

Superseded

PacketCable™ MTA MIB Specification

PKT-SP-MIB-MTA-I06-030415

ISSUED

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- Work in Progress** An incomplete document, designed to guide discussion and generate feedback, that may include several alternative requirements for consideration.
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- Closed** A static document, reviewed, tested, validated, and closed to further engineering change requests to the specification through CableLabs.

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1 SCOPE

This Specification describes the PacketCable MTA MIB requirement.

2 REFERENCES

2.1 NORMATIVE REFERENCES

In order to claim compliance with this specification, it is necessary to conform to the following standards and other works as indicated, in addition to the other requirements of this specification. Notwithstanding, intellectual property rights may be required to use or implement such normative references.

- [1] *PacketCable MIB Framework*, PKT-SP-MIBS-I06-030415, April 15, 2003, Cable Television Laboratories, Inc., www.PacketCable.com/
- [2] *PacketCable Network-Based Call Signaling Protocol Specification*, PKT-SP-EC-MGCP-I07-030415, April 15, 2003, Cable Television Laboratories, Inc., www.PacketCable.com/
- [3] *PacketCable MTA Device Provisioning Specification*, PKT-SP-PROV-I06-030415, April 15, 2003, Cable Television Laboratories, Inc., <http://www.PacketCable.com/>
- [4] IETF RFC 2573, SNMPv3 Applications [1999]
- [5] IETF RFC 2571, An Architecture for Describing SNMP Management Framework
- [6] IETF RFC 2572, Message Processing and Dispatching for SNMP
- [7] IETF RFC 2573, SNMPv3 Applications
- [8] IETF RFC 2574, User Based Security Model for SNMPv3
- [9] IETF RFC 2575, View-Based Access Control Model (VACM) for SNMP,
- [10] *PacketCable Security Specification*, PKT-SP-SEC-I08-030415, April 15, 2003, Cable Television Laboratories, Inc., www.PacketCable.com/

2.2 INFORMATIVE REFERENCES

- [11] ITU-T Recommendation J.160 - Architectural framework for the delivery of time critical services over cable television networks using cable modems.

3 ABBREVIATIONS

There are no abbreviations used in this document.

4 REQUIREMENTS

The PacketCable™ MTA MIB MUST be implemented as defined below.

```

PKTC-MTA-MIB DEFINITIONS ::= BEGIN
    IMPORTS
        MODULE-IDENTITY,
        OBJECT-TYPE,
        Integer32, Counter32,
        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      "200304150000Z" -- April 15, 2003
    ORGANIZATION      "Packet Cable OSS Group"
    CONTACT-INFO
        "Matt Osman
        Postal: Cable Television Laboratories, Inc.
        400 Centennial Parkway
        Louisville, Colorado 80027-1266
        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 1999-2003 Cable Television Laboratories, Inc.
        All rights reserved."
    REVISION "200304150000Z"
    DESCRIPTION
        "This revision, published as part of the PacketCable MIBs
        Specification I06."
    ::= { 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 1.0 supports embedded MTA only
-- PacketCable 1.0 assumes SNMPv3

```

```

-- PacketCable 1.0 SW load management is per DOCSIS 1.1 only
--
-----
--
-- 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
        "The manufacturer's serial number for this MTA."
    ::= { 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
        "The telephony MAC address for this device."
    ::= { 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
        "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      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 parameter indicates the completion state of the
         initialization process. This parameter is sent as part of
         the final INFORM ( Step MTA 25 of the provisioning
         process ). If the configuration file could be parsed
         successfully and the MTA is able to reflect the same in its
         MIB, it must return: 'pass'. If the configuration file was
         in error due to incorrect values in the mandatory
         parameters, the MTA must reject the configuration
         file and return: 'fail'. 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 ), it must return: 'passWithWarnings'. If the
         configuration file is proper, but the MTA cannot reflect
         the same in its MIB ( for ex: Too many entries leading
         to memory exhaustion ), it must accept details related
         to the CMSs 'passWithIncompleteParsing'. If the
         configuration file cannot be parsed due to an internal
         error it must return: 'failureInternalError'.
         If the MTA cannot accept the configuration

```

```

        file for any other reason than the ones stated above,
        it must return 'failureOtherReason'."
 ::= { 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 enables setting the duration of the provisional
        timeout timer. The timer covers the provisioning sequence
        from step MTA-1 to step MTA-23. The value is in minutes
        and setting the timer to 0 disables this timer. The
        default value for the timer is 10."
    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
    "The version of the software currently operating in MTA. Any MTA MUST
        return a string descriptive of the current software load.
        This object should use the syntax defined by the individual
        vendor to identify the software version. The data
        presented in this object MUST be consistent with the
        software version information embedded in the sysDescr
        MIB Object for the MTA."
    ::= { pktcMtaDevBase 14}

```

```

-- The following group describes server access and parameters used for
-- initial provisioning and bootstrapping.
--

```

```

--*****
--*****This object is obsolete*****
--*****

```

```

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 obsolete
    DESCRIPTION
    "If operational(1), the device has completed loading and
        processing of configuration parameters and the CMTS 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 CMTS failed. "
    REFERENCE
    "DOCSIS Radio Frequency Interface Specification"
    ::= { pktcMtaDevServer 1 }

```

```

--*****
--*****This object is obsolete*****
--*****

```

```

pktcMtaDevServerDhcp OBJECT-TYPE
    SYNTAX IpAddress
    MAX-ACCESS read-only
    STATUS obsolete
    DESCRIPTION

```

```

        "The IP address 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      IpAddress
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The IP address of the primary DNS server to be used by the
        MTA to resolve the FQDNs and IP addresses."
 ::= { pktcMtaDevServer 3 }

pktcMtaDevServerDns2 OBJECT-TYPE
    SYNTAX      IpAddress
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The IP address of the Secondary DNS server to be used by the MTA to
        resolve the FQDNs and IP addresses. Contains 0.0.0.0 if
        there is no Secondary DNS server specified for the MTA
        under consideration."
 ::= { pktcMtaDevServer 4 }

pktcMtaDevConfigFile OBJECT-TYPE
    SYNTAX      SnmpAdminString
    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      SnmpAdminString
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The FQDN of the SNMP V3 entity of the Provisioning Server
        to which the MTA has to communicate in order to receive
        the access method, location and the name of the
        Configuration file during MTA provisioning. This would
        also be the entity which caters to the End-point
        provisioning needs of the MTA and is the destination for
        all provisioning informs. It may be also used for post-
        provisioning SNMP operations"
 ::= { pktcMtaDevServer 6 }

pktcMtaDevProvConfigHash OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE(16|20))
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Hash of the contents of the config file, calculated and
        sent to the MTA prior to sending the config file. If the
        authentication algorithm is MD5, the length is 128 bits.
        If the authentication algorithm is SHA-1, the length is 160
        bits. Hash calculation MUST follow the requirements
        in [10]. "
 ::= { pktcMtaDevServer 7 }

```

```
pktcMtaDevProvConfigKey OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE(0|8))
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Key used to encrypt/decrypt the config file, sent to the
        MTA prior to sending the config file.  If the privacy
        algorithm is null, the length is 0.  If the privacy
        algorithm is DES, the length is 64 bits."
    ::= { pktcMtaDevServer 8 }
```

```
pktcMtaDevProvSolicitedKeyTimeout OBJECT-TYPE
    SYNTAX      Integer32 (15..600)
    UNITS       "seconds"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "This timeout applies only when the Provisioning Server
        initiated key management (with a Wake Up message) for
        SNMPv3. It is the period during which the MTA will save a
        (inside the sequence number field) from the sent out AP
        nonce Request and wait for the matching AP Reply from the
        Provisioning Server."
    DEFVAL { 120 }
    ::= { pktcMtaDevServer 9 }
```

```
-----
--
-- Unsolicited Key Updates are based on an exponential backoff
-- mechanism with two timers for AS replies.  The fast timers have a
-- maximum timer (pktcMtaDevProvUnsolicitedKeyMaxTimeout seconds) and
-- a nominal timer pktcMtaDevProvUnsolicitedKeyNomTimeout seconds)
-- from which the backoff timer determinations are made.
--
-----
```

```
-----
--
-- Timeouts for unsolicited key management updates are only pertinent
-- before the first SNMP message is sent between the MTA and the CMS
-- and before the configuration file is loaded.  No SNMP
-- communications can exist under PacketCable without the security
-- association existing.  The following object is provided only for
-- diagnostic purposes and is only useful if the MTA can be brought
-- up without any security.
--
-----
```

```
pktcMtaDevProvUnsolicitedKeyMaxTimeout OBJECT-TYPE

    SYNTAX      Integer32 (15..600)
    UNITS       "seconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This timeout applies to MTA initiated
        AP-REQ/REP key management exchange with
        Provisioning Server. The maximum timeout is
        the value which may not be exceeded in the
        exponential backoff algorithm. If provided,
        DHCP-Option-122-Sub-option 5 overrides this
```

```

        value."
REFERENCE
    "PacketCable Security Specification"
DEFVAL {600}
 ::= { pktcMtaDevServer 10 }

pktcMtaDevProvUnsolicitedKeyNomTimeout OBJECT-TYPE
SYNTAX      Integer32 (15..600)
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Defines the starting value of the timeout for the
    AP-REQ/REP Backoff and Retry mechanism with exponential
    timeout. If provided, DHCP-Option-122-Sub-option 5
    overrides this value."
REFERENCE
    "PacketCable Security Specification"
DEFVAL {30}
 ::= { pktcMtaDevServer 11 }

pktcMtaDevProvUnsolicitedKeyMeanDev OBJECT-TYPE
SYNTAX      Integer32 (15..600)
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      obsolete
DESCRIPTION
    "This is the mean deviation for the round trip delay
    timings."
REFERENCE
    "PacketCable Security Specification"
 ::= { pktcMtaDevServer 12 }

pktcMtaDevProvUnsolicitedKeyMaxRetries OBJECT-TYPE

SYNTAX      Integer32 (1..32)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This retries number applies to MTA initiated AP-REQ/REP
    key management exchange with Provisioning Server. This is
    the maximum number of retries before the MTA gives up
    attempting to establish an SNMPv3 security association
    with Provisioning Server. If provided,
    DHCP-Option-122-Sub-option 5 overrides this
    value."
REFERENCE
    "PacketCable Security Specification"
DEFVAL {8}
 ::= { pktcMtaDevServer 13 }

pktcMtaDevProvKerbRealmName OBJECT-TYPE
SYNTAX      SnmpAdminString (SIZE(1..255))
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The name of the associated Provisioning Kerberos Realm
    acquired during MTA4 ( DHCP Ack ). This is used as an
    index into the pktcMtaDevRealmTable. When used as an
    the upper case ASCII representation of the associated
    index, Kerberos Realm name MUST be used by both the
    Manager(SNMPv3 Entity) and the MTA."
 ::= { pktcMtaDevServer 14 }

```

```

pktcMtaDevProvState OBJECT-TYPE
    SYNTAX INTEGER {
        operational                (1),
        waitingForSnmpSetInfo      (2),
        waitingForTftpAddrResponse (3),
        waitingForConfigFile       (4)
    }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "If operational(1), the device has completed loading and
        processing of initialization parameters.If waiting
        ForSnmpSetInfo(5) then the device is waiting on config file
        download access information.If waiting
        ForTftpAddrResponse(6) then a DNS request has been transmitted
        and no reply has yet been received.If waiting
        ForConfigFile(7) then a TFTP request has been transmitted
        and no reply has yet been received or a download is in progress."
    REFERENCE
        "PacketCable Provisioning Specification,
        PacketCable Security Specification"
    ::= { pktcMtaDevServer 15 }

pktcMtaDevServerDhcp1 OBJECT-TYPE
    SYNTAX      IpAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The IP address of the primary DHCP server which would cater to the
        MTA during its provisioning. Contains 255.255.255.255 if
        there wasno preference given with respect to the DHCP
        servers for MTAp provisioning."
    ::= { pktcMtaDevServer 16 }

pktcMtaDevServerDhcp2 OBJECT-TYPE
    SYNTAX      IpAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The IP address of the Secondary DHCP server
        which could cater to the MTA during its provisioning.
        Contains 0.0.0.0 if there is no specific secondary DHCP
        server to be considered during MTA provisioning."
    ::= { pktcMtaDevServer 17 }

pktcMtaDevTimeServer OBJECT-TYPE
    SYNTAX      IpAddress
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "IP address of the Time Server from which to obtain the
        time. Contains 0.0.0.0 if the Time Protocol is not used for
        time synchronization."
    ::= { pktcMtaDevServer 18}

--
-- 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 }

--*****
--***** THIS OBJECT IS OBSOLETE *****
--*****

pktcMtaDevSignature OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (0..256))
    MAX-ACCESS  read-only
    STATUS      obsolete
    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
--
--  The pktcMtaDevSecurityTable shows security association information
--  relating to a particular MTA endpoint. The MTA endpoint is indexed
--  with ifIndex.
--
-----
--*****
--***** THIS TABLE IS OBSOLETE *****
--*****

pktcMtaDevSecurityTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcMtaDevSecurityEntry
    MAX-ACCESS  not-accessible

```

```

STATUS      obsolete
DESCRIPTION
    "Contains per endpoint security information."
 ::= { pktcMtaDevSecurity 5 }

pktcMtaDevSecurityEntry OBJECT-TYPE
SYNTAX      PktcMtaDevSecurityEntry
MAX-ACCESS  not-accessible
STATUS      obsolete
DESCRIPTION
    "List of security attributes for a single PacketCable
    endpoint interface."
INDEX { ifIndex }
 ::= { pktcMtaDevSecurityTable 1 }

PktcMtaDevSecurityEntry ::= SEQUENCE {
    pktcMtaDevServProviderCertificate    X509Certificate,
    pktcMtaDevTelephonyCertificate       X509Certificate,
    pktcMtaDevKerberosRealm              OCTET STRING,
    pktcMtaDevKerbPrincipalName          DisplayString,
    pktcMtaDevServGracePeriod            Integer32,
    pktcMtaDevLocalSystemCertificate     X509Certificate,
    pktcMtaDevKeyMgmtTimeout1            Integer32,
    pktcMtaDevKeyMgmtTimeout2            Integer32
}

pktcMtaDevServProviderCertificate OBJECT-TYPE
SYNTAX      X509Certificate
MAX-ACCESS  read-write
STATUS      obsolete
DESCRIPTION
    "ASN.1 DER encoding of the Telephony Service
    Provider's X.509 public-key certificate, called
    Telephony 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 TGSs 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      obsolete
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      obsolete -- moved to realm table

```

```

DESCRIPTION
    "Specifies a Kerberos realm (i.e. administrative domain),
    required for Packet Cable key management."
 ::= { pktcMtaDevSecurityEntry 3 }

pktcMtaDevKerbPrincipalName OBJECT-TYPE
    SYNTAX      DisplayString (SIZE(0..40))
    MAX-ACCESS  read-write
    STATUS      obsolete
    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)
    UNITS       "minutes"
    MAX-ACCESS  read-write
    STATUS      obsolete          -- moved to realm table
    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      obsolete
    DESCRIPTION
        "The 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      obsolete -- moved to cms table
    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."
    REFERENCE
        "PacketCable Security Specification"
 ::= { pktcMtaDevSecurityEntry 7 }

pktcMtaDevKeyMgmtTimeout2 OBJECT-TYPE
    SYNTAX      Integer32 (15..600)

```

```

UNITS          "seconds"
MAX-ACCESS    read-write
STATUS        obsolete -- changed to adaptive backoff and moved to
              -- cms table
DESCRIPTION
    "This timeout applies only when the CMS initiated key
    management management (with a Wake Up or Rekey message).
    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."
REFERENCE
    "PacketCable Security Specification"
    ::= { pktcMtaDevSecurityEntry 8 }

--
--          Ticket Granting Server information
--
--*****
--***** THIS TABLE IS OBSOLETE *****
--*****

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

pktcMtaDevTgsEntry OBJECT-TYPE
    SYNTAX      PktcMtaDevTgsEntry
    MAX-ACCESS  not-accessible
    STATUS      obsolete -- Secure Provisioning ECR
    DESCRIPTION
        "List of Tgs attributes for a single packet cable
        endpoint interface."
    INDEX { ifIndex, pktcMtaDevTgsIndex }
    ::= { pktcMtaDevTgsTable 1 }

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

pktcMtaDevTgsIndex OBJECT-TYPE
    SYNTAX      Integer32 (1..2147483647)
    MAX-ACCESS  not-accessible
    STATUS      obsolete -- Secure Provisioning ECR
    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      obsolete -- Secure Provisioning ECR
    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      obsolete          -- Secure Provisioning ECR
    DESCRIPTION
        "This object contains the Row Status associated with
        the pktcMtaDevTgsTable."
 ::= { pktcMtaDevTgsEntry 3 }

pktcMtaDevTelephonyRootCertificate OBJECT-TYPE
    SYNTAX      X509Certificate
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "ASN.1 DER encoding of the IP Telephony Root X.509
        public-key certificate stored in the MTA non-volatile
        memory and updateable with a code download. This
        certificate is used to validate the initial AS Reply
        from the KDC received during the MTA initialization."

 ::= { pktcMtaDevSecurity 9 }

-----
--
--
--   Procedures for setting up security associations:
--
--   A security association may be setup either via configuration or via
--   NCS signaling.
--
--   I.      Security association setup via configuration.
--
--           The realm must be configured first. Associated with the
--           realm is a KDC. The realm table (pktcMtaDevRealmTable)
--           indicates information about realm (e.g., name,
--           organization name) and parameters associated with KDC
--           communications (e.g., grace periods, AS request/AS
--           reply adaptive backoff parameters).
--
--           Once the realm is established, one or more servers may be
--           defined in the realm. For PacketCable 1.0, these are
--           Call Management Servers (CMSs). Associated with each CMS
--           entry in the pktcMtaDevCmsTable is an explicit reference
--           to a Realm via the realm index
--           ( pktcMtaDevCmsKerbRealmName), the FQDN of the CMS,
--           and parameters associated with IPsec management with the
--           CMS (e.g., clock skew, AP request/
--           AP reply adaptive backoff parameters).
--
--
--
--   II.     Security association setup via NCS signaling
--
--           Note: The following process is done automatically by the
--           MTA. The NCS is not involved in creating signaled entries.
--
--           The current CMS signaling association being used by an

```

```
--      endpoint is marked as active in CMS MAP table.  If NCS
--      signaling requests a change of signaling association to
--      a different FQDN, the MTA checks the current CMS MAP
--      table entries for the affected endpoint.  If the entry
--      exists in the CMS MAP table, the current CMS MAP table
--      entry is marked inactive and the newly chosen CMS MAP
--      table entry is marked active.
--
--      If the entry does not exist in the CMS MAP table, the
--      CMS table is checked to determine whether or not it
--      contains the CMS specified by CMS signaling (possibly
--      a redirection).  If the desired CMS entry is defined,
--      then a corresponding entry is created and an entry in
--      the CMS MAP table is created.  If the MTA does not
--      have current associations with that CMS, it will now
--      perform key management to establish required security
--      associations.  Once the desired CMS entry is established,
--      the current CMS MAP table entry is marked inactive and
--      the newly created CMS MAP table entry is marked active.
--      Otherwise the current CMS MAP table entry remains
--      active and the newly created CMS MAP table entry is marked
--      in active.
--
--      If the entry does not exist in the CMS MAP table and the
--      CMS entry does not exist in the CMS table, a new CMS
--      table entry should be created.  This CMS entry should use
--      the same realm as used by this endpoint.  The default
--      values for the clock skew and AP request/AP reply adaptive
--      backoff parameters should be used.  The MTA will now
--      perform key management to establish required security
--      associations.  Once the desired CMS entry is established,
--      the current CMS MAP table entry is marked inactive and
--      the newly created CMS MAP table entry is marked active.
--      Otherwise the current CMS MAP table entry remains
--      active and the newly created CMS MAP table entry is
--      marked inactive.
--
--      III.      When the MTA receives wake-up or rekey messages from a CMS,
--      it performs key management based on the corresponding entry
--      in the CMS table.  If the matching CMS entry does not exist,
--      it must ignore the wake-up or rekey messages.
```

=====

```
--      pktcMtaDevRealmTable
--
--      The pktcMtaDevRealmTable shows the KDC realms.  The table is
--      indexed withpktcMtaDevRealmName.  The Realm Table is used in with
--      conjunction any server which needs a security association with an
--      server MTA.  The table (today the CMS) has a security association.
--      Each server-MTA security association is associated with a
--      single Realm.  This allows for multiple realms, each
--      with its own security association.
```

```
pktcMtaDevRealmTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PktcMtaDevRealmEntry
    MAX-ACCESS  not-accessible
```

```

STATUS      current
DESCRIPTION
    "Contains per Kerberos realm security parameters."
 ::= { pktcMtaDevSecurity 16 }

pktcMtaDevRealmEntry OBJECT-TYPE
SYNTAX      PkctlMtaDevRealmEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "List of security parameters for a single Kerberos realm."
INDEX { IMPLIED pktcMtaDevRealmName }
 ::= { pktcMtaDevRealmTable 1 }

PkctlMtaDevRealmEntry ::= SEQUENCE {
    pkctlMtaDevRealmName                SnmpAdminString,
    pkctlMtaDevRealmPkinitGracePeriod   Integer32,
    pkctlMtaDevRealmTgsGracePeriod      Integer32,
    pkctlMtaDevRealmOrgName             OCTET STRING,
    pkctlMtaDevRealmUnsolicitedKeyMaxTimeout   Integer32,
    pkctlMtaDevRealmUnsolicitedKeyNomTimeout  Integer32,
    pkctlMtaDevRealmUnsolicitedKeyMeanDev     Integer32,
    pkctlMtaDevRealmUnsolicitedKeyMaxRetries  Integer32,
    pkctlMtaDevRealmStatus               RowStatus
}

pkctlMtaDevRealmName OBJECT-TYPE
SYNTAX      SnmpAdminString(SIZE(1..255))
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The corresponding Kerberos Realm name. This is used as
    an index into pkctlMtaDevRealmTable. When used as an index,
    used by both the Manager(SNMPv3 Entity) and the MTA."
 ::= { pkctlMtaDevRealmEntry 1 }

pkctlMtaDevRealmPkinitGracePeriod OBJECT-TYPE
SYNTAX      Integer32 (15..600)
UNITS       "minutes"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "For the purposes of the key management with an Application
    Server (CMS or Provisioning Server), 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. This
    parameter MAY also be used with other Kerberized
    applications."
DEFVAL { 30 }
 ::= { pkctlMtaDevRealmEntry 2 }

pkctlMtaDevRealmTgsGracePeriod OBJECT-TYPE
SYNTAX      Integer32 (1..600)
UNITS       "minutes"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "When the MTA implementation uses TGS Request/TGS Reply
    Kerberos messages for the purpose of the key management
    with an Application Server (CMS or Provisioning Server),
    the MTA MUST obtain a new service ticket for the
    Application Server (with a TGS Request) this many minutes
    before the old ticket expires. The minimum allowable value

```

```

        is 1 min. The default is 10 mins. This parameter MAY also
        be used with other Kerberized applications."
DEFVAL { 10 }
 ::= { pktcMtaDevRealmEntry 3 }

pktcMtaDevRealmOrgName OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (1..64))
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The value of the X.500 organization name attribute in the
        subject name of the Service provider certificate"
    ::= { pktcMtaDevRealmEntry 4 }

-----
--
-- Unsolicited Key Updates are based on an exponential backoff
-- mechanism with two timers for AS replies. The backoff timers has a
-- maximum value of pktcMtaDevRealmUnsolicitedKeyMaxTimeout seconds
-- and a nominal timer has a pktcMtaDevRealmUnsolicitedKeyNomTimeout
-- seconds from which the backoff timer determinations are made.
-- After pktcMtaDevRealmUnsolicitedMaxRetries have occurred no more
-- attempts are made.
--
-----

pktcMtaDevRealmUnsolicitedKeyMaxTimeout OBJECT-TYPE
    SYNTAX Integer32 (1..600)
    UNITS "seconds"
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "This timeout applies only when the MTA initiated key
        management. The maximum timeout is the value which may not
        be exceeded in the exponential backoff algorithm. If
        provided, DHCP-Option-122-Sub-option 4 overrides this value."
    REFERENCE
        "PacketCable Security Specification"
    DEFVAL { 30 }
    ::= { pktcMtaDevRealmEntry 5 }

pktcMtaDevRealmUnsolicitedKeyNomTimeout OBJECT-TYPE
    SYNTAX      Integer32 (100..600000)
    UNITS        "milliseconds"
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Defines the starting value of the timeout for the AS-REQ/REP Backoff
        and Retry mechanism with exponential timeout. If
        provided, DHCP-Option-122-Sub-option 4 override this
        value."
    REFERENCE
        "PacketCable Security Specification,
        PacketCable Provisioning Specification"
    DEFVAL { 10000 }
    ::= { pktcMtaDevRealmEntry 6 }

pktcMtaDevRealmUnsolicitedKeyMeanDev OBJECT-TYPE
    SYNTAX      Integer32 (1..600)
    UNITS        "seconds"
    MAX-ACCESS  read-only
    STATUS      obsolete
    DESCRIPTION

```

```

        "This is measurement of the mean deviation for the round
        trip delay timings."
REFERENCE
    "PacketCable Security Specification"
DEFVAL { 2 }
 ::= { pktcMtaDevRealmEntry 7 }

pktcMtaDevRealmUnsolicitedKeyMaxRetries OBJECT-TYPE
SYNTAX Integer32 (0..1024)
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This is the maximum number of retries before the MTA
    gives up attempting to establish a security association.
    If provided,DHCP-Option-122-Sub-option 4 overrides this
    value."
REFERENCE
    "PacketCable Security Specification"
DEFVAL { 5 }
 ::= { pktcMtaDevRealmEntry 8 }

pktcMtaDevRealmStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This object contains the Row Status associated with
    the pktcMtaDevRealmTable."
 ::= { pktcMtaDevRealmEntry 9 }

-----
--
-- pktcMtaDevCmsTable
--
-- The pktcMtaDevCmsTable shows the IPSec key management policy
-- relating to a particular CMS. The table is indexed with
-- pktcMtaDevCmsFQDN.
--
-----

pktcMtaDevCmsTable OBJECT-TYPE
SYNTAX SEQUENCE OF PkctcMtaDevCmsEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "Contains per CMS key management policy."
 ::= { pktcMtaDevSecurity 17 }

pktcMtaDevCmsEntry OBJECT-TYPE
SYNTAX PkctcMtaDevCmsEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "List of key management parameters for a single MTA-CMS
    interface."
INDEX { IMPLIED pktcMtaDevCmsFqdn }
 ::= { pktcMtaDevCmsTable 1 }

PkctcMtaDevCmsEntry ::= SEQUENCE {
    pktcMtaDevCmsFqdn                SnmpAdminString,
    pktcMtaDevCmsKerbRealmName       SnmpAdminString,
    pktcMtaDevCmsSolicitedKeyTimeout Integer32,
    pktcMtaDevCmsMaxClockSkew        Integer32,

```

```

pktcMtaDevCmsUnsolicitedKeyMaxTimeout      Integer32,
pktcMtaDevCmsUnsolicitedKeyNomTimeout     Integer32,
pktcMtaDevCmsUnsolicitedKeyMeanDev        Integer32,
pktcMtaDevCmsUnsolicitedKeyMaxRetries     Integer32,
pktcMtaDevCmsStatus                       RowStatus,
pktcMtaDevCmsIpsecCtrl                    TruthValue
}

```

```

pktcMtaDevCmsFqdn      OBJECT-TYPE
    SYNTAX      SnmpAdminString (SIZE(1..255))
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The fully qualified domain name of the CMS.
        is the index into the pktcMtaDevCmsTable.
        When used as an index, the upper case ASCII
        representation of the associated CMS FQDN
        MUST be used by both the Manager(SNMPv3 Entity)
        and the MTA."
    ::= { pktcMtaDevCmsEntry 1 }

```

```

pktcMtaDevCmsKerbRealmName OBJECT-TYPE
    SYNTAX      SnmpAdminString (SIZE(1..255))
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The Kerberos Realm Name of the associated CMS. This is
        the index into the pktcMtaDevRealmTable.
        When used as an index, the upper case ASCII
        representation of the associated CMS FQDN
        must be used by both the Manager(SNMPv3 Entity)
        and the MTA "
    ::= { pktcMtaDevCmsEntry 2 }

```

```

pktcMtaDevCmsMaxClockSkew OBJECT-TYPE
    SYNTAX      Integer32 (1..1800)
    UNITS       "seconds"
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This is the maximum allowable clock skew between the
        MTA and CMS"
    DEFVAL { 300 }
    ::= { pktcMtaDevCmsEntry 3 }

```

```

pktcMtaDevCmsSolicitedKeyTimeout OBJECT-TYPE
    SYNTAX Integer32 (100..30000)
    UNITS "milliseconds"
    MAX-ACCESS read-create
    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 numberfield) from the sent out AP Request and
        wait for the matchingAP
        Reply from the CMS."
    REFERENCE
        "PacketCable Security Specification"
    DEFVAL { 1000 }
    ::= { pktcMtaDevCmsEntry 4 }

```

```

-----
--

```

```
-- Unsolicited Key Updates are based on an exponential backoff
-- mechanism with mechanism with two timers for AP replies. The
-- backoff timers have a maximum value of
-- pktcMtaDevCmsUnsolicitedKeyMaxTimeout
-- seconds and a nominal timer has
-- pktcMtaDevCmsUnsolicitedKeyNomTimeout seconds from which the
-- backoff timer determinations are made. After
-- pktcMatDevCmsUnsolicitedMaxRetries have occurred no more
-- attempts are made.
--
-----
```

pktcMtaDevCmsUnsolicitedKeyMaxTimeout OBJECT-TYPE

```
SYNTAX      Integer32 (1..600)
UNITS       "seconds"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "This timeout applies only when the MTA initiated key.
    The maximum management timeout is the value which may not
    be exceeded in the exponential backoff algorithm."
REFERENCE
    "PacketCable Security Specification"
DEFVAL { 8 }
 ::= { pktcMtaDevCmsEntry 5 }
```

pktcMtaDevCmsUnsolicitedKeyNomTimeout OBJECT-TYPE

```
SYNTAX Integer32 (100..30000)
UNITS "milliseconds"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "Defines the starting value of the timeout for the
    AP-REQ/REP Backoff and Retry mechanism with exponential
    timeout for CMS."
REFERENCE
    "PacketCable Security Specification"
DEFVAL { 500 }
 ::= { pktcMtaDevCmsEntry 6 }
```

pktcMtaDevCmsUnsolicitedKeyMeanDev OBJECT-TYPE

```
SYNTAX      Integer32 (1..600)
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      obsolete
DESCRIPTION
    "This is the measurement of the mean deviation for the round
    trip delay timings."
REFERENCE
    "PacketCable Security Specification"
 ::= { pktcMtaDevCmsEntry 7 }
```

pktcMtaDevCmsUnsolicitedKeyMaxRetries OBJECT-TYPE

```
SYNTAX Integer32 (0..1024)
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This is the maximum number of retries before the MTA
    gives up attempting to establish a security association."
REFERENCE
```

```

        "PacketCable Security Specification"
        DEFVAL { 5 }
        ::= { pktcMtaDevCmsEntry 8 }

pktcMtaDevCmsStatus      OBJECT-TYPE

        SYNTAX      RowStatus
        MAX-ACCESS   read-create
        STATUS      current
        DESCRIPTION
            "This object contains the Row Status associated with the
            pktcMtaDevCmsTable."
        ::= { pktcMtaDevCmsEntry 9 }

pktcMtaDevCmsIpsecCtrl  OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS   read-only
        STATUS      current
        DESCRIPTION
            "The value of 'true(1)' indicates that IPSEC and IPSEC
            KeyManagement MUST be used to communicate with the CMS.
            The value of 'false(2)' indicates that IPSEC Signaling
            Security is disabled for both the IPSEC Key Management and
            IPSECprotocol (for the specific CMS)."
        DEFVAL { true }
        ::= { pktcMtaDevCmsEntry 10 }

=====
--
--      pktcMtaCmsMapTable
--*** this table is obsolete ***
--
--
-- The pktcMtaCmsMapTable contains the signaling associations
-- between MTA endpoints and CMSs. It maps the endpoint to
-- zero or more entries in pktcMtaDevCmsTable.
--
-- The table contains the following indexes and rows:
--
-- ifIndex -the index of the physical port
--
-- pktcMtaCmsMapCmsIndex - the index of the CMS entry in the
-- pktcMtaDevCmsTable. Valid indices are equal to current
-- pktcMtaDevCmsIndex values.
--
-- pktcMtaCmsMapOperStatus - this value indicates which signaling
-- association the endpoint is actively using
--
-- pktcMtaCmsMapAdminStatus - this flag indicates whether or not
-- an endpoint should use a particular CMS and its security
-- association. By setting this flag to inhibit, this associated
-- CMS cannot provide signaling to the referenced endpoint.
--
-- pktcMtaCmsMapRowStatus - allows for the creation and deletion of
-- endpoint mappings via the NMS
--
--
=====

pktcMtaCmsMapTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF PktcMtaCmsMapEntry

```

```

MAX-ACCESS not-accessible
STATUS      obsolete
DESCRIPTION
    "Contains per endpoint CMS signaling associations."
 ::= { pktcMtaDevSecurity 18 }

pktcMtaCmsMapEntry OBJECT-TYPE
SYNTAX      PktcMtaCmsMapEntry
MAX-ACCESS not-accessible
STATUS      obsolete
DESCRIPTION
    "List of signaling associations."
INDEX { ifIndex, pktcMtaCmsMapCmsFqdn }
 ::= { pktcMtaCmsMapTable 1 }

PktcMtaCmsMapEntry ::= SEQUENCE {
    pktcMtaCmsMapCmsFqdn DisplayString,
    pktcMtaCmsMapOperStatus  INTEGER,
    pktcMtaCmsMapAdminStatus  INTEGER,
    pktcMtaCmsMapRowStatus  RowStatus
}

pktcMtaCmsMapCmsFqdn OBJECT-TYPE
SYNTAX      DisplayString (SIZE(1..255))
MAX-ACCESS not-accessible
STATUS      obsolete
DESCRIPTION
    "The index for the associated CMS. Valid indices
    are equal to current pktcMtaDevCmsFqdn values."
 ::= { pktcMtaCmsMapEntry 1 }

pktcMtaCmsMapOperStatus OBJECT-TYPE
SYNTAX      INTEGER {
    inactive (1),
    active (2)
}
MAX-ACCESS read-only
STATUS      obsolete
DESCRIPTION
    "The operational status of signaling association. The
    meaning of the status is as follows:
    inactive - signaling is not currently active
    active - signaling is active."
 ::= { pktcMtaCmsMapEntry 2 }

pktcMtaCmsMapAdminStatus OBJECT-TYPE
SYNTAX      INTEGER {
    inhibit (1),
    allow (2)
}
MAX-ACCESS read-create
STATUS      obsolete
DESCRIPTION
    "The administrative status for signaling over the indicated
    security association. The meaning of the status is as
    follows:
    inhibit -signaling is not currently allowed
    allow - signaling is allowed."
 ::= { pktcMtaCmsMapEntry 3 }

pktcMtaCmsMapRowStatus OBJECT-TYPE
SYNTAX      RowStatus
MAX-ACCESS read-create

```

```

STATUS      obsolete
DESCRIPTION
    "This object is used for creating and deleting an entry
    in this table via an element manager."
 ::= { pktcMtaCmsMapEntry 4 }

pktcMtaDevResetKrbTickets OBJECT-TYPE
SYNTAX      BITS {
    invalidateProvOnReboot (0),
    invalidateAllCmsOnReboot (1)
}
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION  "The object defines a Kerberos Ticket Control Mask
that
    instructs an MTA to invalidate the specific application
    server Kerberos Tickets which are locally persisted in
    MTA sNVRAM. If an MTA does not persist the Kerberos
    Tickets, it MUST ignore setting of this object, and MUST
    report value 0 when the object is read. The object value
    is encoded as follows:
    - setting invalidateProvOnReboot (0) bit to 1 means that
    an MTA MUST invalidate a Kerberos Application Ticket for
    the Provisioning Application at the next MTA reboot,
    - setting invalidateAllCmsOnReboot (1) bit to 1 means
    that an MTA MUST invalidate a Kerberos
    Application Tickets for all CMS(s) currently assigned to
    the end-points"
REFERENCE
    "PacketCable Security Specification"
DEFVAL {{ }}
 ::= { pktcMtaDevSecurity 19 }

--
-- 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
--
pktcMtaDevProvisioningEnrollment NOTIFICATION-TYPE
OBJECTS {
    sysDescr,
    pktcMtaDevSwCurrentVers,
    pktcMtaDevTypeIdentifier,
    pktcMtaDevMacAddress,
    pktcMtaDevCorrelationId
}
STATUS      current
DESCRIPTION  "This inform is issued to initiate the PacketCable process
provisioning ."
REFERENCE
    "Inform as defined in RFC 1902"
 ::= { pktcMtaNotification 1 }

pktcMtaDevProvisioningStatus NOTIFICATION-TYPE
OBJECTS {
    pktcMtaDevMacAddress,
    pktcMtaDevCorrelationId,

```

```

        pktcMtaDevProvisioningState
    }
    STATUS          current
    DESCRIPTION
        "This inform is issued to confirm completion of the
        PacketCable 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
    }
    ::= { pktcMtaCompliances 3 }

pktcMtaGroup OBJECT-GROUP
    OBJECTS {
        pktcMtaDevResetNow,
        pktcMtaDevSerialNumber,
        pktcMtaDevMacAddress,
        pktcMtaDevFQDN,
        pktcMtaDevEndPntCount,
        pktcMtaDevEnabled,
        pktcMtaDevTypeIdentifier,
        pktcMtaDevProvisioningState,
        pktcMtaDevHttpAccess,
        pktcMtaDevCertificate,
        pktcMtaDevCorrelationId,
        pktcMtaDevManufacturerCertificate,
        pktcMtaDevServerDhcp1,
        pktcMtaDevServerDhcp2,
        pktcMtaDevServerDns1,
        pktcMtaDevServerDns2,
        pktcMtaDevTimeServer,
        pktcMtaDevConfigFile,
        pktcMtaDevSnmpEntity,
        pktcMtaDevRealmPkinitGracePeriod,
        pktcMtaDevRealmTgsGracePeriod,
        pktcMtaDevRealmOrgName,
        pktcMtaDevRealmUnsolicitedKeyMaxTimeout,
        pktcMtaDevRealmUnsolicitedKeyNomTimeout,
        pktcMtaDevRealmUnsolicitedKeyMaxRetries,
        pktcMtaDevRealmStatus,
        pktcMtaDevCmsKerbRealmName,
        pktcMtaDevCmsUnsolicitedKeyMaxTimeout,
        pktcMtaDevCmsUnsolicitedKeyNomTimeout,
        pktcMtaDevCmsUnsolicitedKeyMaxRetries,
        pktcMtaDevCmsSolicitedKeyTimeout,
        pktcMtaDevCmsMaxClockSkew,
        pktcMtaDevCmsStatus,
        pktcMtaDevProvUnsolicitedKeyMaxTimeout,
        pktcMtaDevProvUnsolicitedKeyNomTimeout,
        pktcMtaDevProvUnsolicitedKeyMaxRetries,
        pktcMtaDevProvKerbRealmName,

```

```

        pktcMtaDevProvSolicitedKeyTimeout,
        pktcMtaDevProvConfigHash,
        pktcMtaDevProvConfigKey,
        pktcMtaDevProvState,
        pktcMtaDevProvisioningTimer,
        pktcMtaDevTelephonyRootCertificate,
        pktcMtaDevErrorOid,
        pktcMtaDevErrorGiven,
        pktcMtaDevErrorReason,
        pktcMtaDevSwCurrentVers,
        pktcMtaDevResetKrbTickets,
        pktcMtaDevCmsIpsecCtrl,
        pktcMtaDevProvisioningCounter
    }
    STATUS current
    DESCRIPTION
        "Group of objects for PacketCable MTA MIB."
    ::= { pktcMtaGroups 1 }

pktcMtaNotificationGroup NOTIFICATION-GROUP
    NOTIFICATIONS {
        pktcMtaDevProvisioningStatus,
        pktcMtaDevProvisioningEnrollment
    }
    STATUS current
    DESCRIPTION
        "These notifications deal with change in status of
        MTA Device."
    ::= { pktcMtaGroups 2 }

pktcMtaObsoleteGroup OBJECT-GROUP
    OBJECTS {
        pktcMtaDevHardwareVersion,
        pktcMtaDevSignature,
        pktcMtaDevServProviderCertificate,
        pktcMtaDevTelephonyCertificate,
        pktcMtaDevKerberosRealm,
        pktcMtaDevKerbPrincipalName,
        pktcMtaDevServGracePeriod,
        pktcMtaDevLocalSystemCertificate,
        pktcMtaDevKeyMgmtTimeout1,
        pktcMtaDevTgsLocation,
        pktcMtaDevTgsStatus,
        pktcMtaDevServerBootState,
        pktcMtaCmsMapOperStatus,
        pktcMtaCmsMapAdminStatus,
        pktcMtaCmsMapRowStatus,
        pktcMtaDevRealmUnsolicitedKeyMeanDev,
        pktcMtaDevCmsUnsolicitedKeyMeanDev,
        pktcMtaDevProvUnsolicitedKeyMeanDev,
        pktcMtaDevServerDhcp,
        pktcMtaDevKeyMgmtTimeout2
    }
    STATUS obsolete
    DESCRIPTION
        "Group of obsolete objects for PacketCable MTA MIB."
    ::= { pktcMtaGroups 3 }

```

END

Appendix A. Revision History (Informative)

The following Engineering Change Notices were incorporated into PKT-SP-MIB-MTA-I03-020116:

ECN Number	ECN Date	Summary
mib*-n-01077	7/16/01	Clarify usage of pktcMtaDev Provisioning Timer, clean up some security related objects
mib-n-01170	11/5/01	Clarifies changes in mib-n-01077.
mta-n-01075	7/16/01	Currently MTA MIB defines the “pktcMtaDevFQDN” MIB Object as having “read-write” attribute.
prov*-n-01076	7/16/01	Clarification regarding the presence of the “Telephony Service Provider SNMP Entity” attribute in the Device Level Configuration Data.
prov*-n-01118	9/10/01	The description of the requirements for tables (and their corresponding MIB entries) is unclear.
prov*-n-01119	9/10/01	Augment sec-n-01029 and clear up several ambiguities in pkt-sp-prov-i02-010323.
prov-n-01122	9/10/01	Modify pktcMtaDevRealmOrgName from DisplayString to Octet String syntax +
mib-n-01168	12/10/01	Clarification of ECN
mib-n-01187	12/10/01	Correct MIB error in sec-n-1029, and complete deletion of the mean deviation objects.
prov-n-01033	5/7/2001	Add MIB items, obsolete an object.

The following Engineering Change Notices were incorporated into PKT-SP-MIB-MTA-I04-021018:

ECN Number	ECN Date	Summary
mib-n-01226	2/25/02	A new MIB object is needed to support the S-MTA ToD server requirements
mibmta-n-02031	6/24/02	Place the MTA's sysDescr object in the MTA15 INFORM, thus reducing the need for MTA16/17 device interrogation.
migsig-n-02043	6/24/02	Correcting references to Security Spec; R0,R6 and R7 Cadence parameters are made mandatory
mibmta-n-02084	6/24/02	Clarification of the Description Attribute of the columnar MIB Objects in "pktcMtaDevRealmTable".
mibmta-n-02083	6/24/02	This ECR makes I03 MIB specification and I05 security specification consistent.
mibmta-n-02091	6/24/02	This ECR enhances the way of representation of indices in the security related tables of the MTA-MIB.
sec-n-02137	7/22/02	The security spec currently requires the same transmission strategy for key management as what is defined in the NCS spec, which is inconsistent with the MTA MIB definition and is more complex than what is necessary.
mib-n-02019	6/24/02	MTA MIB does not define the default values of the timeouts for the AP-REQ/REP exchange backoff and retry mechanism in SNMPv3 Kerberized Key Negotiation.
mibmta-n-02085	6/24/02	Index Columnar MIB Objects of type "DisplayString" in the "pktcMtaDevRealmTable" Conceptual Tables and "pktcMtaDevCmsTable" should have IMPLIED modifier.
mibmta-n-02154	8/26/02	The ECR defines the MIB Object, which allows the Service Providers to control the enabling/disabling of the signaling security (IPSEC) and Key Management flows associated with it.

The following Engineering Change Notices were incorporated into PKT-SP-MIB-MTA-I05-021127:

ECN Number	ECN Date	Summary
mibmta-n-02179	11/11/02	MIB enhancements for proper reflection of the reporting of MTA Device Provisioning State by the MTA.
mibmta-n-02202	11/20/02	Changes MIB syntax INTEGER to Integer32 in Signaling and MTA MIB specifications.

The following Engineering Change Notices were incorporated into PKT-SP-MIB-MTA-I06-030415

ECN Number	ECN Date	Summary
mibmta-n-03003	2/10/03	Unrelated values are deleted from the MIB object pktcMtaDevProvState.
mibmta-n-03024	3/10/03	Eliminates MIB data dependencies, which E-MTA has with the eDOCSIS part of the modem.