CableLabs® Definition MIB Specification

CL-SP-MIB-CLABDEF-I07-080306

ISSUED

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Document Status Sheet

Document Control Number:	CL-SP-MIB-CLABDEF-I07-080306
Document Title:	CableLabs® Definition MIB Specification
Revision History:	I01 – April 5, 2002 I02 – September 20, 2002 I03 – January 13, 2004 I04 – August 4, 2004 I05 – April 8, 2005 I06 – January 19, 2007 I07 – March 6, 2008
Date:	March 6, 2008
Status:	~~Work in Progress~~ ~~Draft~~ Issued ~~Closed~~
Distribution Restrictions:	~~Author Only~~ ~~CL/Member~~ ~~CL/Vendor~~ Public

Key to Document Status Codes:

Work in Progress   An incomplete document, designed to guide discussion and generate feedback, which 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.

Issued   A stable document, which has undergone rigorous member and vendor review and is suitable for product design and development, cross-vendor interoperability, and for certification testing.

Closed   A static document, reviewed, tested, validated, and closed to further engineering change requests to the specification through CableLabs.

Trademarks

Contents

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1   SCOPE

This specification describes the namespace organization for the CableLabs enterprise MIB. It defines the CableLabs Definition MIB module (CLAB-DEF-MIB), whose purpose is to be the central registry of Object Identifiers (OIDs) for CableLabs, and as such, to provide the private layout of the CableLabs Object Identifier structure.

2   REFERENCES

This specification is referenced by several CableLabs projects including DOCSIS®, CableHome®, and PacketCable™. It defines the CableLabs OID registry from which each project assigns its own MIB information modules. As such, the CableLabs Definition MIB constitutes a normative reference to several CableLabs specifications, including those listed below.

DOCSIS Specifications (http://www.cablemodem.com/specifications/)

- DOCSIS Set-Top Gateway Interface Specification: CM-SP-DSG
- DOCSIS Testing MIB Specification: CM-SP-TestMIB
- eDOCSIS™ Specification: CM-SP-eDOCSIS
- DOCSIS M-CMTS Operations Support System Interface Specification: CM-SP-M-OSSI
- DOCSIS Layer 2 Virtual Private Networks Specification: CM-SP-L2VPN
- DOCSIS TDM Emulation Interfaces Specification: CM-SP-TEI
- DOCSIS 3.0 Operations Support System Interface Specification: CM-SP-OSSIv3.0

CableHome Specifications (http://www.cablelabs.com/projects/cablehome/specifications/)

- CableHome 1.0 Specification: CH-SP-CH1.0
- CableHome 1.1 Specification: CH-SP-CH1.1
- CableHome PS Device MIB: CH-SP-MIB-PSDEV
- CableHome Security MIB: CH-SP-MIB-SEC
- CableHome Addressing Portal MIB: CH-SP-MIB-CAP
- CableHome DHCP Portal MIB: CH-SP-MIB-CDP
- CableHome Test Portal MIB: CH-SP-MIB-CTP
- CableHome Quality of Service MIB: CH-SP-MIB-QOS

PacketCable Specifications (http://www.packetcable.com/specifications/)

- PacketCable Multimedia Terminal Adapter (MTA) MIB: PKTC-MTA-MIB
- PacketCable Signaling MIB: PKTC-SIG-MIB
- PacketCable Event Management: MIB: PKTC-SP-EVEMIB
- PacketCable Security Specification: PKT-SP-SEC
- PacketCable Electronic Surveillance Specification: PKT-SP-ESP
- PacketCable Provisioning, Activation, Configuration and Management: PKT-SP-PACM

The CableLabs Definition MIB Specification follows the Internet Standard Management Framework described in IETF RFC 3410 [3]. The CableLabs Definition MIB module also imports its X.509 textual convention from IETF RFC 2578 [1] and RFC 4131 [2].

2.1 Normative References

[1] IETF RFC 2578, Structure of Management Information Version 2 (SMIv2), April 1999.

[2] IETF RFC 4131, Management Information Base for Data Over Cable Service Interface Specification (DOCSIS) Cable Modems and Cable Modem Termination Systems for Baseline Privacy Plus, September 2005.

2.2 Informative References

[3] IETF RFC 3410, Introduction and Applicability Statements for Internet Standard Management Framework, December 2002.

2.3 Reference Acquisition

CableLabs Specifications:

- Cable Television Laboratories, Inc., 858 Coal Creek Circle, Louisville, CO 80027; Phone +1-303-661-9100; Fax +1-303-661-9199; http://www.cablelabs.com.

IETF Specifications:

- IETF Secretariat, 46000 Center Oak Plaza, Sterling, VA 20166, Phone: +1-571-434-3500, Fax: +1-571-434-3535; http://www.ietf.org.

3   ACRONYMS

This specification uses the following acronyms:

BSoD	Business Services over DOCSIS
CA	Certificate Authority
CM	Cable Modem
CMS	Call Management Server
CMTS	Cable Modem Termination System
CPE	Customer Premises Equipment
CVC	Code Verification Certificate
DER	Distinguished Encoding Rules
DEPI	Downstream External PHY Interface
DOCSIS	Data-Over-Cable Service Interface Specification
DSID	Downstream Service Identifier
DTI	DOCSIS Timing Interface
eDOCSIS	Embedded DOCSIS
eSAFE	Embedded Service/Application Functional Entity
IETF	Internet Engineering Task Force
KDC	Key Distribution Center
L2VPN	Layer 2 Virtual Private Network
M-CMTS	Modular Cable Modem Termination System
MIB	Management Information Base
OID	Object Identifier
OSSI	Operations Support System Interface
PS	Portal Services
PW	Pseudo Wire
QoS	Quality of Service
RFI	Radio Frequency Interface
SLED	Software Loopback for eDOCSIS
TDM	Time Division Multiplexing
TEA	TDM Emulation Adapter
X509	ITU-T Recommendation X.509: Information Technology – Open Systems Interconnection – The Directory: Authentication Framework

4   REQUIREMENTS

The CableLabs Definition MIB MUST be implemented as defined below.

```
CLAB-DEF-MIB DEFINITIONS ::= BEGIN
IMPORTS
    MODULE-IDENTITY,
    OBJECT-TYPE,
    enterprises
                    FROM SNMPv2-SMI          -- RFC 2578
    TEXTUAL-CONVENTION
                    FROM SNMPv2-TC           -- RFC 2579
    DocsX509ASN1DEREncodedCertificate
                    FROM DOCS-IETF-BPI2-MIB; -- RFC 4131


cableLabs MODULE-IDENTITY
    LAST-UPDATED "200803060000Z" -- March 6, 2008
    ORGANIZATION "Cable Television Laboratories, Inc."
    CONTACT-INFO
            "Postal: Cable Television Laboratories
                    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 defines the namespace organization for the
            CableLabs enterprise OID registry.

            Copyright 1999-2008 Cable Television Laboratories, Inc.
            All rights reserved."
    REVISION "200803060000Z" -- March 6, 2008
    DESCRIPTION
            "Revised Version includes ECN MIB-CLABDEF-N-07.0032-4 and
            published as CL-SP-MIB-CLABDEF-I07."
    REVISION "200701191700Z" -- January 19, 2007
    DESCRIPTION
            "This revision published as CL-SP-MIB-CLABDEF-I06."
     REVISION "200504081700Z" -- April 8, 2005
    DESCRIPTION
            "This revision published as CL-SP-MIB-CLABDEF-I05."
    ::= { enterprises 4491 }

-- Sub-tree for Registrations
clabFunction           OBJECT IDENTIFIER ::= { cableLabs 1 }
clabFuncMib2           OBJECT IDENTIFIER ::= { clabFunction 1 }
clabFuncProprietary    OBJECT IDENTIFIER ::= { clabFunction 2 }

-- Sub-tree for Project Definitions
clabProject            OBJECT IDENTIFIER ::= { cableLabs 2 }
clabProjDocsis         OBJECT IDENTIFIER ::= { clabProject 1 }
clabProjPacketCable    OBJECT IDENTIFIER ::= { clabProject 2 }
clabProjOpenCable      OBJECT IDENTIFIER ::= { clabProject 3 }
clabProjCableHome      OBJECT IDENTIFIER ::= { clabProject 4 }
```

```
-- Sub-tree for Global Security Definitions
clabSecurity              OBJECT IDENTIFIER ::= { cableLabs 3 }
clabSecCertObject         OBJECT IDENTIFIER ::= { clabSecurity 1 }

-- Sub tree for CableLabs cross project common MIB definitions
clabCommonMibs            OBJECT IDENTIFIER ::= { cableLabs 4 }


--
-- CableLabs DOCSIS Project Sub-tree Definitions
--


--
-- CableLabs CableHome Project Sub-tree Definitions
--


--
-- CableLabs PacketCable Project Sub-tree Definitions
--

pktcSecurity OBJECT IDENTIFIER
    -- CableLabs OID reserved for security and used to specify errors
    -- that can be returned for the Kerberos KDC - Provisioning
    -- Server interface, or the MTA-CMS Kerberized IPsec interface, or
    -- the MTA-Provisioning Server Kerberized SNMPv3 interface.
    -- CableLabs PacketCable Security Specification
    ::= { clabProjPacketCable 4 }

pktcLawfulIntercept OBJECT IDENTIFIER
    -- CableLabs OID reserved for the PacketCable Electronic
    -- Surveillance Protocol (PCESP) between the Delivery Function
    -- and Collection Function. This OID is used to define the ASN.1
    -- PCESP messages.
    -- CableLabs PacketCable Electronic Surveillance Protocol
    -- Specification
    ::= { clabProjPacketCable 5 }

--
-- Sub-tree for PacketCable MIB Enhancements
--

pktcEnhancements OBJECT IDENTIFIER ::= { clabProjPacketCable 6 }

-- Subtree for the incorporation of new MIB Modules
-- (MIB enhancements) proposed to the PacketCable MIB modules.
-- This includes new MIB objects being introduced
-- as part of the PacketCable MIB enhancement efforts
-- and as a place holder for future revisions.
-- This sub-division would facilitate easier incorporation
-- of proposed IETF Internet-Drafts and RFCs by keeping enhancements
-- independent of RFC or Internet-Draft changes.
-- For new MIB tables that use previously used indices, it is
-- recommended that the AUGMENT CLAUSE be used to aid SNMP Operations,
-- as deemed necessary.

pktcPACMMibs OBJECT IDENTIFIER
     -- PacketCable MIB module defining the basic MIB
```

```
    -- Objects related to Provisioning, Activation,
    -- Configuration and Management (PACM)
    -- Reference:
    -- CableLabs PacketCable PACM Specification.
    ::= { clabProjPacketCable 7 }

pktcApplicationMibs OBJECT IDENTIFIER
    -- PacketCable MIB module defining the basic MIB
    -- Objects related to Service specific definitions
    -- Reference:
    -- CableLabs PacketCable Service specifications
    ::= { clabProjPacketCable 8 }

pktcSupportMibs OBJECT IDENTIFIER
    -- PacketCable MIB module defining the basic MIB
    -- Objects related to service support definitions,
    -- (independent of PACM or service specific definitions)
    -- Reference:
    -- CableLabs PacketCable specifications
    ::= { clabProjPacketCable 9 }

pktcEUEMibs OBJECT IDENTIFIER
    -- PacketCable MIB module defining the basic MIB
    -- Objects related to PacketCable E-UE
    -- Provisioning.
    -- Reference:
    -- CableLabs PacketCable E-UE Provisioning
    -- Framework specification
    ::= { clabProjPacketCable 10 }

--
-- PacketCable PACM sub-tree
--

pktcPACMTC OBJECT IDENTIFIER
    -- PacketCable MIB module defining PacketCable
    -- textual conventions for describing PacketCable
    -- PACM MIB objects.
    -- Reference
    -- CableLabs PacketCable Provisioning, Activation,
    -- Configuration and Management specification
    ::= { pktcPACMMibs 1 }

pktcPACMUEMib OBJECT IDENTIFIER
    -- PacketCable MIB module defining PacketCable
    -- PACM MIB Objects related to User Equipment.
    -- Reference
    -- CableLabs PacketCable Provisioning, Activation,
    -- Configuration and Management specification
    ::= { pktcPACMMibs 2 }

pktcPACMUserMib OBJECT IDENTIFIER
    -- PacketCable MIB module defining PacketCable
    -- PACM MIB Objects related to Users.
    -- Reference
    -- CableLabs PacketCable Provisioning, Activation,
    -- Configuration and Management specification
```

```
    ::= { pktcPACMMibs 3 }


--
-- PacketCable Service support sub-tree
--

pktcESSupportMibs OBJECT IDENTIFIER
    -- PacketCable MIB module defining PacketCable
    -- Electronic Surveillance (ES) support MIB Objects.
    -- Reference
    -- CableLabs PacketCable Electronic Surveillance
    -- specification
    ::= { pktcSupportMibs 1 }


--
-- PacketCable EUE sub-tree
--

pktcEUEDeviceMibs OBJECT IDENTIFIER
    -- PacketCable MIB module defining PacketCable
    -- E-UE configuration MIB Objects for specific
    -- E-UE types, such as the E-DVA.
    -- Reference
    -- CableLabs PacketCable E-UE Provisioning
    -- Framework specification
    ::= { pktcEUEMibs 1 }


--
-- CableLabs OpenCable Project Sub-tree Definitions
--


--
-- Definition of CableLabs Security Certificate Objects
--

clabSrvcPrvdrRootCACert OBJECT-TYPE
    SYNTAX      DocsX509ASN1DEREncodedCertificate
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
            "The X509 DER-encoded CableLabs Service Provider Root CA
            Certificate."
    REFERENCE
            "CableLabs CableHome Specification;
            CableLabs PacketCable Security Specification."
    ::= { clabSecCertObject 1 }

clabCVCRootCACert OBJECT-TYPE
    SYNTAX      DocsX509ASN1DEREncodedCertificate
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
            "The X509 DER-encoded CableLabs CVC Root CA Certificate."
    REFERENCE
            "CableLabs CableHome Specification;
            CableLabs PacketCable Security Specification."
    ::= { clabSecCertObject 2 }
```

```
clabCVCCACert OBJECT-TYPE
    SYNTAX      DocsX509ASN1DEREncodedCertificate
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
            "The X509 DER-encoded CableLabs CVC CA Certificate."
    REFERENCE
            "CableLabs CableHome Specification;
            CableLabs PacketCable Security Specification."
    ::= { clabSecCertObject 3 }

clabMfgCVCCert OBJECT-TYPE
    SYNTAX      DocsX509ASN1DEREncodedCertificate
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
            "The X509 DER-encoded Manufacturer CVC Certificate."
    REFERENCE
            "CableLabs CableHome Specification;
            CableLabs PacketCable Security Specification."
    ::= { clabSecCertObject 4 }

clabMfgCACert OBJECT-TYPE
    SYNTAX      DocsX509ASN1DEREncodedCertificate
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
            "The X509 DER-encoded Manufacturer CA Certificate."
    REFERENCE
            "CableLabs CableHome Specification;
            CableLabs PacketCable Security Specification."
    ::= { clabSecCertObject 5 }

--
-- CableLabs cross project common MIB sub-tree definitions
--

clabUpsMib OBJECT IDENTIFIER
    -- CableLabs cross project MIB module defining the basic management
    -- objects for the configuration and monitoring of the battery
    -- backup and UPS functionality for CableLabs compliant devices.
    ::= { clabCommonMibs 1 }

clabTopoMib OBJECT IDENTIFIER
    -- This CableLabs cross project MIB module provides
    -- management objects for the management of fiber
    -- nodes in the Cable plant
    -- Reference:
    -- CableLabs DOCSIS 3.0 OSSI Specification.
    ::= { clabCommonMibs 2 }

--
-- Textual Conventions
--

--
```

```
-- DOCSIS Defined Textual Conventions
--

DocsL2vpnIfList ::= TEXTUAL-CONVENTION
     STATUS       current
     DESCRIPTION
             "A object of this type indicates a set of CM
             MAC bridge interfaces, encoded as a BITS syntax with a ?1?
             Bit for each interface included in the set.

             Bit position eCM(0) represents a conceptual interface to
             the internal 'self' host MAC of the eCM itself. All other
             bit positions K correspond to CM MAC bridge port interface
             index with ifIndex value K.

             A BITS object is encoded as an OCTET STRING, which may have
             length zero. Bit position 0 is encoded in the most
             significant bit of the first octet, proceeding to
             bit position 7 in the least significant bit. Bit position 8
             is encoded in the most significant bit of the second octet,
             and so on.

             In a CM, ifIndex value 1 corresponds to the primary CPE
             interface. In CableHome devices, this interface is assigned
             to the embedded Portal Services (ePS) host interface, which
             provides a portal to the primary physical CPE interface.
             In many contexts of a DocsL2VpnIfList, a '1' in bit
             position 1 corresponds to 'any' or 'all' CPE interfaces
             when the CM contains more than one CPE interface.

             ifIndex value 2 corresponds to the docsCableMacLayer
             RF MAC interface.

             ifIndex values 3 and 4 correspond to the
             docsCableDownstream and docsCableUpstream interfaces,
             respectively, which are not separate MAC bridge port
             interfaces. Bit positions 3 and 4 are unused in this type;
             they must be saved and reported as configured, but
             otherwise ignored.

             ifIndex values 5 through 15 are reserved for individual
             CPE interfaces for devices that implement more than one
             CPE interface. In such devices, DocsL2vpnIfList bit
             position 1 corresponds to the set of all CPE interfaces.
             A CM with more than one CPE interface MAY assign a
             DocsL2vpnIfList bit position within the range of 5..15 to
             refer to the single primary CPE interface.

             ifIndex value 16 is assigned to any embedded Multimedia
             Terminal Adapter (eMTA) as defined by PacketCable.

             ifIndex value 17 is assigned to the IP management host
             interface of an embedded Set Top Box (eSTB). ifIndex value
             18 is reserved for the DOCSIS Set-top Gateway (DSG) traffic
             delivered to an eSTB.

             ifIndex values 19 through 31 are
```

```
            reserved for future defined embedded Service Application."
    SYNTAX      BITS {
        eCm(0),
        cmci(1),
        docsCableMacLayer(2),
        docsCableDownstream(3),
        docsCableUpstream(4),
        -- 5..15 reserved for other CPE interfaces
        eMta(16),
        eStbIp(17),
        eStbDsg(18)
        -- 19..31 reserved for other eSAFE interfaces
    }


END
```

Appendix I Revision History

The following Engineering Change Notices were incorporated into CL-SP-MIB-CLABDEF-I02-020920:

ECN	ECN Date	Summary
CH1-N-02016	7/25/02	Add a new branch into the CLABDEF MIB for CableLabs Security for CableLabs certificates.

The following Engineering Change Notices were incorporated into CL-SP-MIB-CLABDEF-I03-040113:

ECN	ECN Date	Summary
MIB-CLABDEF-N-03.0017-3	1/8/04	Clear SMICng compilation errors and properly register some OID branches. Addition of new TC for X509 certificates.

The following Engineering Change Notices were incorporated into CL-SP-MIB-CLABDEF-I04-040804:

ECN	ECN Date	Summary
MIB-CLABDEF-N-04.0018-3	7/14/04	Add OBJECT IDENTITY place holder for DOCS-LOADBALANCING-MIB. Add Object Entity for CableHome CSA. Updated docsLoadBalMib definition. Add dsgifMib, eSafe branch, typo corrections, add clabMfgCACert MIB object

The following Engineering Change Notices were incorporated into CL-SP-MIB-CLABDEF-I05-050408:

ECN	ECN Date	Summary
MIB-CLABDEF-N-04.0019-4	2/22/05	Addition of PacketCable MIB Extensions
MIB-CLABDEF-N-05.0020-1	3/23/05	New Object Identifiers for CLAB-DEF-MIB MIB Module

The following Engineering Change Notices were incorporated into CL-SP-MIB-CLABDEF-I06-070119:

ECN	ECN Date	Summary
MIB-CLABDEF-N-06.0021-1	3/27/2006	Incorporation of the PacketCable 2.0 sub-tree (the contents of this ECN were not incorporated, as it was superseded by the following ECN).
MIB-CLABDEF-N-06.0023-2	11/1/2006	Correction to MIB-CLABDEF-N-04.0021-1
MIB-CLABDEF-N-06.0024-4	1/17/2007	Updates to CLAB-DEF-MIB for M-CMTS and DOCSIS OSSIv3.0 MIB Module OID.
MIB-CLABDEF-N-07.0025-1	1/18/07	Editorial corrections and clarification of references.

The following Engineering Change Notices were incorporated into CL-SP-MIB-CLABDEF-I07-080306:

ECN	ECN Date	Summary
MIB-CLABDEF-N-07.0032-4	10/31/2007	Addition of new PacketCable subtrees
MIB-CLABDEF-N-07.0034-2	11/28/2007	CLAB-DEF-MIB New Structure