MTAs interpretation, in human readable form.
        Example include:
        VALUE NOT IN RANGE,
        VALUE DOES NOT MATCH TYPE
        UNSUPPORTED VALUE
        LAST 4 BITS MUST BE SET TO ZERO,
        OUT OF MEMORY, CANNOT STORE etc.
        This MAY also contain vendor specific errors
        for vendor specific OIDS and any proprietary error
        codes/messages which can help diagnose errors
        better, in a manner the vendor deems fit."
    ::= { pktcMtaDevErrorOidsEntry 4 }

pktcMtaDevSwCurrentVers OBJECT-TYPE
    SYNTAX SnmpAdminString
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This object identifies the software version currently
```