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SERIES J: CABLE NETWORKS AND TRANSMISSION OF TELEVISION, SOUND PROGRAMME AND OTHER MULTIMEDIA SIGNALS

IPCablecom

IPCablecom media terminal adapter (MTA) MIB requirements

ITU-T Recommendation J.168

(Formerly CCITT Recommendation)

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ITU-T Recommendation J.168

IPCablecom media terminal adapter (MTA) MIB requirements

Summary

This Recommendation describes IPCablecom's Media Terminal Adapter (MTA) MIB requirements.

Source

ITU-T Recommendation J.168 was prepared by ITU-T Study Group 9 (2001-2004) and approved under the WTSA Resolution 1 procedure on 9 March 2001.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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ITU-T Recommendation J.168

IPCablecom media terminal adapter (MTA) MIB requirements

1 Scope

This Recommendation describes IPCablecom MTA MIB requirement.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revisions; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

2.1 Normative references

- ITU-T J.162 (2001), *Network call signalling protocol for the delivery of time-critical services over cable television networks using cable modems.*
- ITU-T J.166 (2001), *IPCablecom management information base (MIB) framework.*
- ITU-T J.167 (2001), *Media terminal adapter (MTA) device provisioning requirements for the delivery of real-time services over cable television networks using cable modems.*
- ITU-T J.170 (Draft), *IPCablecom security specification.*
- ITU-T X.680 (1997), *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation.*
- ITU-T X.681 (1997), *Information technology – Abstract Syntax Notation One (ASN.1): Information object specification.*
- ITU-T X.682 (1997), *Information technology – Abstract Syntax Notation One (ASN.1): Constraint specification.*
- ITU-T X.683 (1997), *Information technology – Abstract Syntax Notation One (ASN.1): Parameterization of ASN.1 specifications.*
- ITU-T X.690 (1997), *Information technology – ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER).*

2.2 Informative references

- ITU-T J.160 (Draft), *Architectural framework for the delivery of time-critical services over cable television networks using cable modems.*
- IETF RFC 2571 (1999), *An Architecture for Describing SNMP Management Frameworks*.
- IETF RFC 2572 (1999), *Message Processing and Dispatching for the Simple Network Management Protocol*.
- IETF RFC 2573 (1999), *SNMP Applications*.
- IETF RFC 2574 (1999), *User-based Security Model (USM) for version 3 of the Simple Network ManagementProtocol (SNMPv3)*.

3 Terms and definitions

This Recommendation defines the following terms:

3.1 cable modem: A cable modem is a layer-two termination device that terminates the customer end of the J.112 connection.

3.2 IPCablecom: An ITU-T project that includes an architecture and a series of Recommendations that enable the delivery of real time services (such as telephony) over the cable television networks using Cable Modems.

3.3 Management Information Base (MIB): the specification of information in a manner that allows standard access through a network management protocol.

3.4 MUST: The term "**MUST**" or "**MUST NOT**" is used as a convention in the present Recommendation to denote an absolutely mandatory aspect of this Recommendation.

4 Abbreviations

This Recommendation uses the following abbreviations:

MIB Management Information Base

MTA Media Terminal Adaptor

5 Requirements

This clause defines the mandatory syntax of the IPCablecom MTA MIB. It follows the IETF Simple Network Management Protocol (SNMP) for defining the managed objects. The MIB is organized as follows:

- MTA device objects;
- MTA security objects;
- objects used for initial provisioning and bootstrapping;
- objects used for event reporting to syslog, trap, local local

The syntax is given below.

```
PKTC-MTA-MIB DEFINITIONS ::= BEGIN
IMPORTS
    MODULE-IDENTITY,
    OBJECT-TYPE,
            Integer32,
            Unsigned32,
            Counter32,
    NOTIFICATION-TYPE
        FROM SNMPv2-SMI
            TruthValue, DisplayString, DateAndTime, RowStatus
        FROM SNMPv2-TC
            OBJECT-GROUP,
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF
            clabProjIPCablecom
        FROM CLAB-DEF-MIB
            ifIndex
        FROM IF-MIB
           docsDevSwCurrentVers
        FROM DOCS-CABLE-DEVICE-MIB;     -- version 8
```

```
pktcMtaMib MODULE-IDENTITY
    LAST-UPDATED    "9912010000Z" -- December 1, 1999
    ORGANIZATION    "IPCablecom OSS Group"
    CONTACT-INFO
            "Roy Spitzer
            Postal: Telogy Networks, Inc.
            20250 Century Blvd.
            Germantown, MD 20855
            U.S.A.
            Phone:  +1 301-515-6531
            Fax:    +1 301-515-7954
            E-mail: rspitzer@telogy.com"
    DESCRIPTION
            "This MIB module supplies the basic management objects
            for the MTA Device."
    ::=  { 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))

--
--   IPCablecom supports embedded MTA only
--   IPCablecom requires SNMPv3
--


pktcMtaMibObjects       OBJECT IDENTIFIER ::= { pktcMtaMib 1 }
pktcMtaDevBase          OBJECT IDENTIFIER ::= { pktcMtaMibObjects 1 }
pktcMtaDevServer        OBJECT IDENTIFIER ::= { pktcMtaMibObjects 2 }
pktcMtaDevSecurity      OBJECT IDENTIFIER ::= { pktcMtaMibObjects 3 }
pktcMtaDevEvent         OBJECT IDENTIFIER ::= { pktcMtaMibObjects 4 }




--
-- 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)."
    ::= { pktcMtaDevBase 1 }

pktcMtaDevSerialNumber OBJECT-TYPE
    SYNTAX      DisplayString (SIZE (0..128))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
            "The manufacturer's serial number for this MTA."
    ::= { pktcMtaDevBase 2 }
```

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

pktcMtaDevMacAddress  OBJECT-TYPE
    SYNTAX      OCTET STRING
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
            "The telephony MAC address for this device."
    ::= { pktcMtaDevBase 4 }

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

pktcMtaDevEndPntCount    OBJECT-TYPE
    SYNTAX      INTEGER (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
            "The MTA Admin Status of this device, where True(1) means
            the voice feature is enabled and false(2) indicates that
            it is disabled."
    ::= { pktcMtaDevBase 7 }

pktcMtaDevTypeIdentifier    OBJECT-TYPE
    SYNTAX      DisplayString
    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),
            fail(3)
    }
    MAX-ACCESS  read-only
    STATUS      current
```

```
    DESCRIPTION
            "This object indicates the completion state of the
             provisioning process. Pass or Fail states occur after processing
             of the config file is completed. InProgress occurs from boot
             time until config file processing is complete. Fail state requires
             manual intervention."
    ::= { 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 }


--
-- The following group describes the security objects in the MTA
--
pktcMtaDevManufacturerCertificate OBJECT-TYPE
    SYNTAX       X509Certificate
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "ASN.1 DER encoding of the MTA Manufacturer's X.509 public-key
         certificate, called MTA Manufacturer Certificate. It is issued to each
         MTA manufacturer and is installed into each MTA either in the factory
         or with a code download. The provisioning server cannot update this
         certificate."
    ::= { pktcMtaDevSecurity 1 }


pktcMtaDevCertificate OBJECT-TYPE
    SYNTAX       X509Certificate
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "ASN.1 DER encoding of the MTA's X.509 public-key certificate
         issued by the manufacturer and installed into the embedded-MTA in
         the factory. This certificate, called MTA Device Certificate, contains
         the MTA's MAC address. It cannot be updated by the provisioning
         server."
    ::= { pktcMtaDevSecurity 2 }



pktcMtaDevSignature OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (0..256))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A unique signature created by the MTA for each SNMP Inform
         or SNMP Trap or SNMP GetResponse message exchanged prior to
         enabling SNMPv3 security ASN.1 encoded Digital signature in
         the Cryptographic message syntax (includes nonce)."
    ::= { pktcMtaDevSecurity 3 }
```

```
pktcMtaDevCorrelationId OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Random value generated by the MTA for use in registration
         authorization.  It is for use only in the MTA initialization
         messages and for MTA configuration file download."
    ::= { pktcMtaDevSecurity 4 }


pktcMtaDevSecurityTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcMtaDevSecurityEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Contains per endpoint security information."
    ::= {  pktcMtaDevSecurity 5 }


pktcMtaDevSecurityEntry OBJECT-TYPE
    SYNTAX      PktcMtaDevSecurityEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "List of security attributes for a single IPCablecom
         endpoint interface associated with ifType(104)."
    INDEX { ifIndex }
    ::= { pktcMtaDevSecurityTable 1 }


PktcMtaDevSecurityEntry ::= SEQUENCE {
    pktcMtaDevServProviderCertificate OCTET STRING,
    pktcMtaDevTelephonyCertificate OCTET STRING,
    pktcMtaDevKerberosRealm OCTET STRING,
    pktcMtaDevKerbPrincipalName DisplayString,
    pktcMtaDevServGracePeriod Integer32,
     pktcMtaDevLocalSystemCertificate OCTET STRING,
    pktcMtaDevKeyMgmtTimeout1 Integer32,
    pktcMtaDevKeyMgmtTimeout2 Integer32
    }


 pktcMtaDevServProviderCertificate OBJECT-TYPE
    SYNTAX       X509Certificate
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "ASN.1 DER encoding of the Telephony Service Provider's X.509
         public-key certificate, called Service Provider Certificate. It serves
         as the root of the intra-domain trust hierarchy. Each MTA is
         configured with this certificate so that it can authenticate KDCs
         owned by the same service provider. The provisioning server needs
         the ability to update this certificate in the MTAs via both SNMP and
         configuration files."
    ::= { pktcMtaDevSecurityEntry 1 }
```

```
pktcMtaDevTelephonyCertificate OBJECT-TYPE
    SYNTAX       X509Certificate
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "ASN.1 DER encoding of the MTA's X.509 public-key certificate
         issued by the Service Provider with either the Service Provider CA or
         a Local System CA. This certificate, called MTA Telephony
         Certificate, contains the same public key as the MTA Device
         Certificate issued by the manufacturer. It is used to authenticate the
         identity of the MTA to the TGS (during PKINIT exchanges). The
         provisioning server needs the ability to update this certificate in the
         MTAs via both SNMP and configuration files."
    ::= { pktcMtaDevSecurityEntry 2 }


pktcMtaDevKerberosRealm OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (0..1280))
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Specifies a Kerberos realm (i.e. administrative domain), required
         for IPCablecom key management]."
    ::= { pktcMtaDevSecurityEntry 3 }


pktcMtaDevKerbPrincipalName OBJECT-TYPE
    SYNTAX      DisplayString (SIZE(0..40))
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Kerberos principal name for the Call Agent.  This information
         is required in order for the MTA to obtain Call Agent Kerberos
         tickets.  This principal name does not include the realm, which
         is specified as a separate field in this configuration file.  A
         Single Kerberos principal name MAY be shared among several
         Call Agents."
    ::= { pktcMtaDevSecurityEntry 4 }


pktcMtaDevServGracePeriod OBJECT-TYPE
    SYNTAX      Integer32 (15..600)
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The MTA MUST obtain a new Kerberos ticket (with a PKINIT
         exchange) this many minutes before the old ticket expires.  The
         minimum allowable value is 15 mins.  The default is 30 mins."
    DEFVAL { 30 }
    ::= { pktcMtaDevSecurityEntry 5 }

pktcMtaDevLocalSystemCertificate OBJECT-TYPE
    SYNTAX         X509Certificate
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Telephony Service Provider CA may delegate the issuance of certificates
         to a regional Certification Authority called Local System CA (with the
         corresponding Local System Certificate).  This parameter is the ASN.1
         DER encoding of the Local System Certificate. It MUST have a non-empty
         value when the MTA Telephony certificate is signed by a Local System CA.
         Otherwise, the value MUST be of length 0."
     ::= { PktcMtaDevSecurityEntry 6 }
```

```
pktcMtaDevKeyMgmtTimeout1 OBJECT-TYPE
    SYNTAX      Integer32 (15..600)
     UNITS         "seconds"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "This timeout applies only when the MTA initiated key management.  It is
         the period during which the MTA will save a nonce (inside the sequence
         number field) from the sent out AP Request and wait for the matching AP
         Reply from the CMS."
     ::= { pktcMtaDevSecurityEntry 7 }


pktcMtaDevKeyMgmtTimeout2 OBJECT-TYPE
    SYNTAX      Integer32 (15..600)
     UNITS         "seconds"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "This timeout applies only when the CMS initiated key management (with a
         Wake Up or Rekey message).  It is the period during which the MTA will
         save a nonce (inside the sequence number field) from the sent out AP
         Request and wait for the matching AP Reply from the CMS."
     ::= { pktcMtaDevSecurityEntry 8}


pktcMtaDevTgsTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcMtaDevTgsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Contains per endpoint Ticket Granting Server information."
    ::= {  pktcMtaDevSecurity 8 }


pktcMtaDevTgsEntry OBJECT-TYPE
    SYNTAX      PktcMtaDevTgsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "List of Tgs attributes for a single IPCablecom
         endpoint interface associated with ifType(104)."
    INDEX { ifIndex, pktcMtaDevTgsIndex }
    ::= { pktcMtaDevTgsTable 1 }

PktcMtaDevTgsEntry ::= SEQUENCE {
    pktcMtaDevTgsIndex Integer32,
    pktcMtaDevTgsLocation DisplayString,
    pktcMtaDevTgsStatus RowStatus
    }


pktcMtaDevTgsIndex OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index into the TGS table for TGS locations.
         IfType specifies the endpoint, TgsIndex specifies a TGS."
    ::= { pktcMtaDevTgsEntry 1 }
```

```
pktcMtaDevTgsLocation OBJECT-TYPE
    SYNTAX      DisplayString (SIZE (0..255))
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Name of the TGS – Ticket Granting Server, which is the Kerberos
         Server. This parameter is a FQDN or Ipv4 address.  There may be
         multiple entries of this type.  The order in which these entries
         are listed is the priority order in which the MTA will attempt to
         contact them for this endpoint."
    ::= { pktcMtaDevTgsEntry 2 }

pktcMtaDevTgsStatus    OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS    read-create
    STATUS    current
    DESCRIPTION
        "This object contains the Row Status associated with
         the pktcMtaDevTgsTable."
    ::= { pktcMtaDevTgsEntry 3 }
--
-- The following group describes server access and parameters used for
-- initial provisioning and bootstrapping.
--
pktcMtaDevServerBootState OBJECT-TYPE
    SYNTAX INTEGER {
            operational(1),
            disabled(2),
            waitingForDhcpOffer(3),
            waitingForDhcpResponse(4),
            waitingForConfig(5),
            refusedByCmts(6),
            other(7),
            unknown(8)
    }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "If operational(1), the device has completed loading and
         processing of configuration parameters and the Access Node has
         completed the Registration exchange.
         If disabled(2) then the device was administratively
         disabled, possibly by being refused network access in the
         configuration file.
         If waitingForDhcpOffer(3) then a DHCP Discover has been
         transmitted and no offer has yet been received.
         If waitingForDhcpResponse(4) then a DHCP Request has been
         transmitted and no response has yet been received.
         If waitingForConfig(5) then a request to the config parameter
         server has been made and no response received.
         If refusedByCmts(6) then the Registration Request/Response
         exchange with the Access Node failed."

    ::= { pktcMtaDevServer 1 }

pktcMtaDevServerDhcp OBJECT-TYPE
    SYNTAX      DisplayString
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The IP address or FQDN of the DHCP server that assigned an IP
         address to this device. Returns 0.0.0.0 if DHCP was not
         used for IP address assignment."
    ::= { pktcMtaDevServer 2 }
```

```
pktcMtaDevServerDns1 OBJECT-TYPE
    SYNTAX      DisplayString
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The IP address or FQDN of the primary DNS server that resolved
         an IP address for this device."
    ::= { pktcMtaDevServer 3 }

pktcMtaDevServerDns2 OBJECT-TYPE
    SYNTAX      DisplayString
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The IP address or FQDN of the secondary DNS server that resolved an IP
         address for this device."
    ::= { pktcMtaDevServer 4 }

pktcMtaDevConfigFile OBJECT-TYPE    SYNTAX      DisplayString
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The URL of the TFTP/HTTP file for downloading provisioning
         and configuration parameters to this device. Returns NULL if the
         server address is unknown. Supports both TFTP and HTTP"
    ::= { pktcMtaDevServer 5 }

pktcMtaDevSnmpEntity OBJECT-TYPE
    SYNTAX      DisplayString
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The IP address or FQDN of the SNMP entity for provisioning trap
         handling that assigned an IP address to this device. Returns
         0.0.0.0 if DHCP was not used for IP address assignment."
    ::= { pktcMtaDevServer 6 }
--
--  Event Reporting
--

pktcMtaDevEvControl OBJECT-TYPE
    SYNTAX INTEGER {
            resetLog(1),
            useDefaultReporting(2)
    }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Setting this object to resetLog(1) empties the event log.
         All data is deleted. Setting it to useDefaultReporting(2)
         returns all event priorities to their factory-default
         reporting. Reading this object always returns
         useDefaultReporting(2)."
    ::= { pktcMtaDevEvent 1 }

pktcMtaDevEvSyslog OBJECT-TYPE
    SYNTAX      DisplayString
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The IP address or FQDN of the Syslog server. If 0.0.0.0,
         syslog transmission is inhibited."
    ::= { pktcMtaDevEvent 2 }
```

```
pktcMtaDevEvThrottleAdminStatus OBJECT-TYPE
    SYNTAX INTEGER {
            unconstrained(1),
            maintainBelowThreshold(2),
            stopAtThreshold(3),
            inhibited(4)
    }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Controls the transmission of traps and syslog messages
         with respect to the trap pacing threshold.
         unconstrained(1) causes traps and syslog messages to be
         transmitted without regard to the threshold settings.
         maintainBelowThreshold(2) causes trap transmission and
         syslog messages to be suppressed if the number of traps
         would otherwise exceed the threshold.
         stopAtThreshold(3) causes trap transmission to cease
         at the threshold, and not resume until directed to do so.
         inhibited(4) causes all trap transmission and syslog
         messages to be suppressed.

         A single event is always treated as a single event for
         threshold counting. That is, an event causing both a trap
         and a syslog message is still treated as a single event.

         Writing to this object resets the thresholding state.

         At initial startup, this object has a default value of
         unconstrained(1)."
    ::= { pktcMtaDevEvent 3 }


pktcMtaDevEvThrottleInhibited OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "If true(1), trap and syslog transmission is currently
         inhibited due to thresholds and/or the current setting of
         pktcMtaDevEvThrottleAdminStatus. In addition, this is set to
         true(1) if transmission is inhibited due to no
         syslog (pktcMtaDevEvSyslog) or trap (pktcMtaDevNmAccessEntry)
         destinations having been set."
    ::= { pktcMtaDevEvent 4 }

pktcMtaDevEvThrottleThreshold OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Number of trap/syslog events per pktcMtaDevEvThrottleInterval
         to be transmitted before throttling.

         A single event is always treated as a single event for
         threshold counting. That is, an event causing both a trap
         and a syslog message is still treated as a single event.

         At initial startup, this object returns 0."
    ::= { pktcMtaDevEvent 5 }
```

```
pktcMtaDevEvThrottleInterval OBJECT-TYPE
    SYNTAX      Integer32 (1..2147483647)
    UNITS       "seconds"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The interval over which the trap threshold applies.
         At initial startup, this object has a value of 1."
    ::= { pktcMtaDevEvent 6 }


--
-- The following table controls the reporting of the various classes of
-- events.
--

pktcMtaDevEvControlTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcMtaDevEvControlEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table allows control of the reporting of event classes.
         For each event priority, a combination of logging and
         reporting mechanisms may be chosen. The mapping of event types
         to priorities is vendor-dependent. Vendors may also choose to
         allow the user to control that mapping through proprietary means."
    ::= {  pktcMtaDevEvent 7 }


pktcMtaDevEvControlEntry OBJECT-TYPE
    SYNTAX      PktcMtaDevEvControlEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Allows configuration of the reporting mechanisms for a
         particular event priority."
    INDEX { pktcMtaDevEvPriority }
    ::= { pktcMtaDevEvControlTable 1 }

pktcMtaDevEvControlEntry ::= SEQUENCE {
    pktcMtaDevEvPriority        INTEGER,
    pktcMtaDevEvReporting       BITS
    }

pktcMtaDevEvPriority OBJECT-TYPE
    SYNTAX INTEGER {
            emergency(1),
            alert(2),
            critical(3),
            error(4),
            warning(5),
            notice(6),
            information(7),
            debug(8)
    }
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The priority level that is controlled by this
         entry. These are ordered from most (emergency) to least (debug)
         critical.  Each event with a CM or Access Node has a particular
         priority level associated with it (as defined by the
         vendor). During normal operation no event more critical than
         notice(6) should be generated. Events between warning and
```

```
         emergency should be generated at appropriate levels of
         problems (e.g. emergency when the box is about to
         crash)."
    ::= { pktcMtaDevEvControlEntry 1 }

pktcMtaDevEvReporting OBJECT-TYPE
    SYNTAX BITS {
            local(0),
            traps(1),
            syslog(2)
    }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Defines the action to be taken on occurrence of this
         event class. Implementations may not necessarily support
         all options for all event classes, but at minimum must
         allow traps and syslogging to be disabled. If the
         local(0) bit is set, then log to the internal log, if the
         traps(1) bit is set, then generate a trap, if the
         syslog(2) bit is set, then send a syslog message
         (assuming the syslog address is set)."
    ::= { pktcMtaDevEvControlEntry 2 }


pktcMtaDevEventTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcMtaDevEventEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Contains a log of network and device events that may be
         of interest in fault isolation and troubleshooting."
    ::= {  pktcMtaDevEvent 8 }

pktcMtaDevEventEntry OBJECT-TYPE
    SYNTAX      PktcMtaDevEventEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Describes a network or device event that may be of
         interest in fault isolation and troubleshooting. Multiple
         sequential identical events are represented by
         incrementing pktcMtaDevEvCounts and setting
         pktcMtaDevEvLastTime to the current time rather than creating
         multiple rows.

         Entries are created with the first occurrance of an event.
         pktcMtaDevEvControl can be used to clear the table.
         Individual events can not be deleted."
    INDEX { pktcMtaDevEvIndex }
    ::= { pktcMtaDevEventTable 1 }

PktcMtaDevEventEntry ::= SEQUENCE {
            pktcMtaDevEvIndex           INTEGER,
            pktcMtaDevEvFirstTime       DateAndTime,
            pktcMtaDevEvLastTime        DateAndTime,
            pktcMtaDevEvCounts          Counter32,
            pktcMtaDevEvLevel           INTEGER,
            pktcMtaDevEvId              Unsigned32,
            pktcMtaDevEvText            DisplayString
        }
```

```
pktcMtaDevEvIndex OBJECT-TYPE
    SYNTAX      INTEGER (1..2147483647)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Provides relative ordering of the objects in the event
         log. This object will always increase except when
         (a) the log is reset via pktcMtaDevEvControl,
         (b) the device reboots and does not implement non-volatile
         storage for this log, or (c) it reaches the value 2^31.
         The next entry for all the above cases is 1."
    ::= { pktcMtaDevEventEntry 1 }

pktcMtaDevEvFirstTime OBJECT-TYPE
    SYNTAX      DateAndTime
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The time that this entry was created."
    ::= { pktcMtaDevEventEntry 2 }

pktcMtaDevEvLastTime OBJECT-TYPE
    SYNTAX      DateAndTime
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "If multiple events are reported via the same entry, the
         time that the last event for this entry occurred,
         otherwise this should have the same value as
         pktcMtaDevEvFirstTime."
    ::= { pktcMtaDevEventEntry 3 }

pktcMtaDevEvCounts OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of consecutive event instances reported by
         this entry.  This starts at 1 with the creation of this
         row and increments by 1 for each subsequent duplicate event."
    ::= { pktcMtaDevEventEntry 4 }

pktcMtaDevEvLevel OBJECT-TYPE
    SYNTAX INTEGER {
            critical(1),
            major(2),
            minor(3),
            warning(4),
            information(5),
            notice(6),
            debug(7)
    }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The priority level of this event as defined by the
         vendor. These are ordered from most serious (critical)
         to least serious (debug)."
    ::= { pktcMtaDevEventEntry 5 }
--
-- Vendors will provide their own enumerations for the following.
-- The interpretation of the enumeration is unambiguous for a
-- particular value of the vendor's enterprise number in sysObjectID.
--
```

```
pktcMtaDevEvId OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "For this product, uniquely identifies the type of event
         that is reported by this entry."
    ::= { pktcMtaDevEventEntry 6 }

pktcMtaDevEvText OBJECT-TYPE
    SYNTAX      DisplayString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Provides a human-readable description of the event,
         including all relevant context (interface numbers,
         etc.)."
    ::= { pktcMtaDevEventEntry 7 }

--
-- notification group is for future extension.
--

pktcMtaNotification OBJECT IDENTIFIER ::= { pktcMtaMib 2 0 }
pktcMtaConformance  OBJECT IDENTIFIER ::= { pktcMtaMib 3 }
pktcMtaCompliances  OBJECT IDENTIFIER ::= { pktcMtaConformance 1 }
pktcMtaGroups       OBJECT IDENTIFIER ::= { pktcMtaConformance 2 }

--
--    Notification Group
--


pktcMtaProvisioningEnrollment  NOTIFICATION-TYPE
    OBJECTS {
        pktcMtaDevHardwareVersion,
        docsDevSwCurrentVers,
        pktcMtaDevTypeIdentifier,
        pktcMtaDevMacAddress,
        pktcMtaDevCorrelationId,
        pktcMtaDevSignature
    }
    STATUS      current
    DESCRIPTION
        "This inform is issued to initiate the IPCablecom
         process provisioning."
    REFERENCE
        "Inform as defined in RFC 1902"
    ::= { pktcMtaNotification 1 }


pktcMtaProvisioningStatus  NOTIFICATION-TYPE
    OBJECTS {
        pktcMtaDevMacAddress,
        pktcMtaDevCorrelationId,
        pktcMtaDevSignature,
        pktcMtaDevProvisioningState
    }
    STATUS      current
    DESCRIPTION
        "This inform is issued to confirm completion of the IPCablecom
         provisioning process, and indicate the completion state."
```

```
    REFERENCE
        "Inform as defined in RFC 1902"
    ::= { pktcMtaNotification 2 }


-- compliance statements

pktcMtaBasicCompliance MODULE-COMPLIANCE
    STATUS     current
    DESCRIPTION
        "The compliance statement for devices that implement
         MTA feature."
    MODULE   --pktcMtaMib

-- unconditionally mandatory groups

    MANDATORY-GROUPS {
            pktcMtaGroup
    }

-- units of conformance

OBJECT pktcMtaDevCorrelationId
    MIN-ACCESS read-only
    DESCRIPTION
        "not-accessible when request is SNMP get
         read-only when used in informs during provisioning."

OBJECT pktcMtaDevCertificate
    MIN-ACCESS  read-only
    DESCRIPTION
        "Read-write when request is through configuration file `
         download, otherwise it's a read-only object."

OBJECT pktcMtaDevTelephonyCertificate
    MIN-ACCESS  read-only
    DESCRIPTION
        "Read-write when request is through configuration file
         download, otherwise it's a read-only object."

OBJECT pktcMtaDevServProviderCertificate
    MIN-ACCESS  read-only
    DESCRIPTION
        "Read-write when request is through configuration file
         download, otherwise it's a read-only object."

OBJECT pktcMtaDevLocalSystemCertificate
    MIN-ACCESS  read-only
    DESCRIPTION
        "Read-write when request is through configuration file
         download, otherwise it's a read-only object."

OBJECT pktcMtaDevKerberosRealm
    MIN-ACCESS  read-only
    DESCRIPTION
        "Read-write when request is through configuration file
         download, otherwise it's a read-only object."

OBJECT pktcMtaDevTgsLocation
    MIN-ACCESS  read-only
    DESCRIPTION
        "Read-write when request is through configuration file
         download, otherwise it's a read-only object."
```

```
OBJECT pktcMtaDevKerbPrincipalName
    MIN-ACCESS  read-only
    DESCRIPTION
        "Read-write when request is through configuration file
         download, otherwise it's a read-only object."

OBJECT pktcMtaDevServGracePeriod
    MIN-ACCESS  read-only
    DESCRIPTION
        "Read-write when request is through configuration file
         download, otherwise it's a read-only object."
::= { pktcMtaCompliances 3 }


pktcMtaGroup OBJECT-GROUP
    OBJECTS {
        pktcMtaDevResetNow,
        pktcMtaDevSerialNumber,
        pktcMtaDevHardwareVersion,
        pktcMtaDevMacAddress,
        pktcMtaDevFQDN,
        pktcMtaDevEndPntCount,
        pktcMtaDevEnabled,
        pktcMtaDevTypeIdentifier,
        pktcMtaDevProvisioningState,
        pktcMtaDevCertificate,
        pktcMtaDevSignature,
        pktcMtaDevCorrelationId,
        pktcMtaDevManufacturerCertificate,
        pktcMtaDevTelephonyCertificate,
        pktcMtaDevServProviderCertificate,
        pktcMtaDevLocalSystemCertificate,
        pktcMtaDevKerberosRealm,
        pktcMtaDevTgsLocation,
        pktcMtaDevKerbPrincipalName,
        pktcMtaDevServGracePeriod,
          pktcMtaDevKeyMgmtTimeout1,
          pktcMtaDevKeyMgmtTimeout2,
        pktcMtaDevServerBootState,
        pktcMtaDevServerDhcp,
        pktcMtaDevSnmpEntity,
        pktcMtaDevEvControl,
        pktcMtaDevEvSyslog,
        pktcMtaDevEvThrottleAdminStatus,
        pktcMtaDevEvThrottleInhibited,
        pktcMtaDevEvThrottleThreshold,
        pktcMtaDevEvThrottleInterval,
        pktcMtaDevEvReporting,
        pktcMtaDevEvFirstTime,
        pktcMtaDevEvLastTime,
        pktcMtaDevEvCounts,
        pktcMtaDevEvLevel,
        pktcMtaDevEvId,
        pktcMtaDevEvText
    }
    STATUS    current
    DESCRIPTION
        "Group of objects for IPCablecom MTA MIB."
    ::= { pktcMtaGroups 1 }

END
```

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