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**Signaling MIB for PacketCable and IPCablecom Multimedia Terminal
Adapters (MTAs)
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Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it defines a basic set of managed objects for Simple Network Management Protocol (SNMP)-based management of PacketCable- and IPCablecom-compliant Multimedia Terminal Adapter devices.

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

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

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

[2.](#) Introduction

A multimedia terminal adapter (MTA) is used to deliver broadband Internet, data, and/or voice access jointly with telephony service to a subscriber's or customer's premises using a cable network infrastructure. An MTA is normally installed at the customer's or subscriber's premises, and it is coupled to a multiple system operator (MSO) using a hybrid fiber coax (HFC) access network.

An MTA is provisioned by the MSO for broadband Internet, data, and/or voice service. For more information on MTA provisioning refer to the PacketCable Provisioning Specification [[PKT-SP-PROV](#)] and [[RFC4682](#)]. MTA devices include one or more endpoints (e.g., telephone ports) which receive call signaling information to establish ring cadence, and codecs used for providing telephony service. For more information on call signaling refer to the PacketCable Signaling Specification [[PKT-SP-MGCP](#)] and [[RFC3435](#)]. For more information on codecs refer to the PacketCable Audio/Video Codecs Specification [[PKT-SP-CODEC](#)].

Telephone systems are typically very complex and often have a wide distribution. It is therefore important for management systems to support MTAs from multiple vendors at the same time, including those from multiple countries. This MIB module provides objects suitable for managing signaling for MTA devices in the widest possible range of markets.

3. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

The terms "MIB module" and "information module" are used interchangeably in this memo. As used here, both terms refer to any of the three types of information modules defined in [Section 3 of RFC 2578](#) [[RFC2578](#)].

3.1 MTA

An MTA is a PacketCable or IPCablecom compliant device providing telephony services over a cable or hybrid system used to deliver video signals to a community. It contains an interface to endpoints, a network interface, codecs, and all signaling and encapsulation functions required for Voice over IP transport, call signaling, and Quality of Service signaling. An MTA can be an embedded or a standalone device. An Embedded MTA (E-MTA) is an MTA device containing an embedded Data Over Cable Service Interface Specifications (DOCSIS) Cable Modem. A Standalone MTA (S-MTA) is an MTA device separated from the DOCSIS Cable Modem by non-DOCSIS MAC interface (e.g., Ethernet, USB).

3.2 Endpoint

An endpoint or MTA endpoint is a standard telephony physical port located on the MTA and used for attaching the telephone device to the MTA.

3.3 L Line Package

The L line package refers to the MGCP package for the core signaling functionality as defined by PacketCable and IPCablecom. An MTA provides all L package elements, however the operator determines their application.

3.4 E Line Package

The E line package refers to the MGCP package extensions, over and above the core L package, defined in support of international requirements. E line package elements are optional, vary from country to country, and are set by operator or regulatory requirements.

4. Overview

This MIB module provides a set of objects required for Multimedia Terminal Adapter (MTA) devices compliant with the PacketCable and IPCablecom signaling specifications published by Cablelabs, the European Telecommunications Standards Institute (ETSI), and the International Telecommunication Union Telecommunication Standardization Sector (ITU-T) IPCablecom compliant Multimedia Terminal Adapter (MTA) devices. The Signaling MIB module (PKTC-SIG-MIB) is intended to update various Signaling MIB modules from which it is partly derived:

- the PacketCable 1.0 Signaling MIB Specification [[PKT-SP-MIB-SIG-1.0](#)],
- the PacketCable 1.5 Signaling MIB Specification [[PKT-SP-MIB-SIG-1.5](#)],
- the ITU-T IPCablecom Signaling MIB requirements [[ITU-T-J169](#)],
- the ETSI Signaling MIB [[ETSI-TS-101-909-9](#)]. The ETSI Signaling MIB requirements also refer to various signal characteristics defined in [[ETSI-TS-101-909-4](#)], [[ETSI-EN-300-001](#)], [[ETSI-EN-300-659-1](#)], [[ETSI-EN-300-324-1](#)] and [[ETSI-TR-101-183](#)].

Several normative and informative references are used to help define Signaling MIB objects. As a convention, wherever PacketCable and IPCablecom requirements are equivalent, the PacketCable reference is used in the object REFERENCE clause. IPCablecom compliant MTA devices MUST use the equivalent IPCablecom references.

This MIB module describes the various Signaling MIB objects that are directly related to the PacketCable MTA and the endpoints supported on the MTA, each of which provides services independently. The recognition and distinction of the endpoints is made by utilizing the ifTable (IF-MIB [[RFC2863](#)]), where each index (ifIndex) refers to a unique endpoint. This MIB module also utilizes the syntax definition of the Differentiated Services Code Point (DSCP) from DIFFSERV-DSCP-TC [[RFC3289](#)] for defining MIB objects that allow for

differentiation between various types of traffic in the service provider network.

4.1 Structure of the MIB

This MIB module is identified by pktcSigMib and is structured into two major parts:

- Signaling information that control device and endpoint configuration (pktcSigMibObjects)
- Module Conformance information(pktcSigConformance)

The following sections explain each part in further detail. It is to be noted that future enhancements to specify Notification Objects is also allowed(pktcSigNotification).

4.2 pktcSigMibObjects

This is further divided into device-specific elements (pktcSigDevObjects) and endpoint-specific elements (pktcSigEndPntConfigObjects).

Some highlights of the device-specific elements are as follows:

pktcSigDevCodecTable - this object identifies the codec types available on the device.

pktcSigDevEchoCancellation - This object identifies the capability of echo cancellation on the device.

pktcSigDevSilenceSuppression - This object specifies if the device is capable of silence suppression (Voice Activity Detection).

pktcSigPulseSignalTable - this international object selects the various signals used in the application of the metering pulse signal to the twisted pair line.

pktcSigDevToneTable - this international table specifies a flexible structure within which to specify all of the tones used in the MTA.

pktcSigDevMultiFreqToneTable - this table defines the characteristics of tones with multiple frequencies. Each entry in

this table represents the frequency reference of a multi-frequency tone.

The endpoint-specific elements are mostly confined to the Endpoint configuration MIB table (pktcSigEndPntConfigTable). This table describes the MTA endPoint configuration. The number of entries in this table represents the number of provisioned endpoints.

4.3 pktcSigConformance

pktcSigDeviceGroup - this group contains all the MIB Objects that apply on a per-device basis and need to be implemented by an MTA to claim compliance with the specified MIB module.

pktcSigEndpointGroup - this group contains all the MIB Objects that apply on a per-endpoint basis and need to be implemented by an MTA to claim compliance with the specified MIB module.

pktcLLinePackageGroup - this group contains the MIB Objects that need to be implemented to support the L Line Package.

pktcELinePackageGroup - this group contains the MIB Objects that need to be implemented to support the E Line Package.

pktcInternationalGroup- this group contains optional MIB Objects designed to support operations over the widest possible range of markets.

5. Definitions

PKTC-SIG-MIB DEFINITIONS ::= BEGIN

IMPORTS

```
    MODULE-IDENTITY,
    OBJECT-TYPE,
    Integer32,
    Unsigned32,
    mib-2
        FROM SNMPv2-SMI
        -- [RFC2578]
    InetAddressType,
    InetAddress,
    InetPortNumber
        FROM INET-ADDRESS-MIB
        -- [RFC4001]
    TEXTUAL-CONVENTION,
    RowStatus,
    TruthValue
        FROM SNMPv2-TC
        -- [RFC2579]
    OBJECT-GROUP,
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF
        -- [RFC2580]
    SnmpAdminString
        FROM SNMP-FRAMEWORK-MIB
        -- [RFC3411]
    ifIndex
        FROM IF-MIB
        -- [RFC2863]
    Dscp
        FROM DIFFSERV-DSCP-TC;
        -- [RFC3289]
```

pktcSigMib MODULE-IDENTITY

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DESCRIPTION

"This MIB module supplies the basic management object for the PacketCable and IPCablecom Signaling protocols. This version of the MIB includes common signaling and Network Call Signaling (NCS) related signaling objects.

Copyright (C) The IETF Trust (2007). This version of this MIB module is part of RFC yyyy; see the RFC itself for full legal notices."

-- RFC Ed: replace yyyy with actual RFC number and remove this note

REVISION "200708250000Z"

DESCRIPTION

"Initial version, published as RFC yyyy."

-- RFC Ed: replace yyyy with actual RFC number and remove this note

::= { mib-2 XXX }

-- RFC Ed: replace XXX with IANA-assigned number and remove this

-- note

-- Textual Conventions

TenthdBm ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d-1"

STATUS current

DESCRIPTION

"This textual convention represents power levels that are normally expressed in dBm. Units are in tenths of a dBm; for example, -13.5 dBm will be represented as -135."

SYNTAX Integer32

PktcCodecType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

" This textual convention defines various types of codecs that MAY be supported. The description for each enumeration is listed below:

Enumeration	Description
other	a defined codec not in the enumeration
unknown	a codec not defined by the PacketCable Codec Specification
g729	ITU-T Recommendation G.729
reserved	for future use
g729E	ITU-T Recommendation G.729E
pcmu	Pulse Code Modulation u-law (PCMU)
g726at32	ITU-T Recommendation G.726-32 (32 kbit/s)
g728	ITU-T Recommendation G.728
pcma	Pulse Code Modulation a-law (PCMA)
g726at16	ITU-T Recommendation G.726-16 (16 kbit/s)
g726at24	ITU-T Recommendation G.726-24 (24 kbit/s)
g726at40	ITU-T Recommendation G.726-40 (40 kbit/s)
ilbc	IETF internet low bit rate codec
bv16	Broadcom BroadVoice16

The list of codecs is consistent with the IETF Real Time Transport Protocol (RTP) Profile registry and the RTP Map Parameters Table in Packetcable Audio/Video Codecs Specification [[PKT-SP-CODEC](#)]. The literal codec name for each codec is listed below:

Codec	Literal Codec Name
g729	G729
g729E	G729E
pcmu	PCMU
g726at32	G726-32
g728	G728
pcma	PCMA
g726at16	G726-16
g726at24	G726-24
g726at40	G726-40
ilbc	iLBC
bv16	BV16

The literal codec name is the second column of the table with codec RTP Map Parameters. Literal Codec Name Column

contains the codec name used in the local connection

options (LC0) of the NCS messages create connection (CRCX)/modify connection (MDCX) and is also used to identify the codec in the Call Management System (CMS) Provisioning Specification. RTP Map Parameter Column of the Table contains the string used in the media attribute line (a=) of the session description protocol (SDP) parameters in NCS messages."

```
SYNTAX INTEGER {
    other          (1),
    unknown       (2),
    g729          (3),
    reserved      (4),
    g729E         (5),
    pcmu          (6),
    g726at32      (7),
    g728          (8),
    pcma          (9),
    g726at16      (10),
    g726at24      (11),
    g726at40      (12),
    ilbc          (13),
    bv16          (14)
}
```

PktcRingCadence ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This object provides an encoding scheme for ring cadences, including repeatability characteristics. All fields in this object MUST be encoded in network-byte order.

The first three higher order octets are reserved. The octets that follow are used to encode a 'bit-string', with each bit corresponding to 50 milliseconds. A bit value of '1' indicates the presence of a ring-tone and a bit value of '0' indicates the absence of a ring-tone, for that duration (50 ms) (Note: A minimum number of octets required to encode the bit-string MUST be used).

The first two of the reserved octets MUST indicate the length of the encoded cadence (in bits) and MUST range between 1 and 264. (Note: The length in bits MUST also be consistent with the number of octets that encode the cadence). The MTA MUST ignore any unused bits in the last octet, but MUST reflect the value as provided on subsequent SNMP GETs.

The third of the reserved octets indicates 'repeatability'

and MUST be either 0x80 or 0x00 - the former value indicating 'non-repeatability' and the latter indicating 'repeatability'.

The MTA MUST reject attempts to set a value that violates any of the above requirements"

SYNTAX OCTET STRING (SIZE(4..36))

PktcSigType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

" This object lists the various types of signaling that may be supported:

other(1) - set when signaling other than NCS is used

ncs(2) - Network call signaling is a derivation of MGCP (Media Gateway Control Protocol) defined for IPCablecom/PacketCable MTAs."

SYNTAX INTEGER {
 other(1),
 ncs(2)
}

DtmfCode ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This textual convention represents the DTMF Character used to indicate the start or end of the digit transition sequence used for Caller ID or VMWI.

Note: The DTMF code '*' is indicated using 'dtmfcodeStar' and the DTMF code '#' is indicated using ' dtmfcodeHash'."

SYNTAX INTEGER {
 dtmfcode0(0),
 dtmfcode1(1),
 dtmfcode2(2),
 dtmfcode3(3),
 dtmfcode4(4),
 dtmfcode5(5),
 dtmfcode6(6),
 dtmfcode7(7),
 dtmfcode8(8),
 dtmfcode9(9),
 dtmfcodeStar(10),
 dtmfcodeHash(11),
 dtmfcodeA(12),

dtmfcodeB(13),

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```

        dtmfcodeC(14),
        dtmfcodeD(15)
    }

```

PktcSubscriberSideSigProtocol::=TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This textual convention represents the Signaling protocol being used for purposes such as Caller ID or VMWI.

A value of fsk(1) indicates Frequency Shift Keying (FSK).

A value of dtmf(2) indicates Dual-Tone Multi-Frequency (DTMF)."

```

SYNTAX INTEGER {
    fsk(1),
    dtmf(2)
}

```

pktcSigMibObjects OBJECT IDENTIFIER ::= { pktcSigMib 1 }

pktcSigDevObjects OBJECT IDENTIFIER ::=

{ pktcSigMibObjects 1 }

pktcSigEndPntConfigObjects OBJECT IDENTIFIER ::=

{ pktcSigMibObjects 2 }

--

-- The codec table (pktcSigDevCodecTable) defines all combinations

-- of codecs supported by the Multimedia Terminal Adapter (MTA).

--

pktcSigDevCodecTable OBJECT-TYPE

SYNTAX SEQUENCE OF PktcSigDevCodecEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" This table describes the MTA supported codec types. An MTA MUST populate this table with all possible combinations of codecs it supports for simultaneous operation. For example, an MTA with two endpoints may be designed with a particular DSP and memory architecture that allows it to support the following fixed combinations of codecs for simultaneous operation:

Codec Type	Maximum Number of Simultaneous Codecs
PCMA	3
PCMA	2
PCMU	1

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PCMU	2
PCMU	3
PCMA	1
G729	1
G729	2
PCMU	1
G729	1

Based on this example, the entries in the codec table would be:

pktcSigDev CodecComboIndex	pktcSigDev CodecType	pktcSigDev CodecMax
1	pcma	3
2	pcma	2
2	pcmu	1
3	pcma	1
3	pcmu	2
4	pcmu	3
5	pcma	1
5	g729	1
6	g729	2
7	pcmu	1
7	g729	1

An operator querying this table is able to determine all possible codec combinations the MTA is capable of simultaneously supporting.

This table MUST NOT include non-voice codecs."

```
::= { pktcSigDevObjects 1 }
```

```
pktcSigDevCodecEntry OBJECT-TYPE
```

```
SYNTAX      PktcSigDevCodecEntry
```

```
MAX-ACCESS  not-accessible
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"Each entry represents the maximum number of active
connections with a particular codec the MTA is capable of
supporting. Each row is indexed by a composite key
consisting of a number enumerating the particular codec
combination and the codec type."
```

```
INDEX { pktcSigDevCodecComboIndex, pktcSigDevCodecType }
```

```
::= { pktcSigDevCodecTable 1 }
```

```
PktcSigDevCodecEntry ::= SEQUENCE {
```



```
pktcSigDevCodecComboIndex    Unsigned32,
pktcSigDevCodecType          PktcCodecType,
pktcSigDevCodecMax           Unsigned32
}
```

```
pktcSigDevCodecComboIndex  OBJECT-TYPE
```

```
    SYNTAX      Unsigned32 (1..255)
```

```
    MAX-ACCESS  not-accessible
```

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        " The index value which enumerates a particular codec
          combination in the pktcSigDevCodecTable."
```

```
    ::= { pktcSigDevCodecEntry 1 }
```

```
pktcSigDevCodecType  OBJECT-TYPE
```

```
    SYNTAX      PktcCodecType
```

```
    MAX-ACCESS  not-accessible
```

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        " A codec type supported by this MTA."
```

```
    ::= { pktcSigDevCodecEntry 2 }
```

```
pktcSigDevCodecMax  OBJECT-TYPE
```

```
    SYNTAX      Unsigned32(1..255)
```

```
    MAX-ACCESS  read-only
```

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        " The maximum number of simultaneous sessions of a
          particular codec that the MTA can support."
```

```
    ::= { pktcSigDevCodecEntry 3 }
```

```
--
```

```
-- These are the common signaling related definitions that affect
-- the entire MTA device.
```

```
--
```

```
pktcSigDevEchoCancellation  OBJECT-TYPE
```

```
    SYNTAX      TruthValue
```

```
    MAX-ACCESS  read-only
```

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        " This object specifies if the device is capable of echo
          cancellation. The MTA MUST set this MIB Object to a
          value of true(1) if it is capable of echo
          cancellation; and a value of false(2) if not."
```

```
    ::= { pktcSigDevObjects 2 }
```

```
pktcSigDevSilenceSuppression  OBJECT-TYPE
```

SYNTAX

TruthValue

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```
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    " This object specifies if the device is capable of
      silence suppression (as a result of Voice Activity
      Detection). The MTA MUST set this MIB Object to a
      value of true(1) if it is capable of silence
      suppression; and a value of false(2) if not."
 ::= { pktcSigDevObjects 3 }

pktcSigDevCidSigProtocol OBJECT-TYPE
    SYNTAX      PktcSubscriberSideSigProtocol
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "This object is used to configure the subscriber line
          protocol used for signaling on-hook caller id information.
          Different countries define different caller id signaling
          protocols to support caller identification.

          Setting this object at a value fsk(1) sets the subscriber
          line protocol to be Frequency Shift Keying (FSK).

          Setting this object at a value dtmf(2) sets the subscriber
          line protocol to be Dual tone multi-frequency (DTMF).

          The value of this MIB Object MUST NOT persist across MTA
          reboots."
    REFERENCE
        "ETSI-EN-300-659-1 Specification"
    DEFVAL { fsk }
 ::= { pktcSigDevObjects 4 }

pktcSigDevR0Cadence OBJECT-TYPE
    SYNTAX      PktcRingCadence
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        " This object specifies ring cadence 0 (a user defined
          field).

          The value of this MIB Object MUST NOT persist across MTA
          reboots."
 ::= { pktcSigDevObjects 5 }

pktcSigDevR1Cadence OBJECT-TYPE
    SYNTAX      PktcRingCadence
    MAX-ACCESS  read-write
```

STATUS current

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DESCRIPTION

" This object specifies ring cadence 1 (a user defined field).

The value of this MIB Object MUST NOT persist across MTA reboots."

::= { pktcSigDevObjects 6 }

pktcSigDevR2Cadence OBJECT-TYPE

SYNTAX PktcRingCadence

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies ring cadence 2 (a user defined field).

The value of this MIB Object MUST NOT persist across MTA reboots."

::= { pktcSigDevObjects 7 }

pktcSigDevR3Cadence OBJECT-TYPE

SYNTAX PktcRingCadence

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies ring cadence 3 (a user defined field).

The value of this MIB Object MUST NOT persist across MTA reboots."

::= { pktcSigDevObjects 8 }

pktcSigDevR4Cadence OBJECT-TYPE

SYNTAX PktcRingCadence

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies ring cadence 4 (a user defined field).

The value of this MIB Object MUST NOT persist across MTA reboots."

::= { pktcSigDevObjects 9 }

pktcSigDevR5Cadence OBJECT-TYPE

SYNTAX PktcRingCadence

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies ring cadence 5 (a user defined field).

The value of this MIB Object MUST NOT persist across MTA reboots."

::= { pktcSigDevObjects 10 }

pktcSigDevR6Cadence OBJECT-TYPE

SYNTAX PktcRingCadence

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies ring cadence 6 (a user defined field).

The value of this MIB Object MUST NOT persist across MTA reboots."

::= { pktcSigDevObjects 11 }

pktcSigDevR7Cadence OBJECT-TYPE

SYNTAX PktcRingCadence

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies ring cadence 7 (a user defined field).

The value of this MIB Object MUST NOT persist across MTA reboots."

::= { pktcSigDevObjects 12 }

pktcSigDevRgCadence OBJECT-TYPE

SYNTAX PktcRingCadence

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies ring cadence rg (a user defined field).

The value of this MIB Object MUST NOT persist across MTA reboots."

::= { pktcSigDevObjects 13 }

pktcSigDevRsCadence OBJECT-TYPE

SYNTAX PktcRingCadence

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies ring cadence rs (a user defined

field) The MTA MUST reject any attempt to make this object repeatable.

The value of this MIB Object MUST NOT persist across MTA reboots."

::= { pktcSigDevObjects 14 }

pktcSigDefCallSigDscp OBJECT-TYPE

SYNTAX Dscp -- [RFC 3289](#): DIFFSERV-DSCP-TC

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" The default value used in the IP header for setting the Differentiated Services Code Point (DSCP) value for call signaling.

The value of this MIB Object MUST NOT persist across MTA reboots."

DEFVAL { 0 }

::= { pktcSigDevObjects 15 }

pktcSigDefMediaStreamDscp OBJECT-TYPE

SYNTAX Dscp -- [RFC 3289](#): DIFFSERV-DSCP-TC

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object contains the default value used in the IP header for setting the Differentiated Services Code Point (DSCP) value for media stream packets. The MTA MUST NOT update this object with the value supplied by the CMS in the NCS messages (if present). Any currently active connections are not affected by updates to this object. When the value of this object is updated by SNMP, the MTA MUST use the new value as a default starting only from new connections.

The value of this MIB Object MUST NOT persist across MTA reboots."

DEFVAL { 0 }

::= { pktcSigDevObjects 16 }

--

-- pktcSigCapabilityTable - This table defines the valid signaling
-- types supported by this MTA.

--

pktcSigCapabilityTable OBJECT-TYPE

SYNTAX SEQUENCE OF PktcSigCapabilityEntry

MAX-ACCESS not-accessible

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```

STATUS          current
DESCRIPTION
    " This table describes the signaling types supported by this
      MTA."
 ::= { pktcSigDevObjects 17 }

```

```

pktcSigCapabilityEntry    OBJECT-TYPE
    SYNTAX                PktcSigCapabilityEntry
    MAX-ACCESS             not-accessible
    STATUS                 current
    DESCRIPTION
        " Entries in pktcMtaDevSigCapabilityTable - List of
          supported signaling types, versions and vendor extensions
          for this MTA. Each entry in the list provides for one
          signaling type and version combination. If the device
          supports multiple versions of the same signaling type it
          will require multiple entries."
    INDEX { pktcSigCapabilityIndex }
    ::= { pktcSigCapabilityTable 1 }

```

```

PktcSigCapabilityEntry ::= SEQUENCE {
    pktcSigCapabilityIndex      Unsigned32,
    pktcSigCapabilityType       PktcSigType,
    pktcSigCapabilityVersion     SnmpAdminString,
    pktcSigCapabilityVendorExt  SnmpAdminString
}

```

```

pktcSigCapabilityIndex    OBJECT-TYPE
    SYNTAX                Unsigned32 (1..255)
    MAX-ACCESS             not-accessible
    STATUS                 current
    DESCRIPTION
        " The index value which uniquely identifies an entry in the
          pktcSigCapabilityTable."
    ::= { pktcSigCapabilityEntry 1 }

```

```

pktcSigCapabilityType     OBJECT-TYPE
    SYNTAX                PktcSigType
    MAX-ACCESS             read-only
    STATUS                 current
    DESCRIPTION
        " This object identifies the type of signaling used. This
          value has to be associated with a single signaling
          version."
    ::= { pktcSigCapabilityEntry 2 }

```

```

pktcSigCapabilityVersion  OBJECT-TYPE
    SYNTAX                SnmpAdminString

```

MAX-ACCESS read-only

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STATUS current

DESCRIPTION

" Provides the version of the signaling type - reference
pktcSigCapabilityType. Examples would be 1.0 or 2.33 etc."
::= { pktcSigCapabilityEntry 3 }

pktcSigCapabilityVendorExt OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The vendor extension allows vendors to provide a list of
additional capabilities.

The syntax for this MIB Object in ABNF ([RFC4234](#)) is
specified to be zero or more occurrences of vendor
extensions, as follows:

```
pktcSigCapabilityVendorExt = *(vendor-extension)
vendor-extension = (ext symbol alphanum) DQUOTE ; DQUOTE
ext = DQUOTE %x58 DQUOTE
symbol = (DQUOTE %x2D DQUOTE)/(DQUOTE %x2D DQUOTE)
alphanum = 1*6(ALPHA/DIGIT)
```

"

::= { pktcSigCapabilityEntry 4 }

pktcSigDefNcsReceiveUdpPort OBJECT-TYPE

SYNTAX InetPortNumber (1025..65535)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" This object contains the MTA User Datagram Protocol (UDP)
receive port that is being used for NCS call signaling.
This object should only be changed by the configuration
file.
Unless changed via configuration this MIB Object MUST
reflect a value of '2427'."

REFERENCE

"PacketCable NCS Specification"

::= { pktcSigDevObjects 18 }

pktcSigPowerRingFrequency OBJECT-TYPE

SYNTAX INTEGER {
f20Hz(1),
f25Hz(2),
f33Point33Hz(3),
f50Hz(4),

f15Hz(5),

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```
        f16Hz(6),
        f22Hz(7),
        f23Hz(8),
        f45Hz(9)
    }
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        " This object must only be provided via the configuration
          file during the provisioning process. The power ring
          frequency is the frequency at which the sinusoidal voltage
          must travel down the twisted pair to make terminal
          equipment ring. Different countries define different
          electrical characteristics to make terminal equipment
          ring.
          The f20Hz setting corresponds to a power ring frequency
          of 20 Hertz. The f25Hz setting corresponds to a power ring
          frequency of 25 Hertz. The f33Point33Hz setting
          corresponds to a power ring frequency of 33.33 Hertz. The
          f50Hz setting corresponds to a power ring frequency of 50
          Hertz. The f15Hz setting corresponds to a power ring
          frequency of 15 Hertz. The f16Hz setting corresponds to a
          power ring frequency of 16 Hertz. The f22Hz setting
          corresponds to a power ring frequency of 22 Hertz. The
          f23Hz setting corresponds to a power ring frequency of 23
          Hertz. The f45Hz setting corresponds to a power ring
          frequency of 45 Hertz."
```

REFERENCE

"ETSI-EN-300-001 contains a list of frequency ranges
that are defined for each country."

::= { pktcSigDevObjects 19 }

pktcSigPulseSignalTable OBJECT-TYPE

SYNTAX SEQUENCE OF PktcSigPulseSignalEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" The Pulse signal table defines the pulse signal operation.
There are nine types of international pulse signals,
with each signal having a set of provisionable parameters.
The values of the MIB objects in this table take effect
only if these parameters are not defined via signaling, in
which case the latter determines the values of the
parameters. The MIB Objects in this table do not persist
across MTA reboots."

REFERENCE

"ETSI-TS-101-909-4 Specification"

::= { pktcSigDevObjects 20 }


```

pktcSigPulseSignalEntry    OBJECT-TYPE
    SYNTAX      PktcSigPulseSignalEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        " This object defines the set of parameters associated with
          each particular value of pktcSigPulseSignalType. Each
          entry in the pktcSigPulseSignalTable is indexed by the
          pktcSigPulseSignalType object.
          The conceptual rows MUST NOT persist across MTA reboots."
    INDEX { pktcSigPulseSignalType }
    ::= { pktcSigPulseSignalTable 1 }

```

```

PktcSigPulseSignalEntry ::= SEQUENCE {
    pktcSigPulseSignalType          INTEGER,
    pktcSigPulseSignalFrequency     INTEGER,
    pktcSigPulseSignalDbLevel       TenthdBm,
    pktcSigPulseSignalDuration      Unsigned32,
    pktcSigPulseSignalPulseInterval Unsigned32,
    pktcSigPulseSignalRepeatCount   Unsigned32
}

```

```

pktcSigPulseSignalType    OBJECT-TYPE
    SYNTAX      INTEGER
                {
                    initialRing(1),
                    pulseLoopClose(2),
                    pulseLoopOpen(3),
                    enableMeterPulse(4),
                    meterPulseBurst(5),
                    pulseNoBattery(6),
                    pulseNormalPolarity(7),
                    pulseReducedBattery(8),
                    pulseReversePolarity(9)
                }
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "There are nine types of international pulse signals. These
          signals are defined as follows:
          initial ring
          pulse loop close
          pulse loop open
          enable meter pulse
          meter pulse burst
          pulse no battery
          pulse normal polarity
          pulse reduced battery

```

pulse reverse polarity"

REFERENCE

"ETSI-EN-300-324-1 Specification"

::= { pktcSigPulseSignalEntry 1 }

pktcSigPulseSignalFrequency OBJECT-TYPE

SYNTAX INTEGER {
 twentyfive (1),
 twelvethousand(2),
 sixteenthousand(3)
 }

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object is only applicable to the initialRing, enableMeterPulse, and meterPulseBurst signal type. This object identifies the frequency of the generated signal. The following table defines the default values for this object depending on signal type:

pktcSigPulseSignalType	Default
initialRing	25
enableMeterPulse	16000
meterPulseBurst	16000

The value of twentyfive MUST only be used for the initialRing signal type. The values of twelvethousand and sixteenthousand MUST only be used for enableMeterPulse and meterPulseBurst signal types. An attempt to set this object while the value of pktcSigPulseSignalType is not initialRing, enableMeterPulse, or meterPulseBurst will result in an 'inconsistentValue' error."

REFERENCE

"ETSI-EN-300-001 Specification"

::= { pktcSigPulseSignalEntry 2 }

pktcSigPulseSignalDbLevel OBJECT-TYPE

SYNTAX TenthdBm (-350..0)

UNITS "1/10 of a dBm"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object is only applicable to the enableMeterPulse and meterPulseBurst signal types. This is the decibel level for each frequency at which tones could be generated at the a and b terminals (TE connection point). An attempt to set this object while the value of pktcSigPulseSignalType is not enableMeterPulse, or meterPulseBurst will result in an 'inconsistentValue' error."

REFERENCE

"ETSI-EN-300-001 Specification"

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```
DEFVAL { -135 }
::={pktcSigPulseSignalEntry 3 }
```

pktcSigPulseSignalDuration OBJECT-TYPE

```
SYNTAX      Unsigned32 (0..5000)
UNITS       "Milliseconds"
MAX-ACCESS  read-write
STATUS      current
```

DESCRIPTION

" This object specifies the pulse duration for each signal type. In addition, the MTA must accept the values in the incremental steps specific for each signal type. The following table defines the default values and the incremental steps for this object depending on the signal type.

pktcSigPulseSignaltype	Default (ms)	Increment (ms)
initialRing	200	50
pulseLoopClose	200	10
pulseLoopOpen	200	10
enableMeterPulse	150	10
meterPulseBurst	150	10
pulseNoBattery	200	10
pulseNormalPolarity	200	10
pulseReducedBattery	200	10
pulseReversePolarity	200	10

An attempt to set this object to a value that does not fall on one of the increment boundaries, or on the wrong increment boundary for the specific signal type will result in an 'inconsistentValue' error."

REFERENCE

```
"ETSI-EN-300-324-1 Specification"
::= {pktcSigPulseSignalEntry 4 }
```

pktcSigPulseSignalPulseInterval OBJECT-TYPE

```
SYNTAX      Unsigned32 (0..5000)
UNITS       "Milliseconds"
MAX-ACCESS  read-write
STATUS      current
```

DESCRIPTION

" This object specifies the repeat interval, or the period for each signal type. In addition, the MTA must accept the values in the incremental steps specific for each signal type. The following table defines the default values and the incremental steps for this object depending on the signal type.

pktcSigPulseSignaltype	Default (ms)	Increment (ms)
initialRing	200	50
pulseLoopClose	1000	10

pulseLoopOpen

1000

10

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enableMeterPulse	1000	10
meterPulseBurst	1000	10
pulseNoBattery	1000	10
pulseNormalPolarity	1000	10
pulseReducedBattery	1000	10
pulseReversePolarity	1000	10

An attempt to set this object to a value that does not fall on one of the increment boundaries, or on the wrong increment boundary for the specific signal type will result in an 'inconsistentValue' error."

REFERENCE

"ETSI-EN-300-324-1 Specification"

::= { pktcSigPulseSignalEntry 5}

pktcSigPulseSignalRepeatCount OBJECT-TYPE

SYNTAX Unsigned32 (1..50)

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies how many times to repeat a pulse. This object is not used by the enableMeterPulse signal type and in that case the value is irrelevant. The following table defines the default values and the valid ranges for this object depending on the signal type.

pktcSigPulseSignaltype	Default	Range
initialRing	1	1-5
pulseLoopClose	1	1-50
pulseLoopOpen	1	1-50
enableMeterPulse	(any value)(but not used)	
meterPulseBurst	1	1-50
pulseNoBattery	1	1-50
pulseNormalPolarity	1	1-50
pulseReducedBattery	1	1-50
pulseReversePolarity	1	1-50

An attempt to set this object to a value that does not fall within the range for the specific signal type will result in an 'inconsistentValue' error."

::={ pktcSigPulseSignalEntry 6 }

pktcSigDevCidMode OBJECT-TYPE

SYNTAX INTEGER {
 duringRingingETS(1),
 dtAsETS(2),
 rpAsETS(3),
 lrAsETS(4),

1rETS(5)

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```

    }
MAX-ACCESS read-write
STATUS current
DESCRIPTION

```

" For on-hook Caller ID, pktcSigDevCidMode selects the method for representing and signaling Caller Identification. For the duringRingingETS method, the Frequency Shift Keying (FSK) or the Dual Tone Multi Frequency (DTMF) containing the Caller Identification information is sent between the first and second ring pattern.

For the dtAsETS, rpAsETS, lrAsETS and lrETS methods, the FSK or DTMF containing the Caller ID information is sent before the first ring pattern.

For the dtAsETS method, the FSK or DTMF is sent after the Dual Tone Alert Signal. For the rpAsETS method, the FSK or DTMF is sent after a Ring Pulse.

For the lrAsETS method, the Line Reversal occurs first, then the Dual Tone Alert Signal, and finally the FSK or DTMF is sent.

For the lrETS method, the Line Reversal occurs first then the FSK or DTMF is sent.

The value of this MIB Object MUST NOT persist across MTA reboots."

```

DEFVAL { rpAsETS}
::= {pktcSigDevObjects 21 }

```

```

pktcSigDevCidAfterRing      OBJECT-TYPE
SYNTAX      Unsigned32 (0|50..2000)
UNITS       "Milliseconds"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION

```

" This object specifies the delay between the end of first ringing pattern and the start of the transmission of the FSK or DTMF containing the Caller ID information. It is only used when pktcSigDevCidMode is set to a value of 'duringRingingETS'.

The following table defines the default values for this MIB Object, depending on the signal type (pktcSigDevCidMode) and MUST be followed:

Value of pktcSigDevCidMode	Default value
duringringingETS	550 ms
dtAsETS	any value (not used)
rpAsETS	any value (not used)
lrAsETS	any value (not used)
lrETS	any value (not used)

An attempt to set this object while the value of pktcSigDevCidMode is not duringringingETS will result in an 'inconsistentValue' error.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 Specification"

DEFVAL { 550 }

::= {pktcSigDevObjects 22 }

pktcSigDevCidAfterDTAS OBJECT-TYPE

SYNTAX Unsigned32 (0|45..500)

UNITS "Milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies the delay between the end of the Dual Tone Alert Signal (DT-AS) and the start of the transmission of the FSK or DTMF containing the Caller ID information. This object is only used when pktcSigDevCidMode is set to a value of 'dtAsETS' or 'lrAsETS'.

The following table defines the default values for this MIB Object, depending on the signal type (pktcSigDevCidMode) and MUST be followed:

Value of pktcSigDevCidMode	Default value
duringringingETS	any value (not used)
dtAsETS	50 ms
rpAsETS	any value (not used)
lrAsETS	50 ms
lrETS	any value (not used)

An attempt to set this object while the value of pktcSigDevCidMode is not 'dtAsETS' or 'lrAsETS' will result in an 'inconsistentValue' error.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 Specification"

DEFVAL { 50 }

::= {pktcSigDevObjects 23 }

pktcSigDevCidAfterRPAS OBJECT-TYPE

SYNTAX Unsigned32 (0|500..800)

UNITS "Milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies the delay between the end of the Ring Pulse Alert Signal (RP-AS) and the start of the transmission of the FSK or DTMF containing the Caller ID information. This MIB object is only used when pktcSigDevCidMode is set to a value of 'rpAsETS'. The following table defines the default values for this MIB Object, depending on the signal type (pktcSigDevCidMode) and MUST be followed:

Value of pktcSigDevCidMode	Default value
duringringingETS	any value (not used)
dtAsETS	any value (not used)
rpAsETS	650 ms
lrAsETS	any value (not used)
lrETS	any value (not used)

An attempt to set this object while the value of pktcSigDevCidMode is not 'rpAsETS' will result in an 'inconsistentValue' error.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 Specification"

DEFVAL { 650 }

::= {pktcSigDevObjects 24 }

pktcSigDevRingAfterCID OBJECT-TYPE

SYNTAX Unsigned32 (0|50..500)

UNITS "Milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies the delay between the end of the

complete transmission of the FSK or DTMF containing the Caller ID information and the start of the first ring pattern. It is only used when pktcSigDevCidMode is set to a value of 'dtAsETS', 'rpAsETS', 'lrAsETS' or 'lrETS'.

The following table defines the default values for this MIB Object, depending on the signal type (pktcSigDevCidMode) and MUST be followed:

Value of pktcSigDevCidMode	Default value
duringringingETS	any value (not used)
dtAsETS	250 ms
rpAsETS	250 ms
lrAsETS	250 ms
lrETS	250 ms

An attempt to set this object while the value of pktcSigDevCidMode is not 'dtAsETS', 'rpAsETS', 'lrAsETS' or 'lrETS' will result in an 'inconsistent value' error.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 Specification"

DEFVAL { 250 }

::= {pktcSigDevObjects 25 }

pktcSigDevCidDTASAfterLR OBJECT-TYPE

SYNTAX Unsigned32 (50..655)

UNITS "Milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies the delay between the end of the Line Reversal and the start of the Dual Tone Alert Signal (DT-AS). This object is only used when pktcSigDevCidMode is set to a value of 'lrAsETS'.

The following table defines the default values for this MIB Object, depending on the signal type (pktcSigDevCidMode) and MUST be followed:

Value of pktcSigDevCidMode	Default value
duringringingETS	any value (not used)
dtAsETS	any value (not used)
rpAsETS	any value (not used)

lrAsETS	250 ms
lrETS	any value (not used)

An attempt to set this object while the value of pktcSigDevCidMode is not lrAsETS will result in an 'inconsistentValue' error.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 Specification"

DEFVAL { 250 }

::= {pktcSigDevObjects 26 }

pktcSigDevVmwMode OBJECT-TYPE

SYNTAX INTEGER {
 dtAsETS(1),
 rpAsETS(2),
 lrAsETS(3),
 osi(4),
 lrETS(5)
 }

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" For visual message waiting indicator (VMWI), pktcSigDevVmwMode selects the alerting signal method. For the dtAsETS, rpAsETS, lrAsETS, osi and lrETS methods, the FSK containing the VMWI information is sent after an alerting signal.

For the dtAsETS method, the FSK or DTMF is sent after the Dual Tone Alert Signal. For the rpAsETS method, the FSK or DTMF is sent after a Ring Pulse.

For the lrAsETS method, the Line Reversal occurs first, then the Dual Tone Alert Signal, and finally the FSK or DTMF is sent.

For the OSI method, the FSK or DTMF is sent after the Open Switching Interval.

For the lrETS method, the Line Reversal occurs first then the FSK or DTMF is sent.

The value of this MIB Object MUST NOT persist across MTA reboots."


```

DEFVAL { rpAsETS }
::= {pktcSigDevObjects 27 }

```

```

pktcSigDevVmwiAfterDTAS      OBJECT-TYPE
    SYNTAX      Unsigned32 (0|45..500)
    UNITS       "Milliseconds"
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION

```

" This object specifies the delay between the end of the Dual Tone Alert Signal (DT-AS) and the start of the transmission of the FSK or DTMF containing the VMWI information.

This object is only used when pktcSigDevVmwiMode is set to a value of 'dtAsETS' or 'lrAsETS'.

The following table defines the default values for this MIB Object, depending on the signal type (pktcSigDevVmwiMode) and MUST be followed:

Value of pktcSigDevVmwiMode	Default value
dtAsETS	50 ms
rpAsETS	any value (not used)
lrAsETS	50 ms
lrETS	any value (not used)

An attempt to set this object while the value of pktcSigDevVmwiMode is not 'dtAsETS' or 'lrAsETS' will result in an 'inconsistentValue' error.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 Specification"

```

DEFVAL { 50 }
::= {pktcSigDevObjects 28 }

```

```

pktcSigDevVmwiAfterRPAS      OBJECT-TYPE
    SYNTAX      Unsigned32 (0|500..800)
    UNITS       "Milliseconds"
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION

```

" This object specifies the delay between the end of the Ring Pulse Alert Signal (RP-AS) and the start of the transmission of the FSK or DTMF containing the VMWI

information.

This object is only used when pktcSigDevVmwiMode is set to a value of 'rpAsETS'.

The following table defines the default values for this MIB Object, depending on the signal type (pktcSigDevVmwiMode) and MUST be followed:

Value of pktcSigDevVmwiMode	Default value
dtAsETS	any value (not used)
rpAsETS	650 ms
lrAsETS	any value (not used)
lrETS	any value (not used)

An attempt to set this object while the value of pktcSigDevVmwiMode is not 'rpAsETS' will result in an 'inconsistentValue' error.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 Specification"

DEFVAL { 650 }

::= {pktcSigDevObjects 29 }

pktcSigDevVmwiDTASAfterLR OBJECT-TYPE

SYNTAX Unsigned32 (0|50..655)

UNITS "Milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies the delay between the end of the Line Reversal and the start of the Dual Tone Alert Signal (DT-AS) for VMWI information. This object is only used when pktcSigDevVmwiMode is set to a value of 'lrAsETS'.

The following table defines the default values for this MIB Object, depending on the signal type (pktcSigDevVmwiMode) and MUST be followed:

Value of pktcSigDevVmwiMode	Default value
dtAsETS	any value (not used)
rpAsETS	any value (not used)
lrAsETS	250 ms
lrETS	any value (not used)

An attempt to set this object while the value of

pktcSigDevVmwiMode is not 'lrAsETS' will result in an 'inconsistentValue' error.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 Specification"

DEFVAL { 250 }

::= {pktcSigDevObjects 30 }

pktcSigDevRingCadenceTable OBJECT-TYPE

SYNTAX SEQUENCE OF PktcSigDevRingCadenceEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Cadence rings are defined by the telco governing body for each country. The MTA must be able to support various ranges of cadence patterns and cadence periods. The MTA will be able to support country specific provisioning of the cadence and idle period. Each cadence pattern will be assigned a unique value ranging from 0-127 (inclusive) corresponding to the value of x, where x is the value sent in the cadence ringing (cr) signal cr(x), requested per the appropriate NCS message, and defined in the E package. The MTA will derive the cadence periods from the ring cadence table entry as provisioned by the customer. The MTA is allowed to provide appropriate default values for each of the ring cadences. This table only needs to be supported when the MTA implements the E package."

REFERENCE

"ETSI-TS-101-909-4 Specification"

::= { pktcSigDevObjects 31 }

pktcSigDevRingCadenceEntry OBJECT-TYPE

SYNTAX PktcSigDevRingCadenceEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" Each entry in this row corresponds to a ring cadence that is being supported by the device. The conceptual rows MUST NOT persist across MTA reboots."

INDEX { pktcSigDevRingCadenceIndex }

::= { pktcSigDevRingCadenceTable 1 }

PktcSigDevRingCadenceEntry ::= SEQUENCE {
 pktcSigDevRingCadenceIndex Unsigned32,

pktcSigDevRingCadence

PktcRingCadence

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}

pktcSigDevRingCadenceIndex OBJECT-TYPE

SYNTAX Unsigned32 (0..127)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" Unique value ranging from 0 to 127 that corresponds to the value sent by the LE based on country specific cadences, one row per cadence cycle. In any given system implementation for a particular country, it is anticipated that a small number of ring cadences will be in use. Thus, this table most likely will not be populated to its full size."

::= { pktcSigDevRingCadenceEntry 1 }

pktcSigDevRingCadence OBJECT-TYPE

SYNTAX PktcRingCadence

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This is the Ring Cadence."

::= { pktcSigDevRingCadenceEntry 2 }

pktcSigDevToneTable OBJECT-TYPE

SYNTAX SEQUENCE OF PktcSigDevToneEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" The Tone Table defines the composition of tones and various tone operations.

The definition of the tones callWaiting1 through callWaiting4 in this table MUST only contain the audible tone itself; the delay between tones or the value of the tone repeat count are not applicable for the call waiting tones.

The delay between tones or the repeat count is controlled by the objects pktcSigEndPntConfigCallWaitingDelay, and pktcSigEndPntConfigCallWaitingMaxRep. If the pktcSigDevToneType is set to either of the values callWaiting1, callWaiting2, callWaiting3 or callWaiting4, then the value of the pktcSigDevToneWholeToneRepeatCount object indicates that the particular frequency group is applicable, as a repeatable part of the tone, based on the value of the MIB Object

pktcSigDevToneWholeToneRepeatCount.

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The MTA MUST make sure that, after the provisioning cycle, the table is fully populated (i.e., for each possible index, an entry MUST be defined) using reasonable defaults for each row that was not defined by the provisioning information delivered via MTA Configuration.

The frequency composition of each tone is defined by the pktcSigDevMultiFreqToneTable. For each ToneType defined in pktcSigDevToneTable, the MTA MUST populate at least one entry in the pktcSigDevMultiFreqToneTable.

For each particular value of pktcSigDevToneType, the pktcSigDevToneTable table can define non-repeating and repeating groups of the frequencies defined by the pktcSigDevMultiFreqToneTable, such that each group is represented by the set of the consecutive rows (frequency group) in the pktcSigDevMultiFreqToneTable.

Objects in this table do not persist across MTA reboots. For tones with multiple frequencies refer to the MIB table pktcSigDevMultiFreqToneTable."

REFERENCE

"PacketCable NCS Specification, ETSI-TS-101-909-4 Specification."

::= { pktcSigDevObjects 32 }

pktcSigDevToneEntry OBJECT-TYPE

SYNTAX PktcSigDevToneEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" The different tone types that can be provisioned based on country specific needs.

Each entry contains the tone generation parameters for a specific frequency group of the specific Tone Type.

The different parameters can be provisioned via MTA configuration based on country specific needs.

An MTA MUST populate all entries of this table for each tone type."

INDEX { pktcSigDevToneType, pktcSigDevToneFreqGroup }

::= { pktcSigDevToneTable 1 }

PktcSigDevToneEntry ::= SEQUENCE {

pktcSigDevToneType	INTEGER,
pktcSigDevToneFreqGroup	Unsigned32,
pktcSigDevToneFreqCounter	Unsigned32,

pktcSigDevToneWholeToneRepeatCount Unsigned32,

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```

pktcSigDevToneSteady          TruthValue
}

```

```

pktcSigDevToneType          OBJECT-TYPE

```

```

SYNTAX          INTEGER {
                busy(1),
                confirmation(2),
                dial(3),
                messageWaiting(4),
                offHookWarning(5),
                ringBack(6),
                reOrder(7),
                stutterdial(8),
                callWaiting1(9),
                callWaiting2(10),
                callWaiting3(11),
                callWaiting4(12),
                alertingSignal(13),
                specialDial(14),
                specialInfo(15),
                release(16),
                congestion(17),
                userDefined1(18),
                userDefined2(19),
                userDefined3(20),
                userDefined4(21)
                }

```

```

MAX-ACCESS      not-accessible

```

```

STATUS          current

```

```

DESCRIPTION

```

```

    "Unique value that will correspond to the different
    tone types. These tones can be provisioned based on
    country specific needs. This object defines the type
    of tone being accessed.

```

```

    The alertingSignal, specialDial, specialInfo, release,
    congestion, userDefined1, userDefined2, userDefined3
    and userDefined4 tone types are used in
    the E line package."

```

```

 ::= { pktcSigDevToneEntry 1 }

```

```

pktcSigDevToneFreqGroup     OBJECT-TYPE

```

```

SYNTAX          Unsigned32(1..4)

```

```

MAX-ACCESS      not-accessible

```

```

STATUS          current

```

```

DESCRIPTION

```

```

    "This MIB Object represents the Tone Sequence reference
    of a multi-sequence tone."

```

::={ pktcSigDevToneEntry 2}

pktcSigDevToneFreqCounter OBJECT-TYPE

SYNTAX Unsigned32(1..8)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This MIB Object represents the number of consecutive multi-frequency tones for the particular tone type in the multi-frequency table (pktcSigDevMultiFreqToneTable).

Such a sequence of the consecutive multi-frequency tones forms the tone group for the particular tone type in the pktcSigDevToneTable."

::={ pktcSigDevToneEntry 3}

pktcSigDevToneWholeToneRepeatCount OBJECT-TYPE

SYNTAX Unsigned32 (0..5000)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is the repeat count, which signifies how many times to repeat the entire on-off cadence sequence. Setting this object may result in a cadence duration longer or shorter than the overall signal duration specified by the time out (T0) object for a particular signal. If the repeat count results in a longer tone duration than the signal duration specified by the T0, the tone duration defined by the T0 object for a particular signal always represents the overall signal duration for a tone. In this case, the tone duration repeat count will not be fully exercised and the desired tone duration will be truncated per the T0 setting. If the repeat count results in a shorter tone duration than the signal duration specified by the T0, the tone duration defined by the repeat count takes precedence over the T0 and will end the signal event. In this case, the T0 represents a time not to be exceeded for the signal. It is recommended to ensure proper telephony signaling that The T0 duration setting should always be longer than the desired repeat count time duration."

::={ pktcSigDevToneEntry 4 }

pktcSigDevToneSteady OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This MIB Object represents the steady tone status. A value

of 'true(1)' indicates that the steady tone is applied; and

a value of 'false(2)' indicates otherwise.
Devices must play out the on-off cadence sequence for the number of times indicated by the MIB Object 'pktcSigDevToneWholeToneRepeatCount' prior to applying the last tone steadily, indefinitely. If the MIB table 'pktcSigDevToneTable' contains multiple rows with this Object set to a value of 'true(1)', the steady tone is applied to the last repeating frequency group of the tone.

Setting this MIB Object may result in a tone duration longer or shorter than the overall signal duration specified by the time out (TO) MIB Object for a particular signal. If the repeat count results in a longer tone duration than the signal duration specified by the TO, the tone duration defined by the TO object for a particular signal always represents the overall signal duration for a tone. In this case, the tone duration repeat count will not be fully exercised and the desired tone duration will be truncated per the TO setting. If the repeat count results in a shorter tone duration than the signal duration specified by the TO, the tone duration defined by the repeat count takes precedence over the TO and will end the signal event. In this case, the TO represents a time not to be exceeded for the signal.

It is recommended to ensure proper telephony signaling that The TO duration setting should always be longer than the desired repeat count time duration plus the desired maximum steady tone period."

::={ pktcSigDevToneEntry 5 }

pktcSigDevMultiFreqToneTable	OBJECT-TYPE
SYNTAX	SEQUENCE OF PktcSigDevMultiFreqToneEntry
MAX-ACCESS	not-accessible
STATUS	current

DESCRIPTION

" This MIB table defines the characteristics of tones with multiple frequencies. The constraints imposed on the tones by the MIB table pktcSigDevToneTable need to be considered for MIB objects in this table as well.

The MTA MUST populate the corresponding row(s) of the pktcSigDevMultiFreqToneTable for each tone defined in the pktcSigDevToneTable.

The contents of the table may be provisioned via MTA configuration."

REFERENCE

Specification."
 ::= { pktcSigDevObjects 33 }

pktcSigDevMultiFreqToneEntry OBJECT-TYPE
 SYNTAX PktcSigDevMultiFreqToneEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 " The different tone types with multiple frequencies
 that can be provisioned based on country specific
 needs."
 INDEX {pktcSigDevToneType, pktcSigDevToneNumber}
 ::= { pktcSigDevMultiFreqToneTable 1 }

PktcSigDevMultiFreqToneEntry ::= SEQUENCE {
 pktcSigDevToneNumber Unsigned32,
 pktcSigDevToneFirstFreqValue Unsigned32,
 pktcSigDevToneSecondFreqValue Unsigned32,
 pktcSigDevToneThirdFreqValue Unsigned32,
 pktcSigDevToneFourthFreqValue Unsigned32,
 pktcSigDevToneFreqMode INTEGER,
 pktcSigDevToneFreqAmpModePrtg Unsigned32,
 pktcSigDevToneDbLevel TenthdBm,
 pktcSigDevToneFreqOnDuration Unsigned32,
 pktcSigDevToneFreqOffDuration Unsigned32,
 pktcSigDevToneFreqRepeatCount Unsigned32
 }

pktcSigDevToneNumber OBJECT-TYPE
 SYNTAX Unsigned32(1..8)
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "This MIB Object represents the frequency reference
 of a multi-frequency tone."
 ::= { pktcSigDevMultiFreqToneEntry 1}

pktcSigDevToneFirstFreqValue OBJECT-TYPE
 SYNTAX Unsigned32(0..4000)
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This MIB Object represents the value of the first
 frequency of a tone type. A value of Zero implies
 absence of the referenced frequency."
 ::= { pktcSigDevMultiFreqToneEntry 2}

pktcSigDevToneSecondFreqValue OBJECT-TYPE

SYNTAX

Unsigned32(0..4000)

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MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This MIB Object represents the value of the second
frequency of a tone type. A value of Zero implies
absence of the referenced frequency."
::={ pktcSigDevMultiFreqToneEntry 3}

pktcSigDevToneThirdFreqValue OBJECT-TYPE
SYNTAX Unsigned32(0..4000)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This MIB Object represents the value of the third
frequency of a tone type. A value of Zero implies
absence of the referenced frequency."
::={ pktcSigDevMultiFreqToneEntry 4}

pktcSigDevToneFourthFreqValue OBJECT-TYPE
SYNTAX Unsigned32(0..4000)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This MIB Object represents the value of the fourth
frequency of a tone type. A value of Zero implies
absence of the referenced frequency."
::={ pktcSigDevMultiFreqToneEntry 5}

pktcSigDevToneFreqMode OBJECT-TYPE
SYNTAX INTEGER {
firstModulatedBySecond(1),
summation(2)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This MIB Object provides directive on the
modulation or summation of the frequencies
involved in the tone.

It is to be noted that while summation can
be done without any constraint on the number
of frequencies, the modulation (amplitude)
holds good only when there are two frequencies
(first and second).

Thus:

- If the mode is set to a value of

'firstModulatedBySecond(1)', the first frequency

MUST be modulated by the second and the remaining frequencies (third and fourth) ignored. The percentage of amplitude modulation to be applied is defined by the MIB Object pktcSigDevToneFreqAmpModePrtg.

- If the mode is set to a value of 'summation(2)', all the frequencies MUST be summed, without any modulation

"

::={ pktcSigDevMultiFreqToneEntry 6}

pktcSigDevToneFreqAmpModePrtg OBJECT-TYPE

SYNTAX Unsigned32(0..100)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This MIB Object represents the percentage of amplitude modulation applied to the second frequency when the MIB Object pktcSigDevToneFreqMode is set to a value of 'firstModulatedBySecond (1)'.

If the MIB Object pktcSigDevToneFreqMode is set to value of 'summation (2)' then this MIB Object MUST be ignored."

::={ pktcSigDevMultiFreqToneEntry 7}

pktcSigDevToneDbLevel OBJECT-TYPE

SYNTAX TenthdBm (-250..-110)

UNITS "1/10 of a dBm"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This MIB Object contains the decibel level for each analog signal (tone) that is locally generated (versus in band supervisory tones) and sourced to the a-b terminals (TE connection point). Each tone in itself may consist of multiple frequencies as defined by the MIB table pktcSigDevMultiFreqToneTable.

This MIB Object reflects the desired level at the Telco (POTS) a-b (T/R) terminals including the affect of any MTA receiver gain (loss). This is required so that locally generated tones are consistent with remotely generated in band tones at the a-b terminals, consistent with user expectations.

This MIB Object must be set for each tone.

When tones are formed by combining multi-frequencies,

the level of each frequency shall be set so as to result in the tone level specified in this object at the a-b (T/R) terminals.

The wide range of levels for this Object is required to provide signal generator levels across the wide range of gains (loss) - but does not imply the entire range is to be achievable given the range of gains (loss) in the MTA."

DEFVAL { -120 }

::={ pktcSigDevMultiFreqToneEntry 8}

pktcSigDevToneFreqOnDuration OBJECT-TYPE

SYNTAX Unsigned32(0..5000)

UNITS "milliseconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This MIB Object represents the duration for which the frequency reference corresponding to the tone type is turned on."

::={ pktcSigDevMultiFreqToneEntry 9}

pktcSigDevToneFreqOffDuration OBJECT-TYPE

SYNTAX Unsigned32(0..5000)

UNITS "milliseconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This MIB Object represents the duration for which the frequency reference corresponding to the tone type is turned off."

::={ pktcSigDevMultiFreqToneEntry 10}

pktcSigDevToneFreqRepeatCount OBJECT-TYPE

SYNTAX Unsigned32(0..5000)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This MIB Object indicates the number of times to repeat the cadence cycle represented by the on/off durations (refer to the MIB Objects pktcSigDevToneFreqOnDuration and pktcSigDevToneFreqOffDuration).

Setting this object may result in a tone duration longer or shorter than the overall signal duration specified by the time out (TO) object for the

corresponding tone type. If the value of this MIB

Object indicates a longer duration than the specified by the T0, the latter overrules the former and the desired tone duration will be truncated according to the T0.

However, if the repeat count results in a shorter tone duration than the signal duration specified by the T0, the tone duration defined by the repeat count takes precedence over the T0 and will end the signal event. In this case, the T0 represents a time not to be exceeded for the signal. It is recommended to ensure proper telephony signaling that the T0 duration setting should always be longer than the desired repeat count time duration. A value of zero means the tone sequence is to be played once but not repeated."

::={ pktcSigDevMultiFreqToneEntry 11}

pktcSigDevCidDelayAfterLR OBJECT-TYPE

SYNTAX Unsigned32 (300..800)

UNITS "Milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This object specifies the delay between the end of the Line Reversal and the start of the FSK or DTMF signal. This MIB object is used only when pktcSigDevCidMode is set to a value of 'lrETS'. This timing has a range of 300 to 800 ms.

The following table defines the default values for this MIB Object, depending on the signal type (pktcSigDevCidMode) and MUST be followed:

Value of pktcSigDevCidMode	Default value
duringringingETS	any value (not used)
dtAsETS	any value (not used)
rpAsETS	any value (not used)
lrAsETS	any value (not used)
lrETS	400

An attempt to set this object while the value of pktcSigDevCidMode is not set to a value of 'lrETS' will result in an 'inconsistentValue' error.

The value of this MIB Object MUST NOT persist across MTA reboots."

DEFVAL { 400 }

::= {pktcSigDevObjects 34 }

pktcSigDevCidDtmfStartCode OBJECT-TYPE

SYNTAX DtmfCode
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"This object identifies optional start codes used when the MIB object pktcSigDevCidSigProtocol is set to a value of 'dtmf(2)'.
Different countries define different caller id signaling codes to support caller identification. When Dual tone multi-frequency (DTMF) is used the Caller ID digits are preceded by a 'start code' digit, followed by the digit transmission sequence <S1>...<Sn> (where Sx represents the digits 0-9) and terminated by the 'end code' digit. For e.g.
 <A><S1>...<Sn> <D><S1>...<Sn> <S1>...<Sn> <C>.
The start code for calling number delivery may be DTMF 'A' or 'D'. The start code for redirecting number may be DTMF 'D'. The DTMF code 'B' may be sent by the network as start code for the transfer of information values, through which special events can be indicated to the user. In some countries the '*' or '#' may be used instead of 'A', 'B', 'C' or 'D'.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 specification"

DEFVAL {dtmfcodeA}

::= { pktcSigDevObjects 35 }

pktcSigDevCidDtmfEndCode OBJECT-TYPE

SYNTAX DtmfCode
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"This object identifies optional end codes used when the pktcSigDevCidSigProtocol is set to a value of 'dtmf(2)'.
Different countries define different caller id signaling protocols to support caller identification. When Dual tone multi-frequency (DTMF) is used the Caller ID digits are preceded by a 'start code' digit, followed by the digit transmission sequence <S1>...<Sn> (where Sx represents the digits 0-9) and terminated by the 'end

code' digit.

For e.g.

<A><S1>...<Sn> <D><S1>...<Sn> <S1>...<Sn> <C>.

The DTMF code 'C' may be sent by the network as end code for the transfer of information values, through which special events can be indicated to the user. In some countries the '*' or '#' may be used instead of 'A', 'B', 'C' or 'D'.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 specification"

DEFVAL {dtmfcodeC}

::= { pktcSigDevObjects 36 }

pktcSigDevVmwSigProtocol OBJECT-TYPE

SYNTAX PkctSubscriberSideSigProtocol

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This object identifies the subscriber line protocol used for signaling the Information on Visual Message Waiting Indicator (VMWI). Different countries define different VMWI signaling protocols to support VMWI service. Frequency shift keying (FSK) is most commonly used. Dual tone multi-frequency (DTMF) is an alternative.

The value of this MIB Object MUST NOT persist across MTA reboots."

DEFVAL { fsk }

::= { pktcSigDevObjects 37 }

pktcSigDevVmwDelayAfterLR OBJECT-TYPE

SYNTAX Unsigned32 (0|300..800)

UNITS "Milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This object specifies the delay between the end of the Line Reversal and the start of the FSK or DTMF signal. This object is only used when pktcSigDevVmwMode is set to a value of 'lrETS'. This timing has a range of 300 to 800 ms.

The following table defines the default values for this MIB Object, depending on the signal type

(pktcSigDevVmwiMode) and MUST be followed:

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Value of pktcSigDevVmwiMode	Default value
duringringingETS	any value (not used)
dtAsETS	any value (not used)
rpAsETS	any value (not used)
lrAsETS	any value (not used)
lrETS	400

An attempt to set this object while the value of pktcSigDevVmwiMode is not 'lrETS' will result in an 'inconsistentValue' error.

The value of this MIB Object MUST NOT persist across MTA reboots."

```
DEFVAL {400}
 ::= {pktcSigDevObjects 38 }
```

pktcSigDevVmwiDtmfStartCode OBJECT-TYPE

```
SYNTAX      DtmfCode
MAX-ACCESS  read-write
STATUS      current
```

DESCRIPTION

"This object identifies optional start codes used when the pktcSigDevVmwiSigProtocol is set to a value of 'dtmf(2)'. Different countries define different On Hook Data Transmission Protocol signaling codes to support VMWI.

When Dual tone multi-frequency (DTMF) is used the VMWI digits are preceded by a 'start code' digit, followed by the digit transmission sequence <S1>...<Sn> (where Sx represents the digits 0-9) and terminated by the 'end code' digit.

For e.g.

```
<A><S1>...<Sn> <D><S1>...<Sn> <B><S1>...<Sn> <C>.
```

The start code for redirecting VMWI may be DTMF 'D'
The DTMF code 'B' may be sent by the network as start code for the transfer of information values, through which special events can be indicated to the user. In some countries the '*' or '#' may be used instead of 'A', 'B', 'C' or 'D'.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 specification"

DEFVAL {dtmfcodeA}

::= { pktcSigDevObjects 39 }

pktcSigDevVmwiDtmfEndCode OBJECT-TYPE

SYNTAX DtmfCode

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This object identifies optional end code used when the pktcSigDevVmwiSigProtocol is set to a value of 'dtmf(2)'. Different countries define different On Hook Data Transmission Protocol signaling codes to support VMWI.

When Dual tone multi-frequency (DTMF) is used the VMWI digits are preceded by a 'start code' digit, followed by the digit transmission sequence <S1>...<Sn> (where Sx represents the digits 0-9) and terminated by the 'end code' digit.

For e.g.

<A><S1>...<Sn> <D><S1>...<Sn> <S1>...<Sn> <C>.

The DTMF code 'C' may be sent by the network as end code for the transfer of information values, through which special events can be indicated to the user. In some countries the '*' or '#' may be used instead of 'A', 'B', 'C' or 'D'.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 specification"

DEFVAL {dtmfcodeC}

::= { pktcSigDevObjects 40 }

pktcSigDevrpAsDtsDuration OBJECT-TYPE

SYNTAX Unsigned32 (0|200..500)

UNITS "Milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" This object specifies the duration of the rpASDTS ring pulse prior to the start of the transmission of the FSK or DTMF containing the Caller ID information. It is

only used when pktcSigDevCidMode is set to a value of 'rpAsETS'.

The following table defines the default values for this MIB Object, depending on the signal type (pktcSigDevCidMode) and MUST be followed:

Value of pktcSigDevCidMode	Default value
duringringingETS	any value (not used)
dtAsETS	any value (not used)
rpAsETS	250
lrAsETS	any value (not used)
lrETS	any value (not used)

An attempt to set this object while the value of pktcSigDevCidMode is not 'rpAsETS' will result in an 'inconsistentValue' error.

The value of this MIB Object MUST NOT persist across MTA reboots."

REFERENCE

"ETSI-EN-300-659-1 Specification and Belgacom
BGC_D_48_9811_30_09_EDOC version 3.3"

DEFVAL { 250 }

::= {pktcSigDevObjects 41 }

--

-- The Endpoint Config Table is used to define attributes that
-- are specific to connection EndPoints.

--

pktcSigEndPntConfigTable OBJECT-TYPE

SYNTAX SEQUENCE OF PktcSigEndPntConfigEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" This table describes the information pertaining to each endpoint of the MTA. All entries in this table represent the provisioned endpoints provisioned with the information required by the MTA to maintain the NCS protocol communication with the CMS. Each endpoint can be assigned to its own CMS. If the specific endpoint does not have the corresponding CMS information in this table, the endpoint is considered as not provisioned with voice services. Objects in this table do not persist across MTA reboots."

::= { pktcSigEndPntConfigObjects 1 }

pktcSigEndPntConfigEntry OBJECT-TYPE

SYNTAX PktcSigEndPntConfigEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry in the pktcSigEndPntConfigTable represents required signaling parameters for the specific endpoint provisioned with voice services. The conceptual rows MUST NOT persist across MTA reboots."

INDEX { ifIndex }

::= { pktcSigEndPntConfigTable 1 }

PktcSigEndPntConfigEntry ::= SEQUENCE {

pktcSigEndPntConfigCallAgentId	SnmpAdminString,
pktcSigEndPntConfigCallAgentUdpPort	InetPortNumber,
pktcSigEndPntConfigPartialDialTO	Unsigned32,
pktcSigEndPntConfigCriticalDialTO	Unsigned32,
pktcSigEndPntConfigBusyToneTO	Unsigned32,
pktcSigEndPntConfigDialToneTO	Unsigned32,
pktcSigEndPntConfigMessageWaitingTO	Unsigned32,
pktcSigEndPntConfigOffHookWarnToneTO	Unsigned32,
pktcSigEndPntConfigRingingTO	Unsigned32,
pktcSigEndPntConfigRingBackTO	Unsigned32,
pktcSigEndPntConfigReorderToneTO	Unsigned32,
pktcSigEndPntConfigStutterDialToneTO	Unsigned32,
pktcSigEndPntConfigTSMMax	Unsigned32,
pktcSigEndPntConfigMax1	Unsigned32,
pktcSigEndPntConfigMax2	Unsigned32,
pktcSigEndPntConfigMax1QEnable	TruthValue,
pktcSigEndPntConfigMax2QEnable	TruthValue,
pktcSigEndPntConfigMWD	Unsigned32,
pktcSigEndPntConfigTdinit	Unsigned32,
pktcSigEndPntConfigTdmin	Unsigned32,
pktcSigEndPntConfigTdmax	Unsigned32,
pktcSigEndPntConfigRtoMax	Unsigned32,
pktcSigEndPntConfigRtoInit	Unsigned32,
pktcSigEndPntConfigLongDurationKeepAlive	Unsigned32,
pktcSigEndPntConfigThist	Unsigned32,
pktcSigEndPntConfigStatus	RowStatus,
pktcSigEndPntConfigCallWaitingMaxRep	Unsigned32,
pktcSigEndPntConfigCallWaitingDelay	Unsigned32,
pktcSigEndPntStatusCallIpAddressType	InetAddressType,
pktcSigEndPntStatusCallIpAddress	InetAddress,
pktcSigEndPntStatusError	INTEGER,
pktcSigEndPntConfigMinHookFlash	Unsigned32,
pktcSigEndPntConfigMaxHookFlash	Unsigned32,
pktcSigEndPntConfigPulseDialInterdigitTime	Unsigned32,

pktcSigEndPntConfigPulseDialMinMakeTime Unsigned32,

```

pktcSigEndPntConfigPulseDialMaxMakeTime    Unsigned32,
pktcSigEndPntConfigPulseDialMinBreakTime    Unsigned32,
pktcSigEndPntConfigPulseDialMaxBreakTime    Unsigned32
}

```

pktcSigEndPntConfigCallAgentId OBJECT-TYPE

SYNTAX SnmpAdminString(SIZE (3..255))

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains a string indicating the call agent name (e.g.: ca@example.com). The call agent name, after the character '@', MUST be a fully qualified domain name (FQDN) and MUST have a corresponding pktcMtaDevCmsFqdn entry in the pktcMtaDevCmsTable. The object pktcMtaDevCmsFqdn is defined in the PacketCable MIBMTA Specification. For each particular endpoint, the MTA MUST use the current value of this object to communicate with the corresponding CMS. The MTA MUST update this object with the value of the 'Notified Entity' parameter of the NCS message. Because of the high importance of this object to the ability of the MTA to maintain reliable NCS communication with the CMS, it is highly recommended not to change this object's value using SNMP during normal operation."

::= { pktcSigEndPntConfigEntry 1 }

pktcSigEndPntConfigCallAgentUdpPort OBJECT-TYPE

SYNTAX InetPortNumber (1025..65535)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains the current value of the User Datagram Protocol (UDP) receive port on which the call agent will receive NCS from the endpoint. For each particular endpoint, the MTA MUST use the current value of this object to communicate with the corresponding CMS. The MTA MUST update this object with the value of the 'Notified Entity' parameter of the NCS message. If the Notified Entity parameter does not contain a CallAgent port, the MTA MUST update this object with the default value of 2727. Because of the high importance of this object to the ability of the MTA to maintain reliable NCS communication with the CMS, it is highly recommended not to change this object's value using SNMP during normal operation."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 2727 }

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```
::= { pktcSigEndPntConfigEntry 2 }
```

```
pktcSigEndPntConfigPartialDialTO      OBJECT-TYPE
```

```
SYNTAX      Unsigned32
```

```
UNITS       "seconds"
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"This object contains the value of the partial dial  
time out.
```

```
The Time out (TO) elements are intended to limit the time a  
tone or frequency is generated. When this MIB Object is set  
to a value of '0', the MTA MUST NOT generate the  
corresponding frequency or tone regardless of the  
definitions pertaining to frequency, tone duration or  
cadence."
```

```
REFERENCE
```

```
"PacketCable NCS Specification"
```

```
DEFVAL { 16 }
```

```
::= { pktcSigEndPntConfigEntry 3 }
```

```
pktcSigEndPntConfigCriticalDialTO     OBJECT-TYPE
```

```
SYNTAX      Unsigned32
```

```
UNITS       "seconds"
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"This object contains the value of the critical  
dial time out.
```

```
The Time out (TO) elements are intended to limit the time a  
tone or frequency is generated. When this MIB Object is set  
to a value of '0', the MTA MUST NOT generate the  
corresponding frequency or tone regardless of the  
definitions pertaining to frequency, tone duration or  
cadence."
```

```
REFERENCE
```

```
"PacketCable NCS Specification"
```

```
DEFVAL { 4 }
```

```
::= { pktcSigEndPntConfigEntry 4 }
```

```
pktcSigEndPntConfigBusyToneTO         OBJECT-TYPE
```

```
SYNTAX      Unsigned32
```

```
UNITS       "seconds"
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

```
DESCRIPTION
```

```
" This object contains the default timeout value for busy  
tone. The MTA MUST NOT update this object with the
```

value provided in the NCS message (if present). If

the value of the object is modified by the SNMP Management Station, the MTA MUST use the new value as a default only for a new signal requested by the NCS message.

The Time out (TO) elements are intended to limit the time a tone or frequency is generated. When this MIB Object is set to a value of '0', the MTA MUST NOT generate the corresponding frequency or tone regardless of the definitions pertaining to frequency, tone duration or cadence."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 30 }

::= { pktcSigEndPntConfigEntry 5 }

pktcSigEndPntConfigDialToneTO OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains the default timeout value for dial tone. The MTA MUST NOT update this object with the value provided in the NCS message (if present). If the value of the object is modified by the SNMP Management Station, the MTA MUST use the new value as a default only for a new signal requested by the NCS message. The Time out (TO) elements are intended to limit the time a tone or frequency is generated. When this MIB Object is set to a value of '0', the MTA MUST NOT generate the corresponding frequency or tone regardless of the definitions pertaining to frequency, tone duration or cadence."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 16 }

::= { pktcSigEndPntConfigEntry 6 }

pktcSigEndPntConfigMessageWaitingTO OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains the default timeout value for message waiting indicator. The MTA MUST NOT update this object with the value provided in the NCS message (if

present). If the value of the object is modified by the

SNMP Manager application, the MTA MUST use the new value as a default only for a new signal requested by the NCS message.

The Time out (TO) elements are intended to limit the time a tone or frequency is generated. When this MIB Object is set to a value of '0', the MTA MUST NOT generate the corresponding frequency or tone regardless of the definitions pertaining to frequency, tone duration or cadence."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 16 }

::= { pktcSigEndPntConfigEntry 7 }

pktcSigEndPntConfigOffHookWarnToneTO OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains the default timeout value for the off hook Warning tone. The MTA MUST NOT update this object with the value provided in the NCS message (if present). If the value of the object is modified by the SNMP Manager application, the MTA MUST use the new value as a default only for a new signal requested by the NCS message.

The Time out (TO) elements are intended to limit the time a tone or frequency is generated. When this MIB Object is set to a value of '0', the MTA MUST NOT generate the corresponding frequency or tone regardless of the definitions pertaining to frequency, tone duration or cadence."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 0 }

::= { pktcSigEndPntConfigEntry 8 }

pktcSigEndPntConfigRingingTO OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains the default timeout value for ringing. The MTA MUST NOT update this object with the

value provided in the NCS message (if present). If

the value of the object is modified by the SNMP Management Station, the MTA MUST use the new value as a default only for a new signal requested by the NCS message.

The Time out (TO) elements are intended to limit the time a tone or frequency is generated. When this MIB Object is set to a value of '0', the MTA MUST NOT generate the corresponding frequency or tone regardless of the definitions pertaining to frequency, tone duration or cadence."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 180 }

::= { pktcSigEndPntConfigEntry 9 }

pktcSigEndPntConfigRingBackTO OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains the default timeout value for ring back. The MTA MUST NOT update this object with the value provided in the NCS message (if present). If the value of the object is modified by the SNMP Management Station, the MTA MUST use the new value as a default only for a new signal requested by the NCS message.

The Time out (TO) elements are intended to limit the time a tone or frequency is generated. When this MIB Object is set to a value of '0', the MTA MUST NOT generate the corresponding frequency or tone regardless of the definitions pertaining to frequency, tone duration or cadence."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 180 }

::= { pktcSigEndPntConfigEntry 10 }

pktcSigEndPntConfigReorderToneTO OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains the default timeout value for reorder tone. The MTA MUST NOT update this object with the value provided in the NCS message (if present). If

the value of the object is modified by the SNMP Management

Station, the MTA MUST use the new value as a default only for a new signal requested by the NCS message.

The Time out (TO) elements are intended to limit the time a tone or frequency is generated. When this MIB Object is set to a value of '0', the MTA MUST NOT generate the corresponding frequency or tone regardless of the definitions pertaining to frequency, tone duration or cadence."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 30 }

::= { pktcSigEndPntConfigEntry 11 }

pktcSigEndPntConfigStutterDialToneTO OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains the default timeout value for stutter dial tone. The MTA MUST NOT update this object with the value provided in the NCS message (if present). If the value of the object is modified by the SNMP Management Station, the MTA MUST use the new value as a default only for a new signal requested by the NCS message.

The Time out (TO) elements are intended to limit the time a tone or frequency is generated. When this MIB Object is set to a value of '0', the MTA MUST NOT generate the corresponding frequency or tone regardless of the definitions pertaining to frequency, tone duration or cadence."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 16 }

::= { pktcSigEndPntConfigEntry 12 }

pktcSigEndPntConfigTSMax OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This MIB object is used as part of an NCS retransmission algorithm. Prior to any retransmission, the MTA must check to make sure that the time elapsed since the sending of the initial datagram does not exceed the value specified by this MIB Object. If more

than T_{max} time has elapsed, then the retransmissions

MUST cease.

Refer to the MIB Object pktcSigEndPntConfigThist for information on when the endpoint becomes disconnected."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 20 }

::= { pktcSigEndPntConfigEntry 13 }

pktcSigEndPntConfigMax1 OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object contains the suspicious error threshold for signaling messages. The pktcSigEndPntConfigMax1 object indicates the retransmission threshold at which the MTA MAY actively query the domain name server (DNS) in order to detect the possible change of call agent interfaces."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 5 }

::= { pktcSigEndPntConfigEntry 14 }

pktcSigEndPntConfigMax2 OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object contains the disconnect error threshold for signaling messages. The pktcSigEndPntConfigMax2 object indicates the retransmission threshold at which the MTA SHOULD contact the DNS one more time to see if any other interfaces to the call agent have become available."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 7 }

::= { pktcSigEndPntConfigEntry 15 }

pktcSigEndPntConfigMax1QEnable OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object enables/disables the Max1 domain name server (DNS) query operation when the pktcSigEndPntConfigMax1 threshold has been reached.

A value of true(1) indicates enabling, and a value of

false(2) indicates disabling."

```
DEFVAL { true }
::= { pktcSigEndPntConfigEntry 16 }
```

```
pktcSigEndPntConfigMax2QEnable      OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS   read-create
    STATUS      current
    DESCRIPTION
        "This object enables/disables the Max2 domain name server
        (DNS) query operation when the pktcSigEndPntConfigMax2
        threshold has been reached.
        A value of true(1) indicates enabling, and a value of
        false(2) indicates disabling."
    DEFVAL { true }
    ::= { pktcSigEndPntConfigEntry 17 }
```

```
pktcSigEndPntConfigMWD      OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "seconds"
    MAX-ACCESS   read-create
    STATUS      current
    DESCRIPTION
        "Maximum Waiting Delay (MWD) contains the maximum number of
        seconds an MTA waits after powering on, before initiating
        the restart procedure with the call agent."
    REFERENCE
        "PacketCable NCS Specification"
    DEFVAL { 600 }
    ::= { pktcSigEndPntConfigEntry 18 }
```

```
pktcSigEndPntConfigTdinit      OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "seconds"
    MAX-ACCESS   read-create
    STATUS      current
    DESCRIPTION
        "This MIB object represents the 'disconnected' initial
        waiting delay within the context of an MTA's 'disconnected
        procedure'. The 'disconnected procedure' is initiated when
        an endpoint becomes 'disconnected' while attempting to
        communicate with a Call Agent.

        The 'disconnected timer' associated with the 'disconnected
        Procedure' is initialized to a random value, uniformly
        distributed between zero and the value contained in this
        MIB Object.
```

For more information on the usage of this timer, please

refer to the PacketCable NCS Specification."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 15 }

::= { pktcSigEndPntConfigEntry 19 }

pktcSigEndPntConfigTdmin OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This MIB object represents the 'disconnected' minimum waiting delay within the context of an MTA's 'disconnected procedure', specifically when local user activity is detected.

The 'disconnected procedure' is initiated when an endpoint becomes 'disconnected' while attempting to communicate with a Call Agent.

For more information on the usage of this timer, please refer to the PacketCable NCS Specification."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 15 }

::= { pktcSigEndPntConfigEntry 20 }

pktcSigEndPntConfigTdmax OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains the maximum number of seconds the MTA waits after a disconnect, before initiating the disconnected procedure with the call agent.

"

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 600 }

::= { pktcSigEndPntConfigEntry 21 }

pktcSigEndPntConfigRtoMax OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

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"This object specifies the maximum number of seconds the MTA waits for a response to an NCS message before initiating a retransmission."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 4 }

::= { pktcSigEndPntConfigEntry 22 }

pktcSigEndPntConfigRtoInit OBJECT-TYPE

SYNTAX Unsigned32

UNITS "milliseconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains the initial number of seconds for the retransmission timer."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 200 }

::= { pktcSigEndPntConfigEntry 23 }

pktcSigEndPntConfigLongDurationKeepAlive OBJECT-TYPE

SYNTAX Unsigned32

UNITS "minutes"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" Specifies a timeout value in minutes for sending long duration call notification message."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 60 }

::= { pktcSigEndPntConfigEntry 24 }

pktcSigEndPntConfigThist OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" Timeout period in seconds before no response is declared."

REFERENCE

"PacketCable NCS Specification"

DEFVAL { 30 }

::= { pktcSigEndPntConfigEntry 25 }

pktcSigEndPntConfigStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

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STATUS current

DESCRIPTION

" This object contains the Row Status associated with the pktcSigEndPntConfigTable. There are no restrictions or dependencies amidst the columnar objects before this row can be activated or for modifications of the columnar objects when this object is set to a value of 'active(1)."

::= { pktcSigEndPntConfigEntry 26 }

pktcSigEndPntConfigCallWaitingMaxRep OBJECT-TYPE

SYNTAX Unsigned32 (0..10)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains the default value of the maximum number of repetitions of the call waiting tone that the MTA will play from a single CMS request. The MTA MUST NOT update this object with the information provided in the NCS message (if present). If the value of the object is modified by the SNMP Manager application, the MTA MUST use the new value as a default only for a new signal requested by the NCS message."

DEFVAL { 1 }

::= { pktcSigEndPntConfigEntry 27 }

pktcSigEndPntConfigCallWaitingDelay OBJECT-TYPE

SYNTAX Unsigned32 (1..100)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" This object contains the delay between repetitions of the call waiting tone that the MTA will play from a single CMS request."

DEFVAL { 10 }

::= { pktcSigEndPntConfigEntry 28 }

pktcSigEndPntStatusCallIpAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" This object contains the type of Internet address contained in the MIB Object 'pktcSigEndPntStatusCallIpAddress'.

Since pktcSigEndPntStatusCallIpAddress is expected to

contain an IP address, a value of dns(16) is disallowed."

```
::= { pktcSigEndPntConfigEntry 29 }
```

```
pktcSigEndPntStatusCallIpAddress OBJECT-TYPE
```

```
SYNTAX      InetAddress
```

```
MAX-ACCESS  read-only
```

```
STATUS      current
```

```
DESCRIPTION
```

" This MIB Object contains the chosen IP address of the CMS currently being used for the corresponding endpoint.

The device determines the IP address by using DNS to resolve the IP address of the CMS from the FQDN stored in the MIB Object 'pktcSigEndPntConfigCallAgentId'. The processes are outlined in the PacketCable NCS and Security specifications, and MUST be followed by the MTA.

The IP address type contained in this MIB Object is indicated by pktcSigEndPntStatusCallIpAddressType."

```
REFERENCE
```

"PacketCable NCS Specification;

PacketCable Security specification, [[PKT-SP-SEC](#)]."

```
::= { pktcSigEndPntConfigEntry 30 }
```

```
pktcSigEndPntStatusError OBJECT-TYPE
```

```
SYNTAX INTEGER {
```

```
    operational (1),
```

```
    noSecurityAssociation (2),
```

```
    disconnected (3)
```

```
}
```

```
MAX-ACCESS  read-only
```

```
STATUS      current
```

```
DESCRIPTION
```

" This object contains the error status for this interface.

The operational status indicates that all operations necessary to put the line in service have occurred, and the CMS has acknowledged the Restart In Progress (RSIP) message successfully. If pktcMtaDevCmsIpsecCtrl is enabled for the associated Call Agent, the noSecurityAssociation status indicates that no Security Association (SA) yet exists for this endpoint. If pktcMtaDevCmsIpsecCtrl is disabled for the associated Call Agent, the noSecurityAssociation status is not applicable and should not be used by the MTA. The disconnected status indicates one of the following two:

If pktcMtaDevCmsIpsecCtrl is disabled, then no security association is involved with this endpoint. The NCS signaling software is in process of establishing the NCS

signaling link via an RSIP exchange.

Otherwise, when pktcMtaDevCmsIpsecCtrl is enabled, security Association has been established, and the NCS signaling software is in process of establishing the NCS signaling link via an RSIP exchange."

::= { pktcSigEndPntConfigEntry 31 }

pktcSigEndPntConfigMinHookFlash OBJECT-TYPE

SYNTAX Unsigned32 (20..1550)

UNITS "Milliseconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" This is the minimum time a line needs to be on hook for a valid hook flash. The value of this object MUST be greater than the value of pktcSigEndPntConfigPulseDialMaxBreakTime. The value of pktcSigEndPntConfigMinHookFlash MUST be less than pktcSigEndPntConfigMaxHookFlash. This object MUST only be set via the MTA configuration during the provisioning process.

Furthermore, given the possibility for the 'pulse dial' and 'hook flash' to overlap, the value of this object MUST be greater than the value contained by the MIB Object 'pktcSigEndPntConfigPulseDialMaxMakeTime'."

DEFVAL { 300 }

::= { pktcSigEndPntConfigEntry 32 }

pktcSigEndPntConfigMaxHookFlash OBJECT-TYPE

SYNTAX Unsigned32 (20..1550)

UNITS "Milliseconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" This is the maximum time a line needs to be on hook for a valid hook flash. The value of pktcSigEndPntConfigMaxHookFlash MUST be greater than pktcSigEndPntConfigMinHookFlash. This object MUST only be set via the MTA configuration during the provisioning process."

DEFVAL { 800 }

::= { pktcSigEndPntConfigEntry 33 }

pktcSigEndPntConfigPulseDialInterdigitTime OBJECT-TYPE

SYNTAX Unsigned32 (100..1500)

UNITS "Milliseconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" This is the pulse dial inter-digit timeout. This object

MUST only be set via the MTA configuration during the provisioning process."

DEFVAL { 100 }

::= { pktcSigEndPntConfigEntry 34 }

pktcSigEndPntConfigPulseDialMinMakeTime OBJECT-TYPE

SYNTAX Unsigned32 (20..200)

UNITS "Milliseconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" This is the minimum make pulse width for the dial pulse.
The value of pktcSigEndPntConfigPulseDialMinMakeTime MUST
be less than pktcSigEndPntConfigPulseDialMaxMakeTime. This
object MUST only be set via the MTA configuration during
the provisioning process."

DEFVAL { 25 }

::= { pktcSigEndPntConfigEntry 35 }

pktcSigEndPntConfigPulseDialMaxMakeTime OBJECT-TYPE

SYNTAX Unsigned32 (20..200)

UNITS "Milliseconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" This is the maximum make pulse width for the dial pulse.
The value of pktcSigEndPntConfigPulseDialMaxMakeTime MUST
be greater than pktcSigEndPntConfigPulseDialMinMakeTime.
This object MUST only be provided via the configuration
file during the provisioning process.
Furthermore, given the possibility for the 'pulse dial'
and 'hook flash' to overlap, the value of this object MUST
be less than the value contained by the MIB Object
pktcSigEndPntConfigMinHookFlash."

DEFVAL { 55 }

::= { pktcSigEndPntConfigEntry 36 }

pktcSigEndPntConfigPulseDialMinBreakTime OBJECT-TYPE

SYNTAX Unsigned32 (20..200)

UNITS "Milliseconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" This is the minimum break pulse width for the dial pulse.
The value of pktcSigEndPntConfigPulseDialMinBreakTime MUST
be less than pktcSigEndPntConfigPulseDialMaxBreakTime.
This object must only be provided via the configuration
file during the provisioning process."

DEFVAL { 45 }

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```
 ::= { pktcSigEndPntConfigEntry 37 }

pktcSigEndPntConfigPulseDialMaxBreakTime    OBJECT-TYPE
    SYNTAX      Unsigned32 (20..200)
    UNITS        "Milliseconds"
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        " This is the maximum break pulse width for the dial pulse.
          The value of pktcSigEndPntConfigPulseDialMaxBreakTime MUST
          be greater than pktcSigEndPntConfigPulseDialMinBreakTime.
          This object MUST only be provided via the configuration
          file during the provisioning process."
    DEFVAL { 75 }
    ::= { pktcSigEndPntConfigEntry 38 }

--
-- notification group is for future extension.
--
pktcSigNotification    OBJECT IDENTIFIER ::= { pktcSigMib 0 }
pktcSigConformance     OBJECT IDENTIFIER ::= { pktcSigMib 2 }
pktcSigCompliances     OBJECT IDENTIFIER ::= { pktcSigConformance 1 }
pktcSigGroups          OBJECT IDENTIFIER ::= { pktcSigConformance 2 }

--
-- compliance statements
--

pktcSigBasicCompliance MODULE-COMPLIANCE
    STATUS       current
    DESCRIPTION
        " The compliance statement for MTAs that implement
          NCS Signaling."

MODULE -- pktcSigMib

---
-- Unconditionally mandatory groups for all MTAs
---

MANDATORY-GROUPS {
    pktcSigDeviceGroup,
    pktcSigEndpointGroup
}
---
-- Conditionally mandatory groups for MTAs
---
```


GROUP pktcInternationalGroup

DESCRIPTION

" This group is mandatory only for MTAs implementing international telephony features."

GROUP pktcLLinePackageGroup

DESCRIPTION

" This group is mandatory only for MTAs implementing the L Line Package"

GROUP pktcELinePackageGroup

DESCRIPTION

" This group is mandatory only for MTAs implementing the E Line Package"

::={ pktcSigCompliances 1 }

pktcSigDeviceGroup OBJECT-GROUP

OBJECTS {

pktcSigDevCodecMax,
pktcSigDevEchoCancellation,
pktcSigDevSilenceSuppression,
pktcSigDevR0Cadence,
pktcSigDevR1Cadence,
pktcSigDevR2Cadence,
pktcSigDevR3Cadence,
pktcSigDevR4Cadence,
pktcSigDevR5Cadence,
pktcSigDevR6Cadence,
pktcSigDevR7Cadence,
pktcSigDevRgCadence,
pktcSigDevRsCadence,
pktcSigDefCallSigDscp,
pktcSigDefMediaStreamDscp,
pktcSigDevVmwiMode,
pktcSigCapabilityType,
pktcSigCapabilityVersion,
pktcSigCapabilityVendorExt,
pktcSigDefNcsReceiveUdpPort
}

STATUS current

DESCRIPTION

"Group of MIB Objects containing signaling configuration information that is applicable per-device."

::= { pktcSigGroups 1 }

pktcSigEndpointGroup OBJECT-GROUP

OBJECTS {

pktcSigEndPntConfigCallAgentId,
pktcSigEndPntConfigCallAgentUdpPort,
pktcSigEndPntConfigPartialDialTO,
pktcSigEndPntConfigCriticalDialTO,
pktcSigEndPntConfigBusyToneTO,
pktcSigEndPntConfigDialToneTO,
pktcSigEndPntConfigMessageWaitingTO,
pktcSigEndPntConfigOffHookWarnToneTO,
pktcSigEndPntConfigRingingTO,
pktcSigEndPntConfigRingBackTO,
pktcSigEndPntConfigReorderToneTO,
pktcSigEndPntConfigStutterDialToneTO,
pktcSigEndPntConfigTSMax,
pktcSigEndPntConfigMax1,
pktcSigEndPntConfigMax2,
pktcSigEndPntConfigMax1QEnable,
pktcSigEndPntConfigMax2QEnable,
pktcSigEndPntConfigMWD,
pktcSigEndPntConfigTdinit,
pktcSigEndPntConfigTdmin,
pktcSigEndPntConfigTdmax,
pktcSigEndPntConfigRtoMax,
pktcSigEndPntConfigRtoInit,
pktcSigEndPntConfigLongDurationKeepAlive,
pktcSigEndPntConfigThist,
pktcSigEndPntConfigStatus,
pktcSigEndPntConfigCallWaitingMaxRep,
pktcSigEndPntConfigCallWaitingDelay,
pktcSigEndPntStatusCallIpAddressType,
pktcSigEndPntStatusCallIpAddress,
pktcSigEndPntStatusError

}

STATUS current

DESCRIPTION

"Group of MIB Objects containing signaling configuration
information that is applicable per-endpoint."

::= { pktcSigGroups 2 }

pktcInternationalGroup OBJECT-GROUP

OBJECTS {

pktcSigEndPntConfigMinHookFlash,
pktcSigEndPntConfigMaxHookFlash,
pktcSigEndPntConfigPulseDialInterdigitTime,
pktcSigEndPntConfigPulseDialMinMakeTime,
pktcSigEndPntConfigPulseDialMaxMakeTime,
pktcSigEndPntConfigPulseDialMinBreakTime,

pktcSigEndPntConfigPulseDialMaxBreakTime,

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```
pktcSigDevRingCadence,
pktcSigDevCidSigProtocol,
pktcSigDevCidDelayAfterLR,
pktcSigDevCidDtmfStartCode,
pktcSigDevCidDtmfEndCode,
pktcSigDevVmwSigProtocol,
pktcSigDevVmwDelayAfterLR,
pktcSigDevVmwDtmfStartCode,
pktcSigDevVmwDtmfEndCode,
pktcSigDevrpAsDtsDuration,
pktcSigDevCidMode,
pktcSigDevCidAfterRing,
pktcSigDevCidAfterDTAS,
pktcSigDevCidAfterRPAS,
pktcSigDevRingAfterCID,
pktcSigDevCidDTASAfterLR,
pktcSigDevVmwMode,
pktcSigDevVmwAfterDTAS,
pktcSigDevVmwAfterRPAS,
pktcSigDevVmwDTASAfterLR,
pktcSigPowerRingFrequency,
pktcSigPulseSignalFrequency,
pktcSigPulseSignalDbLevel,
pktcSigPulseSignalDuration,
pktcSigPulseSignalPulseInterval,
pktcSigPulseSignalRepeatCount,
pktcSigDevToneDbLevel,
pktcSigDevToneFreqCounter,
pktcSigDevToneWholeToneRepeatCount,
pktcSigDevToneSteady,
pktcSigDevToneFirstFreqValue,
pktcSigDevToneSecondFreqValue,
pktcSigDevToneThirdFreqValue,
pktcSigDevToneFourthFreqValue,
pktcSigDevToneFreqMode,
pktcSigDevToneFreqAmpModePrtg,
pktcSigDevToneFreqOnDuration,
pktcSigDevToneFreqOffDuration,
pktcSigDevToneFreqRepeatCount
}
STATUS current
DESCRIPTION
    " Group of objects that extend the behavior of existing
      objects to support operations in the widest possible set
      of international marketplaces. Note that many of these
      objects represent a superset of behaviors described in
      other objects within this MIB Module."
 ::= { pktcSigGroups 3 }
```



```
pktcLLinePackageGroup  OBJECT-GROUP
    OBJECTS {
        pktcSigDevR0Cadence,
        pktcSigDevR1Cadence,
        pktcSigDevR2Cadence,
        pktcSigDevR3Cadence,
        pktcSigDevR4Cadence,
        pktcSigDevR5Cadence,
        pktcSigDevR6Cadence,
        pktcSigDevR7Cadence,
        pktcSigDevRgCadence,
        pktcSigDevRsCadence
    }
    STATUS current
    DESCRIPTION
        "Group of Objects to support the L Line Package."
        ::= { pktcSigGroups 4 }

pktcELinePackageGroup  OBJECT-GROUP
    OBJECTS {
        pktcSigDevR0Cadence,
        pktcSigDevR1Cadence,
        pktcSigDevR2Cadence,
        pktcSigDevR3Cadence,
        pktcSigDevR4Cadence,
        pktcSigDevR5Cadence,
        pktcSigDevR6Cadence,
        pktcSigDevR7Cadence,
        pktcSigDevRgCadence,
        pktcSigDevRsCadence,
        pktcSigPulseSignalFrequency,
        pktcSigPulseSignalDbLevel,
        pktcSigPulseSignalDuration,
        pktcSigPulseSignalPulseInterval,
        pktcSigPulseSignalRepeatCount,
        pktcSigDevRingCadence
    }
    STATUS current
    DESCRIPTION
        "Group of Objects to support the E Line Package."
        ::= { pktcSigGroups 5 }

END
```

6. Examples

This section provides a couple of examples, specifically related to the MIB tables pktcSigDevToneTable and

pktcSigDevMultiFreqToneTable.

Example A: Call waiting tone defined per ITU-T E.180:

- 1) 400 Hz AM modulated by 16 Hz, on for 500ms at -4 dBm
- 2) 400 Hz AM modulated by 16 Hz, off for 400ms
- 3) 400 Hz not AM modulated, on for 50 ms at -4 dBm
- 4) 400 Hz not AM modulated, off for 450 ms
- 5) 400 Hz not AM modulated, on for 50 ms at -4 dBm
- 6) 400 Hz not AM modulated, off for 3450 ms
- 7) 400 Hz not AM modulated, on for 50 ms at -4 dBm
- 8) 400 Hz not AM modulated, off for 450 ms
- 9) 400 Hz not AM modulated, on for 50 ms at -4 dBm
- 10) 400 Hz not AM modulated, off for 3450 ms
- 11) not repeated, not continuous

Assume userDefined1(18) is assigned to this tone:

pktcSigDevMultiFreqToneTable:

ToneType	F-1	F-2	F-3	F-4	F-Mode	ModePrtg	DbL	OnDur	OffDur	Rep-Count
18	400	16	0	0	1	90	-40	500	400	0
18	400	0	0	0	2	0	-40	50	450	0
18	400	0	0	0	2	0	-40	50	3450	0
18	400	0	0	0	2	0	-40	50	450	0
18	400	0	0	0	2	0	-40	50	3450	0

pktcSigDevToneTable:

ToneType	ToneFreqGroup	ToneFreqCounter	ToneRep-Count	Steady
18	1	5	0	false(2)

The single row of the pktcSigDevToneTable defines one multi-frequency group of five rows (ToneFreqCounter) defined in the pktcSigDevMultiFreqToneTable and instructs the MTA to play this group only once (non-repeatable as ToneRep-Count equals 0).

Example B - Congestion Tone - congestion(17):

Note: This example of an embedded cadence is based on an operator variation.

- 1) 400Hz on for 400ms -10 dBm
- 2) 400Hz off for 350ms
- 3) 400Hz on for 225ms -4 dBm
- 4) 400Hz off for 525ms

5) repeat (1) through (4) 5000 times or T0 timeout (which ever is shortest period)

pktcSigDevMultiFreqToneTable:

ToneType	F-1	F-2	F-3	F-4	F-Mode	ModePrtg	DbL	OnDur	OffDur	Rep-Count
17	400	0	0	0	2	0	-100	400	350	0
17	400	0	0	0	2	0	-40	225	525	0

pktcSigDevToneTable:

ToneType	ToneFreqGroup	ToneFreqCounter	ToneRep-Count	Steady
17	1	2	5000	false(2)

Example C - Call Waiting Tone - callWaiting1(9):

- 1) 16 Hz is modulated to carry the 400 Hz signal, ModulationRate within 85%, on for 500msec, at -25 dBm or more but less than -14 dBm
- 2) 16 Hz is modulated to carry the 400 Hz signal, off for 0 ~ 4 secs
- 3) 400 Hz not modulated, on for 50 ms at -25 dBm or more but less than -14 dBm
- 4) 400 Hz not modulated, off for 450ms
- 5) 400 Hz not modulated, on for 50 ms at -25 dBm or more but less than -14 dBm
- 6) 400 Hz not modulated, off for 3450ms ([4000 - (50+450+50)])
- 7) Steps 3 thru 6 are repeated.

pktcSigDevMultiFreqToneTable:

ToneType	F-1	F-2	F-3	F-4	F-Mode	ModePrtg	DbL	OnDur	OffDur	Rep-Count
9	1	400	16	0	0	1	85	-25	500	1000
9	2	400	0	0	0	2	0	-25	50	450
9	3	400	0	0	0	2	0	-25	50	3450

pktcSigDevToneTable:

ToneType	ToneFreqGroup	ToneFreqCounter	ToneRep-Count	Steady
9	1	1	0	false(2)
9	2	2	1	false(2)

The first row of the pktcSigDevToneTable table instructs the MTA to play one row (ToneFreqCounter) of the pktcSigDevMultiFreqToneTable table only once (non-repeatable as ToneRep-Count equals 0). The second row of the pktcSigDevToneTable table instructs the MTA to

play next two rows (ToneFreqCounter) of the pktcSigDevMultiFreqToneTable table and make this frequency group repeatable (ToneRep-Count is not 0).

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8. Security Considerations

There are a number of management objects defined in this MIB that have a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations.

The following Differentiated Services Code Point (DSCP) and mask objects are used to differentiate between various types of traffic in the service provider network:

```
pktcSigDefCallSigDscp
pktcSigDefMediaStreamDscp
```

These objects may contain information that may be sensitive from a business perspective. For example, they may represent a customer's service contract that a service provider chooses to apply to a customer's ingress or egress traffic. If these objects are SET maliciously, it may permit unmarked or inappropriately marked signaling and media traffic to enter the service provider network, resulting in unauthorized levels of service for customers.

The following objects determine ring cadence, repeatable characteristics, signal duration, and caller id subscriber line protocol for telephony operation:

```
pktcSigDevR0Cadence
pktcSigDevR1Cadence
pktcSigDevR2Cadence
pktcSigDevR3Cadence
pktcSigDevR4Cadence
pktcSigDevR5Cadence
pktcSigDevR6Cadence
pktcSigDevR7Cadence
pktcSigDevRgCadence
pktcSigDevRsCadence
pktcSigDevCidSigProtocol
pktcSigDevVmwSigProtocol
pktcSigPulseSignalDuration
pktcSigPulseSignalPauseDuration
```

If these objects are SET maliciously, it may result in unwanted operation, or a failure to obtain telephony service from client (MTA) devices.

The objects in the pktcSigEndPntConfigTable are used for endpoint signaling. The pktcSigEndPntConfigCallAgentId object contains the name of the call agent, which includes the call agent Fully

Qualified Domain Name (FQDN). If this object is SET maliciously, the

MTA will not be able to communicate with the call agent, resulting in a disruption of telephony service. The `pktcSigEndPntConfigCallAgentUdpPort` object identifies the UDP port for NCS traffic. If this object is SET maliciously, the call agent will not receive NCS traffic from the MTA, also resulting in a disruption of telephony service.

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control even GET and/or NOTIFY access to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP. The most sensitive is `pktcSigEndPntStatusCallIpAddress` within `pktcSigEndPntConfigTable`. This information itself may be valuable to would-be attackers.

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPsec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB module.

It is RECOMMENDED that implementers consider the security features as provided by the SNMPv3 framework (see [\[RFC3410\]](#), [section 8](#)), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

9. IANA Considerations

The MIB module in this document uses the following IANA-assigned OBJECT IDENTIFIER values recorded in the SMI Numbers registry:

Descriptor	OBJECT IDENTIFIER Value
-----	-----
<code>pktcSigMib</code>	{ mib-2 XXX }

Editor's Note (to be removed prior to publication): the IANA is requested to assign a value for XXX under the mib-2 subtree and to record the assignment in the SMI Numbers registry. When the assignment has been made, the RFC Editor is asked to replace XXX

(here and in the MIB module) with the assigned value and to remove this note.

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