

PacketCable™ 1.5 Specifications

Signaling Extension MIB

PKT-SP-MIB-EXSIG1.5-I01-050128

ISSUED **Superseded**

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Key to Document Status Codes:

- Work in Progress** An incomplete document, designed to guide discussion and generate feedback, that may include several alternative requirements for consideration.

- Draft** A document in specification format considered largely complete, but lacking review by Members and vendors. Drafts are susceptible to substantial change during the review process.

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1 SCOPE

1.1 Purpose of the Document

New objects that are being introduced beyond PacketCable 1.0 for Signaling MIBS are being grouped in this document so that the additional changes made can be tracked easily.

1.2 Requirements

Throughout this document, the words that are used to define the significance of particular requirements are capitalized. These words are:

"MUST"	This word or the adjective "REQUIRED" means that the item is an absolute requirement of this specification.
"MUST NOT"	This phrase means that the item is an absolute prohibition of this specification.
"SHOULD"	This word or the adjective "RECOMMENDED" means that there may exist valid reasons in particular circumstances to ignore this item, but the full implications should be understood and the case carefully weighed before choosing a different course.
"SHOULD NOT"	This phrase means that there may exist valid reasons in particular circumstances when the listed behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
"MAY"	This word or the adjective "OPTIONAL" means that this item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because it enhances the product, for example; another vendor may omit the same item.

2 REFERENCES

2.1 Normative References

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

- [1] PacketCable 1.5 MTA Device Provisioning Specification, PKT-SP-PROV1.5-I01-050128, January 28, 2005, Cable Television Laboratories, Inc.
- [2] IETF STD 62, Simple Network Management Protocol Version 3 (SNMPv3), December 2002.
- [3] IETF RFC 2669, Cable Device Management Information Base for DOCSIS compliant Cable Modems and Cable Modem Termination Systems.
- [4] Data-Over-Cable Service Interface Specifications, DOCSIS 1.1, Operations Support System Interface, SP-OSSIV1.1-I07-030730, July 30, 2003, Cable Television Laboratories, Inc.

- [5] IETF STD 5, Internet Protocol, September 1981.
- [6] IETF RFC 2011, SNMPv2 Management Information Base for the Internet Protocol using SMIV2, November 1996.
- [7] IETF RFC 2863, The Interfaces Group MIB, June 2000.
- [8] eDOCSIS™ Specification, SP-eDOCSIS-I04-041124, November 24, 2004, Cable Television Laboratories.
- [9] CableLabs Definition MIB Specification, CL-SP-MIB-CLABDEF-I04-040804, August 4, 2004, Cable Television Laboratories, Inc.
- [10] Data-Over-Cable Service Interface Specifications, DOCSIS 2.0, Operations Support System Interface Specification, SP-OSSIV2.0-I06-040804, August 4, 2004, Cable Television Laboratories, Inc.
- [11] PacketCable 1.5 MTA MIB Specification, PKT-SP-MIB-MTA1.5-I01-050128, January 28, 2005, Cable Television Laboratories, Inc.
- [12] PacketCable 1.5 Signaling MIB Specification, PKT-SP-MIB-SIG1.5-I01-050128, January 28, 2005, Cable Television Laboratories, Inc.
- [13] PacketCable 1.5 MIBs Framework, PKT-SP-MIBS1.5-I01-050128, January 28, 2005, Cable Television Laboratories, Inc.
- [14] IETF RFC 2833, RTP Payload for DTMF Digits, Telephony Tones and Signals, May 2000.
- [15] PacketCable 1.5 Audio/Video Codecs Specification, PKT-SP-CODEC1.5-I01-050128, January 28, 2005, Cable Television Laboratories, Inc.
- [16] PacketCable 1.5 Network-Based Call Signaling Protocol Specification, PKT-SP-NCS1.5 I01-050128, January 28, 2005.

2.2 Informative References

- [17] Data-Over-Cable Service Interface Specifications, Cable Modem to Customer Premise Equipment Interface Specification, CMCI, DOCSIS SP-CMCI-I09-030730, July 30, 2003, Cable Television Laboratories, Inc.
- [18] IETF RFC 3417, Transport Mappings for the Simple Network Management Protocol (SNMP), December 2002.
- [19] IETF RFC 2579, Textual Conventions for SMIV2, April 1999.
- [20] IETF RFC 3410, Introduction and Applicability Statements for Internet-Standard Management Framework, December 2002.
- [21] IETF RFC 3411, An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks, December 2002.
- [22] IETF RFC 3412, Message Processing and Dispatching for the Simple Network Management Protocol (SNMP), December 2002.
- [23] IETF RFC 2821, Simple Mail Transfer Protocol, April 2001.
- [24] PacketCable 1.5 Dynamic Quality of Service Specification, PKT-SP-DQOS1.5-I01-050128, January 28, 2005, Cable Television Laboratories, Inc.
- [25] IETF RFC 3594, PacketCable Security Ticket Control Sub-Option for the DHCP CableLabs Client Configuration (CCC) Option, September 2003.
- [26] IETF RFC 2782, A DNS RR for specifying the location of services (DNS SRV), February 2000.

- [27] IETF RFC 3584, Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework, August 2003.
- [28] PacketCable 1.5 Management Event MIB Specification, PKT-SP-EVEMIB1.5-I01-050128, January 28, 2005, Cable Television Laboratories, Inc.

2.3 Reference Acquisition

CableLabs Specifications:

- Cable Television Laboratories, Inc., 858 Coal Creek Circle, Louisville, CO 80027; Phone 303-661-9100; Fax 303-661-9199; Internet: <http://www.cablelabs.com/>, <http://www.packetcable.com>.
- Internet Engineering Task Force (IETF) Secretariat c/o Corporation for National Research Initiatives, 1895 Preston White Drive, Suite 100, Reston, VA 20191-5434, Phone 703-620-8990, Fax 703-620-9071, Internet: www.ietf.org/

3 ABBREVIATIONS

There are no abbreviations used in this document.

4 REQUIREMENTS

The PacketCable™ Extension Signaling MIB MUST be implemented as defined below.

```
PKTC-EN-SIG-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
    MODULE-IDENTITY,
    OBJECT-TYPE,
    Unsigned32, BITS FROM SNMPv2-SMI
    ifIndex FROM IF-MIB
    SnmpAdminString
        FROM SNMP-FRAMEWORK-MIB
    TruthValue
        FROM SNMPv2-TC
    OBJECT-GROUP,
    MODULE-COMPLIANCE
        FROM SNMPv2-CONF
    pktcEnhancements
        FROM CLAB-DEF-MIB
    pktcNcsEndPntConfigEntry
        FROM PKTC-SIG-MIB;
```

```
pktcEnSigMib MODULE-IDENTITY
    LAST-UPDATED      "200528010000Z" -- January 28, 2005
    ORGANIZATION      "Cable Television Laboratories, Inc "
    CONTACT-INFO
        "Sumanth Channabasappa
    Postal: Cable Television Laboratories, Inc.
    858 Coal Creek Circle
    Louisville, Colorado 80027-9750
    U.S.A.
    Phone: +1 303-661-9100
    Fax: +1 303-661-9199
    E-mail: mibs@cablelabs.com"
```

DESCRIPTION

"This MIB module enhances the basic management objects defined for PacketCable Signaling protocols by the MIB group pktcSigMib.

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 Jean-Francois Mule - CableLabs

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REVISION "2005028010000Z"

DESCRIPTION

"This revision is being published as part of the PacketCable Signaling MIBs enhancements for PacketCable 1.5."

::= { pktcEnhancements 2 }

--

-- Enhanced MIB Objects and Divisions.

--

```
pktcEnSigMibObjects          OBJECT IDENTIFIER
                               ::= { pktcEnSigMib 1 }
pktcEnSigDevConfigObjects   OBJECT IDENTIFIER
                               ::= { pktcEnSigMibObjects 1 }
pktcEnNcsEndPntConfigObjects OBJECT IDENTIFIER
                               ::= { pktcEnSigMibObjects 2 }
pktcEnSigEndPntConfigObjects OBJECT IDENTIFIER
                               ::= { pktcEnSigMibObjects 3 }
pktcEnDcsEndPntConfigObjects OBJECT IDENTIFIER
                               ::= { pktcEnSigMibObjects 4 }
```

--

-- Enhanced Notification groups.

--

```
pktcEnSigNotificationPrefix OBJECT IDENTIFIER
                               ::= { pktcEnSigMib 2 }
pktcEnSigNotification       OBJECT IDENTIFIER
                               ::= { pktcEnSigNotificationPrefix 0 }
pktcEnSigConformance        OBJECT IDENTIFIER
                               ::= { pktcEnSigMib 3 }
pktcEnSigCompliances        OBJECT IDENTIFIER
                               ::= { pktcEnSigConformance 1 }
pktcEnSigGroups             OBJECT IDENTIFIER
                               ::= { pktcEnSigConformance 2 }
```

```
pktcEnNcsMinimumDtmfPlayout OBJECT-TYPE
```

```
  SYNTAX Unsigned32 (0 | 40..100)
```

```
  UNITS "milliseconds"
```

```
  MAX-ACCESS read-write
```

```
  STATUS current
```

```
  DESCRIPTION
```

"This object defines the minimum playout time for the DTMF digit when IETF RFC 2833 DTMF Relay is used for the egress gateway.
 If the value set via this pktcEnNcsMinimumDtmfPlayout

object is different from that specified in RFC2833 packet, then the MTA MUST use the maximum of the two values. For example:
 If the RFC 2833 packet specifies 23ms and if the object pktcEnNcsMinimumDtmfPlyout is set to 40ms then the egress gateway must use a value of 40ms. Similarly if the RFC 2833 packet specifies 60 ms and if the object pktcEnNcsMinimumDtmfPlyout is set to 40ms then the egress gateway must use a value of 60 ms."

REFERENCE
 "PacketCable(tm) Codec Specification"
 DEFVAL {0}
 ::= { pktcEnSigDevConfigObjects 1 }

--
 -- The following table enhances the NCS End Point Config Table
 -- (pktcNcsEndPntConfigTable) defined in pktSigMib.
 --
 --

pktcEnNcsEndPntConfigTable OBJECT-TYPE
 SYNTAX SEQUENCE OF PktcEnNcsEndPntConfigEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "This table augments pktcNcsEndPntConfigTable."
 ::= { pktcEnNcsEndPntConfigObjects 1 }

pktcEnNcsEndPntConfigEntry OBJECT-TYPE
 SYNTAX PktcEnNcsEndPntConfigEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "An enhancement to pktcNcEndPntConfigTable - where each entry describes endpoint characteristics."
 AUGMENTS { pktcNcsEndPntConfigEntry }
 ::= { pktcEnNcsEndPntConfigTable 1 }

PktcEnNcsEndPntConfigEntry ::=
 SEQUENCE {
 pktcEnNcsEndPntQuarantineState INTEGER,
 pktcEnNcsEndPntHookState INTEGER,
 pktcEnNcsEndPntFaxDetection TruthValue,
 pktcEnNcsEndPntStatusReportCtrl INTEGER
 }

pktcEnNcsEndPntQuarantineState OBJECT-TYPE
 SYNTAX INTEGER {
 normal (1),
 notification (2),
 lockstep (3),
 extendedlockstep (4)
 }
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the state of the Endpoint. When the endpoint is in notification, lockstep or values 'extended lockstep' states, the E-MTA MUST report the of notification(2), lockstep(3) or extendedlockstep(4), respectively. Else, the endpoint MUST report a value of of normal(1).
 'Extended Lockstep' is defined as the state when the

E-MTA is in the lockstep state for longer than 2 minutes.
For more description about the states refer
to the PacketCable Network Based Call signaling
specification."

REFERENCE

"PacketCable(tm) Network-Based Call Signaling Protocol
Specification,"

::= { pktcEnNcsEndPntConfigEntry 1 }

pktcEnNcsEndPntHookState OBJECT-TYPE

SYNTAX INTEGER {
 onHook (1),
 onHookPlusNCSActivity (2),
 offHook (3)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the 'hook state' and 'NCS Activity'
of an endpoint.

'NCS Activity', by definition includes: an active
timeout signal, active brief signal or existence of
an NCS connection.

The onHook(1) state indicates that the endpoint is
'on hook' and the absence of 'NCS Activity' on that
endpoint.

The onHookPlusNCSActivity(2) indicates that the endpoint
is 'on hook' and the presence of 'NCS Activity' on that
endpoint.

The offHook(3) state indicates that the endpoint is
'off hook'."

REFERENCE

"PacketCable(tm) Network-Based Call Signaling Protocol
Specification"

::= { pktcEnNcsEndPntConfigEntry 2 }

pktcEnNcsEndPntFaxDetection OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This MIB object is used to configure
the distinctive fax calling tone (CNG) detection feature
on an MTA endpoint with reference to the analog interface.
When set to true, the MTA MUST enable the detection
of CNG tones on the specific endpoint.

When set to false, the MTA MUST disable the detection
of CNG tones on the specific endpoint.

If a connection already exists on the endpoint when this
MIB Object is modified, then the setting needs to take
effect on the next connection."

DEFVAL {false}

::= { pktcEnNcsEndPntConfigEntry 3 }

pktcEnNcsEndPntStatusReportCtrl OBJECT-TYPE

SYNTAX INTEGER {
 unsupported (1),
 reportActualStatus (2),
 reportEndPointAsActive (3)
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This MIB object is be used to control the Endpoint Status Reporting, if the feature is supported by the MTA and is configurable. The term 'Endpoint Status Reporting' refers to any information that the MTA may provide to External Systems for use in a particular reporting mechanism (Ex: Home Alarm Systems). The definition of the External Systems and reporting mechanism are beyond the scope of this definition (In the example of Home Alarm Systems, this MIB Object will allow Management Stations to temporarily disable outage reporting on an EndPoint during planned downtime).
 If supported, the MTA MUST:
 - reflect the actual Endpoint status when the value is set to 'reportActualStatus(2)'
 - reflect the EndPoint status as being active when the value is set to 'reportEndPointAsActive(3)', irrespective of the actual status.
 If unsupported, the MTA MUST set this value to 'unsupported(1)' and reject any attempt to set this MIB object using SNMP SET to any other value."
 ::= { pktcEnNcsEndPntConfigEntry 4 }

pktcEnEndPntInfoTable OBJECT-TYPE
 SYNTAX SEQUENCE OF PktcEnEndPntInfoTableEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "This table includes any additional information associated with PacketCable EndPoints. The number of entries in this table represents the number of available PacketCable EndPoints."
 ::= { pktcEnNcsEndPntConfigObjects 2 }

pktcEnEndPntInfoTableEntry OBJECT-TYPE
 SYNTAX PktcEnEndPntInfoTableEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "An entry in this table MUST be created for each PacketCable EndPoint. The index needs to be the corresponding index in the ifTable for the associated PacketCable EndPoint."
 INDEX { ifIndex }
 ::= { pktcEnEndPntInfoTable 1 }

PktcEnEndPntInfoTableEntry ::= SEQUENCE {
 pktcEnEndPntFgnPotSupport BITS,
 pktcEnEndPntFgnPotDescr SnmpAdminString,
 pktcEnEndPntClrFgnPotTsts BITS,
 pktcEnEndPntRunFgnPotTsts BITS,
 pktcEnEndPntFgnTestValidity BITS,
 pktcEnEndPntFgnTestResults BITS
 }

pktcEnEndPntFgnPotSupport OBJECT-TYPE
 SYNTAX BITS {
 fgnPotDetection (0),
 hazardousFgnPotDetection (1)
 }
 MAX-ACCESS read-only
 STATUS current

DESCRIPTION

"This MIB object indicates the capabilities of the MTA to detect various conditions related to the presence of foreign potential on an endpoint.
The MTA MUST set a value of '1' for each bit corresponding to a supported functionality and a value of '0' for each bit corresponding to an unsupported functionality."

```
::= { pktcEnEndPntInfoTableEntry 1 }
```

pktcEnEndPntFgnPotDescr OBJECT-TYPE

```
SYNTAX SnmpAdminString
```

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

```
STATUS current
```

DESCRIPTION

"This MIB object provides information related to the various tests for each detection mechanism supported by the MTA. While the actual contents are vendor-specific, the recommended format is:
[<Capability>:<Test References>:<Other Info>]...

Example:

```
<fgnPotDetection>:<test XYZ, Reference 'Document'>:<NA>;
```

```
<hazardousFngPotDetection>:<Test ABC, References>:<NA>
```

```
"
```

```
::= { pktcEnEndPntInfoTableEntry 2 }
```

pktcEnEndPntClrFgnPotTsts OBJECT-TYPE

```
SYNTAX BITS {
```

```
    clrFgnPotentialResults (0),
```

```
    clrHazardousPotResults (1)
```

```
}
```

```
MAX-ACCESS read-write
```

```
STATUS current
```

DESCRIPTION

"This MIB object is used to clear the current test results of supported conditions indicated by 'pktcEnEndPntFgnPotSupport'.
Setting a bit to a value of '1' clears the corresponding results in the MIB Object 'pktcEnEndPntFgnTestResults' and the validity as indicated by the MIB object 'pktcEnEndPntFgnTestValidity' for the supported conditions only (i.e, the MTA MUST set the corresponding bits to a value of '0' in the indicated tables).
If an SNMP SET attempts to set a bit corresponding to an unsupported condition to a value of '1', then the MTA MUST reject the entire SNMP SET and report an 'inconsistent value' error.

For all unsupported scenarios, the corresponding bits MUST be set to a value of '0'.

Whenever one or more tests are enabled by the MIB Object 'pktcEnEndPntRunFgnPotTsts', the MTA MUST also reset the corresponding bits in this MIB Object to a value of '0'."

```
::= { pktcEnEndPntInfoTableEntry 3 }
```

pktcEnEndPntRunFgnPotTsts OBJECT-TYPE

```
SYNTAX BITS {
```

```
    runFgnPotentialTsts (0),
```

```
    runHazardousPotTsts (1)
```

```
}
```

```
MAX-ACCESS read-write
```

```
STATUS current
```

DESCRIPTION

"This MIB object is used to initiate one or more test cases associated with a supported foreign potential detection. Thus, whenever one or more BITS corresponding to supported

foreign scenario potential detection mechanisms are set to a value of '1', the MTA MUST enable those tests. Once the tests are executed, the MTA MUST:

- set the corresponding bit to a value of '0'
- update the corresponding BITS in the MIB Objects 'pktcEnEndPntFgnTestValidity' and 'pktcEnEndPntFgnTestResults'.

If an SNMP SET attempts to set a bit corresponding to an unsupported condition to a value of '1', then the MTA MUST reject the entire SNMP SET and report an 'inconsistent value' error.

Whenever a test is being run on an EndPoint the MTA MUST set the corresponding 'ifOperStatus' MIB Object to a value of 'testing(3)' for the whole duration of the test. When the test is completed, the MTA MUST set the ifOperStatus to the value corresponding to the current state of the line.

Note: Whenever multiple tests are run, the ordering of the tests or the results is vendor dependent and need not necessarily follow the ordering of BITS in this MIB Object."

::= { pktcEnEndPntInfoTableEntry 4}

```

pktcEnEndPntFgnTestValidity OBJECT-TYPE
    SYNTAX BITS {
        fgnPotTstValidity (0),
        hazardousPotTstValidity (1)
    }
    MAX-ACCESS      read-only
    STATUS           current
    DESCRIPTION
        "This MIB object is used to indicate the validity of the
        corresponding test cases that were initiated using the MIB
        Object 'pktcEnEndPntRunFgnPotTests'.
        An MTA MUST:
        - return a value of '1' if the tests were run successfully
          and the results are valid.
        - return a value of '0' if a particular test was not
          initiated or if the tests could not be run successfully
          and hence the results are invalid.
        Note: The MTA MUST set all the BITS to '0' as soon as one
              or more test cases are initiated."
    ::= { pktcEnEndPntInfoTableEntry 5}
    
```

```

pktcEnEndPntFgnTestResults OBJECT-TYPE
    SYNTAX BITS {
        fgnPotentialResults (0),
        hazardousPotResults (1)
    }
    MAX-ACCESS      read-only
    STATUS           current
    DESCRIPTION
        "This MIB object is used to indicate the results of the
        corresponding test cases that were initiated using the MIB
        Object 'pktcEnEndPntRunFgnPotTests'.
        An MTA MUST:
        - set the corresponding bit to a value of '1' if the tests
          indicated the presence of a foreign potential as per the
          associated test case.
        - set the corresponding bit to a value of '0' if the tests
          indicated the absence of a foreign potential as per the
          associated test case.
        Note: The MTA MUST set all the BITS to '0' as soon as one or
              more test cases are initiated."
    
```

```

 ::= { pktcEnEndPntInfoTableEntry 6}

--
-- Compliance statements
--
pktcSigBasicCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for devices that implement
        PacketCable defined Signaling on an MTA."

    MODULE PKTC-EN-SIG-MIB

--
-- Mandatory groups
--
MANDATORY-GROUPS {
    pktcEnSigGroup
}
GROUP pktcEnNcsGroup
DESCRIPTION
    "This group is mandatory for any MTA implementing
    PacketCable signaling."
::={ pktcEnSigCompliances 1 }

--
-- Conformance group for common Signaling.
--
pktcEnSigGroup OBJECT-GROUP
    OBJECTS {
        pktcEnNcsMinimumDtmfPlyout
    }
    STATUS current
    DESCRIPTION
        "Enhanced group of objects for the common portion of the
        PacketCable Signaling MIB."
    ::= { pktcEnSigGroups 1 }

--
-- Conformance group for NCS Signaling.
--
pktcEnNcsGroup OBJECT-GROUP
    OBJECTS {
        pktcEnNcsEndPntQuarantineState,
        pktcEnNcsEndPntHookState,
        pktcEnNcsEndPntFaxDetection,
        pktcEnNcsEndPntStatusReportCtrl,
        pktcEnEndPntFgnPotSupport,
        pktcEnEndPntFgnPotDescr,
        pktcEnEndPntClrFgnPotTsts,
        pktcEnEndPntRunFgnPotTsts,
        pktcEnEndPntFgnTestValidity,
        pktcEnEndPntFgnTestResults
    }
    STATUS current
    DESCRIPTION
        "Enhanced group of objects for the NCS portion of the
        PacketCable Signaling MIB. This is mandatory for
        NCS signaling support."
    ::= { pktcEnSigGroups 2 }
END

```

Appendix A Acknowledgements

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