

Superseded

CableHome™ CAP MIB Specification

CH-SP-MIB-CAP-I03-030411

Issued

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

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1 SCOPE

This specification describes CableHome Addressing Portal (CAP) MIB requirements.

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] CableHome 1.0 Specification, CH-SP-I04-030411, April 11, 2003.

2.2 Informative Reference

There are no informative references required for this document.

2.3 Reference Acquisition

CableLabs Specifications:

- Cable Television Laboratories, Inc., <http://www.cablelabs.com/>

3 ACRONYMS

This specification uses the following acronyms:

CAP	CableHome Addressing Portal
CDC	CableHome DHCP Client (component of CDP)
CDP	CableHome DHCP Portal
CDS	CableHome DHCP Server (component of CDP)
CMP	CableHome Management Portal
CTP	CableHome Test Portal
DHCP	Dynamic Host Configuration Protocol
NAPT	Network Address and Port Translation
NAT	Network Address Translation
PS	Portal Services

4 REQUIREMENTS

The CableHome™ CAP MIB MUST be implemented as defined below.

```

CABH-CAP-MIB DEFINITIONS ::= BEGIN
IMPORTS
    MODULE-IDENTITY,
    OBJECT-TYPE,
    Unsigned32          FROM SNMPv2-SMI
    TEXTUAL-CONVENTION,
    TruthValue,
    RowStatus,
    PhysAddress          FROM SNMPv2-TC
    OBJECT-GROUP,
    MODULE-COMPLIANCE  FROM SNMPv2-CONF
    InetAddressType,
    InetAddress,
    InetPortNumber      FROM INET-ADDRESS-MIB
    clabProjCableHome   FROM CLAB-DEF-MIB;

-----
--
--      History:
--
--      Date          Modified by   Reason
--      04/05/02      Issued I01
--      09/20/02      Issued I02
--      04/11/03      Issued I03
--
-----

cabhCapMib MODULE-IDENTITY
    LAST-UPDATED      "200304110000Z" --April 11, 2003
    ORGANIZATION      "CableLabs Broadband Access Department"
    CONTACT-INFO
        "Kevin Luehrs
        Postal: Cable Television Laboratories, Inc.
              400 Centennial Parkway
              Louisville, Colorado 80027-1266
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        Phone:  +1 303-661-9100
        Fax:    +1 303-661-9199
        E-mail: k.luehrs@cablelabs.com"
    DESCRIPTION
        "This MIB module supplies the basic management objects
        for the CableHome Addressing Portal (CAP) portion of
        the PS database.

        Acknowledgements:
        Roy Spitzer      -   Consultant to CableLabs
        Mike Mannette    -   Consultant to Cable Labs
        Randy Dunton     -   Intel
        Dmitrii Loukianov -   Intel
        Itay Sherman     -   Texas Instruments
        Chris Zacker     -   Broadcom
        Rick Vetter      -   Consultant to Cable Labs
        John Bevilacqua  -   YAS"
    ::= { clabProjCableHome 3 }

-- Textual conventions

```

```

CabhCapPacketMode ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        "The data type established when
        a binding/mapping is established."
    SYNTAX INTEGER {
        napt          (1),  -- NAT with port translation
        nat           (2),  -- Basic NAT
        passthrough  (3)   -- Pass Through External Address
    }

cabhCapObjects      OBJECT IDENTIFIER ::= { cabhCapMib 1 }
cabhCapBase         OBJECT IDENTIFIER ::= { cabhCapObjects 1 }
cabhCapMap          OBJECT IDENTIFIER ::= { cabhCapObjects 2 }

=====
--
--      General CAP Parameters
--
=====

cabhCapTcpTimeWait OBJECT-TYPE
    SYNTAX Unsigned32
    UNITS "seconds"
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "This object is the maximum inactivity time to wait before assuming
        TCP session is terminated. It has no relation to the TCP session
        TIME_WAIT state referred to in [RFC793]"
    DEFVAL { 300 }
    ::= { cabhCapBase 1 }

cabhCapUdpTimeWait OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "seconds"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The inactivity time to wait before destroying
        CAP mappings for UDP."
    DEFVAL { 300 } -- 5 minutes
    ::= { cabhCapBase 2 }

cabhCapIcmpTimeWait OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "seconds"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The inactivity time to wait before destroying
        CAP mappings for ICMP."
    DEFVAL { 300 } -- 5 minutes
    ::= { cabhCapBase 3 }

cabhCapPrimaryMode OBJECT-TYPE
    SYNTAX      CabhCapPacketMode
    MAX-ACCESS  read-write

```

```

STATUS      current
DESCRIPTION
"The Primary Packet Handling Mode to be used."
DEFVAL { napt }
 ::= { cabhCapBase 4 }

cabhCapSetToFactory OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
"Reading this object always returns false(2). When the
 cabhCapSetToFactory object is set to true(1), the PS must
 take the following actions:

1.   Clear all entries in the cabhCapMappingTable and
 cabhCapPassthroughTable.
2.   Reset the following objects to their factory default values:
      cabhCapTcpTimeWait,
      cabhCapUdpTimeWait,
      cabhCapIcmpTimeWait,
      cabhCapPrimaryMode"

 ::= { cabhCapBase 5 }

=====
--
--   cabhCapMappingTable (CAP Mapping Table)
--
--   The cabhCapMappingTable contains the info for all CAP mappings.
--
=====

cabhCapMappingTable OBJECT-TYPE
SYNTAX      SEQUENCE OF CabhCapMappingEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table contains IP address mappings between private network
addresses, or network addresses and port numbers/ICMP sequence numbers,
assigned to devices on the subscriber's home LAN, and network
addresses, or network addresses and port numbers/ICMP sequence number,
assigned by the cable operator, presumed to be on a separate subnetwork
than the private IP addresses. The CAP Mapping Table is used by the
CableHome Address Portal (CAP) function of the PS to make packet
forwarding decisions."
 ::= { cabhCapMap 1 }

cabhCapMappingEntry OBJECT-TYPE
SYNTAX      CabhCapMappingEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"List of the private IP (LAN) address - to - cable operator
 assigned IP (WAN) address mappings stored in the PS and
 used by the PS to make packet forwarding decisions."
INDEX { cabhCapMappingIndex }
 ::= { cabhCapMappingTable 1 }

CabhCapMappingEntry ::= SEQUENCE {
 cabhCapMappingIndex      INTEGER,
 cabhCapMappingWanAddrType  InetAddressType,
 cabhCapMappingWanAddr     InetAddress,

```

```

    cabhCapMappingWanPort          InetPortNumber,
    cabhCapMappingLanAddrType     InetAddressType,
    cabhCapMappingLanAddr        InetAddress,
    cabhCapMappingLanPort        InetPortNumber,
    cabhCapMappingMethod         INTEGER,
    cabhCapMappingProtocol       INTEGER,
    cabhCapMappingRowStatus      RowStatus
}

cabhCapMappingIndex OBJECT-TYPE
    SYNTAX          INTEGER (1..65535)
    MAX-ACCESS     not-accessible
    STATUS         current
    DESCRIPTION
        "The Index into the CAP Mapping Table."
    ::= { cabhCapMappingEntry 1 }

cabhCapMappingWanAddrType OBJECT-TYPE
    SYNTAX          InetAddressType
    MAX-ACCESS     read-create
    STATUS         current
    DESCRIPTION
        "The IP address type assigned on the WAN side"
    DEFVAL { ipv4 }
    ::= { cabhCapMappingEntry 2 }

cabhCapMappingWanAddr OBJECT-TYPE
    SYNTAX          InetAddress
    MAX-ACCESS     read-create
    STATUS         current
    DESCRIPTION
        "The IP address assigned by the cable operator's address (DHCP)
        server, and comprising the WAN-side IP address of the CAP
        Mapping tuple. This object is populated either dynamically by
        LAN-to-WAN outbound traffic or statically by the cable operator."
    ::= { cabhCapMappingEntry 3 }

cabhCapMappingWanPort OBJECT-TYPE
    SYNTAX          InetPortNumber
    MAX-ACCESS     read-create
    STATUS         current
    DESCRIPTION
        "The TCP/UDP port number or ICMP sequence number on the WAN
        side. A port number of 0 indicates a NAT mapping. A
        non-zero port number indicates an NAPT mapping."
    DEFVAL { 0 }
    ::= { cabhCapMappingEntry 4 }

cabhCapMappingLanAddrType OBJECT-TYPE
    SYNTAX          InetAddressType
    MAX-ACCESS     read-create
    STATUS         current
    DESCRIPTION
        "The IP address type assigned on the LAN side."
    DEFVAL { ipv4 }
    ::= { cabhCapMappingEntry 5 }

cabhCapMappingLanAddr OBJECT-TYPE
    SYNTAX          InetAddress
    MAX-ACCESS     read-create
    STATUS         current
    DESCRIPTION
        "The IP address assigned by the DHCP server function of the

```

```

    PS (CableHome DHCP Server, CDS), and comprising the
    LAN-side IP address of the CAP Mapping tuple.
    This object is populated either dynamically as a result of LAN
    -to-WAN outbound traffic or statically by the cable operator."
 ::= { cabhCapMappingEntry 6 }

cabhCapMappingLanPort OBJECT-TYPE
    SYNTAX      InetPortNumber
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The TCP/UDP port number or ICMP sequence number on the LAN
        side. A port number/sequence number of 0 indicates a NAT mapping.
        A non-zero port number/sequence number indicates an NAPT mapping."
    DEFVAL { 0 }
 ::= { cabhCapMappingEntry 7 }

cabhCapMappingMethod OBJECT-TYPE
    SYNTAX      INTEGER {
        static      (1),
        dynamic     (2)
    }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Indicates how this mapping was created. Static means that it
        was provisioned, and dynamic means that it was handled by the
        PS itself."
 ::= { cabhCapMappingEntry 8 }

cabhCapMappingProtocol OBJECT-TYPE
    SYNTAX      INTEGER {
        other       (1),  -- any other protocol; e.g. IGMP
        icmp        (2),
        udp         (3),
        tcp         (4)
    }
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The protocol for this mapping."
 ::= { cabhCapMappingEntry 9 }

cabhCapMappingRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The RowStatus interlock for the creation and deletion of a
        cabhCapMappingTable entry. Changing the value of the IP
        address or port number columns of the CAP Mapping Table may
        have an effect on active traffic, so the PS will prevent modification
        of this table's columns and return an inconsistentValue error when
        cabhCapMappingRowStatus object is active(1). The PS must not allow
        RowStatus to be set to notInService(2) by a manager. A newly created
        row cannot be set to active(1) until the corresponding instances of
        cabhCapMappingWanAddrType, cabhCapMappingWanAddr,
        cabhCapMappingLanAddrType, cabhCapMappingLanAddr, and
        cabhCapMappingProtocol have been set. If Primary Packet-handling
        Mode is NAPT (cabhCapPrimaryMode is napt(1)), a newly created row
        can not be set to active(1) until a non-zero value of
        cabhCapMappingWanPort and cabhCapMappingLanPort have been set.
        If Primary Packet-handling Mode is NAT (cabhCapPrimaryMode is nat(2)),

```

a newly created row can not be set to active(1) if a non-zero value of cabhCapMappingWanPort and cabhCapMappingLanPort have been set."

```
::={ cabhCapMappingEntry 10 }
```

```
=====
--
-- cabhCapPassthroughTable (CAP Passthrough Table)
--
-- The cabhCapPassthroughTable contains the MAC Addresses for all
-- LAN-IP Devices which will be configured as passthrough.
--
=====
```

```
cabhCapPassthroughTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF CabhCapPassthroughEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table contains MAC addresses for LAN-IP Devices which are
        configured as passthrough mode."
    ::= { cabhCapMap 2 }
```

```
cabhCapPassthroughEntry OBJECT-TYPE
    SYNTAX      CabhCapPassthroughEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "List of hardware addresses of LAN IP Devices which are configured
        for passthrough mode."
    INDEX {cabhCapPassthroughIndex}
    ::= { cabhCapPassthroughTable 1 }
```

```
CabhCapPassthroughEntry ::= SEQUENCE {
    cabhCapPassthroughIndex      INTEGER,
    cabhCapPassthroughMacAddr    PhysAddress,
    cabhCapPassthroughRowStatus  RowStatus
}
```

```
cabhCapPassthroughIndex OBJECT-TYPE
    SYNTAX      INTEGER (1..65535)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The index into the CAP Passthrough Table."
    ::= { cabhCapPassthroughEntry 1 }
```

```
cabhCapPassthroughMacAddr OBJECT-TYPE
    SYNTAX      PhysAddress
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Hardware address of the LAN-IP Device to be configured as
        passthrough mode."
    ::= { cabhCapPassthroughEntry 2 }
```

```
cabhCapPassthroughRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The RowStatus interlock for the creation and deletion
        of a cabhCapPassthroughTable entry. Any writable object in each
        row can be modified at any time while the row is active(1)."
```

```
 ::= { cabhCapPassthroughEntry 3 }
--
-- notification group is for future extension.
--

cabhCapNotification OBJECT IDENTIFIER ::= { cabhCapMib 2 0 }
cabhCapConformance OBJECT IDENTIFIER ::= { cabhCapMib 3 }
cabhCapCompliances OBJECT IDENTIFIER ::= { cabhCapConformance 1 }
cabhCapGroups OBJECT IDENTIFIER ::= { cabhCapConformance 2 }

--
-- Notification Group
--

-- compliance statements

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

-- unconditionally mandatory groups

MANDATORY-GROUPS {
    cabhCapGroup
}

 ::= { cabhCapCompliances 1 }

cabhCapGroup OBJECT-GROUP
    OBJECTS {
        cabhCapTcpTimeWait,
        cabhCapUdpTimeWait,
        cabhCapIcmpTimeWait,
        cabhCapPrimaryMode,
        cabhCapSetToFactory,
        cabhCapMappingWanAddrType,
        cabhCapMappingWanAddr,
        cabhCapMappingWanPort,
        cabhCapMappingLanAddrType,
        cabhCapMappingLanAddr,
        cabhCapMappingLanPort,
        cabhCapMappingMethod,
        cabhCapMappingProtocol,
        cabhCapMappingRowStatus,
        cabhCapPassthroughMacAddr,
        cabhCapPassthroughRowStatus
    }
    STATUS current
    DESCRIPTION
        "Group of objects for CableHome CAP MIB."
 ::= { cabhCapGroups 1 }

END
```

Appendix I Revision History

The following Engineering Change Notices were incorporated into CH-SP-MIB-CAP-I02-020920:

ECN Number	ECN Date	Summary
CH1-N-02007	6/20/02	Modify the default values of the CAP Mapping Table timeout values for UDP, TCP, and ICMP protocols
CH1-N-02011	6/20/02	Eight technical/editorial changes, see ECR for detailed description
CH1-N-02017	8/15/02	Four technical/editorial changes, see ECR for detailed description
CH1-N-02019	8/15/02	Four technical/editorial changes, see ECR for detailed description

The following Engineering Change Notices were incorporated into CH-SP-MIB-CAP-I03-030411:

ECN Number	ECN Date	Summary
CH1-N-02054	1/23/03	Provide more descriptive text in the CAP MIB for various tables and for Row Status of various tables
CH1-N-03014	3/13/03	Clarify description of the cabhCapSetToFactory mib object.