

IPDCN
Internet Draft
Document: [draft-ietf-ipcdn-dvbdev-mib-00.txt](#)
Category: Informational

J.M.Pedersen
Cisco Systems
Feb 2001

DVB Cable Interactive Network Adapter Device MIB

Status of this Memo

This document is an Internet-Draft and is in full conformance with all provisions of [Section 10 of RFC2026](#) [[RFC2026](#)].

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF), its areas, and its working groups. Note that other groups may also distribute working documents as Internet-Drafts. Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet- Drafts as reference material or to cite them other than as "work in progress."

The list of current Internet-Drafts can be accessed at <http://www.ietf.org/ietf/1id-abstracts.txt>

The list of Internet-Draft Shadow Directories can be accessed at <http://www.ietf.org/shadow.html>.

1. 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 SNMP-based management of a DVB Interactive Network Adapter device.

The DVB interaction channel for Cable TV distribution systems are specified in the ES 200 800 [[ES200800](#)]

This memo specifies a MIB module in a manner that is compliant to the SNMP SMIV2 [[RFC2578](#)][[RFC2579](#)][[RFC2580](#)]. The set of objects is consistent with the SNMP framework and existing SNMP standards.

This memo is a product of the DVB RCCL workgroup, which has been adopted as a work item of the IPCDN WG. Comments are solicited and should be addressed to the author.

2. The SNMP Management Framework

The SNMP Management Framework presently consists of five major components:

- o An overall architecture, described in [RFC 2571](#) [[RFC2571](#)].

Pedersen	Informational - Expires August 2001	1
	DVB Cable INA Device MIB	Feb 2001

- o Mechanisms for describing and naming objects and events for the purpose of management. The first version of this Structure of Management Information (SMI) is called SMIV1 and described in STD 16, [RFC 1155](#) [[RFC1155](#)], STD 16, [RFC 1212](#) [[RFC1212](#)] and [RFC 1215](#) [[RFC1215](#)]. The second version, called SMIV2, is described in STD 58, [RFC 2578](#) [[RFC2578](#)], STD 58, [RFC 2579](#) [[RFC2579](#)] and STD 58, [RFC 2580](#) [[RFC2580](#)].
- o Message protocols for transferring management information. The first version of the SNMP message protocol is called SNMPv1 and described in STD 15, [RFC 1157](#) [[RFC1157](#)]. A second version of the SNMP message protocol, which is not an Internet standards track protocol, is called SNMPv2c and described in [RFC 1901](#) [[RFC1901](#)] and [RFC 1906](#) [[RFC1906](#)]. The third version of the message protocol is called SNMPv3 and described in [RFC 1906](#) [[RFC1906](#)], [RFC 2572](#) [[RFC2572](#)] and [RFC 2574](#) [[RFC2574](#)].
- o Protocol operations for accessing management information. The first set of protocol operations and associated PDU formats is described in STD 15, [RFC 1157](#) [[RFC1157](#)]. A second set of protocol operations and associated PDU formats is described in [RFC 1905](#) [[RFC1905](#)].
- o A set of fundamental applications described in [RFC 2573](#) [[RFC2573](#)] and the view-based access control mechanism described in [RFC 2575](#) [[RFC2575](#)].

A more detailed introduction to the current SNMP Management Framework can be found in [RFC 2570](#) [[RFC2570](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the mechanisms defined in the SMI.

This memo specifies a MIB module that is compliant to the SMIV2. A MIB conforming to the SMIV1 can be produced through the appropriate translations. The resulting translated MIB must be semantically equivalent, except where objects or events are omitted because no translation is possible (use of Counter64). Some machine readable information in SMIV2 will be converted into textual descriptions in SMIV1 during the translation process. However, this loss of machine readable information is not considered to change the semantics of the

MIB.

2. Conventions used in this document

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](#)].

Pedersen	Informational - Expires August 2001	2
	DVB Cable INA Device MIB	Feb 2001

3. Glossary

CATV

Originally "Community Antenna TeleVision", Now used to refer to any cable or hybrid fiber and cable system used to deliver video signals to a community.

CPE

Customer Premises Equipment. Equipment connected to the NIU at the customer's premises. Normally one or more PCs.

Downstream

The direction from the head-end towards the subscriber.

DVB

Digital Video Broadcasting. The DVB projects produce open and interoperable global standards for digital audio and video distribution.

Head-end

The origination point in most cable systems of the subscriber video signals. Generally also the location of the INA equipment.

INA

Interactive Network Adapter. This can act as a bridge or router in the cable head-end. It is responsible for controlling the bandwidth available to each NIU.

MAC

Media Access Control. The MAC protocol is the DVB protocol between the INA and the NIU.

NIU

Network Interface Unit. The unit is located at the subscriber premises and provides interactive services via the cable network. The NIU is under the control of the INA, but may request additional

bandwidth/connections when required. The NIU can act as a bridge or router.

RF
Radio Frequency.

Upstream
The direction from the subscriber towards the head-end.

4. Overview

This MIB provides a set of objects required for the management of a DVB INA.

The MIB is intended for devices using IPv4 addresses. All IP addresses are however specified as described in [RFC 2851](#) [[RFC2851](#)] to aid future migration to IPv6.

Pedersen	Informational - Expires August 2001	3
	DVB Cable INA Device MIB	Feb 2001

4.1 Structure of the MIB

The MIB is structured in 9 groups. All groups are optional to implement in order to be compliant. The reason to make all groups optional is that the MIB structure does not fit all INA configurations well - especially integrated router and INA systems.

- o Device group.
- o Network management access group.
- o SW group.
- o DHCP group.
- o Event group.
- o IP Filter group.
- o Ethernet Filter group.
- o NIU Error group.
- o NIU IP group.

4.1.1 Device group

The Device group contains object for general device control for the INA. The version of the MIB is also found here.

4.1.2 Network Management access group

The Network Management access group specifies addresses, password and access rights for management stations that are allowed to access the INA.

4.1.3 SW group

The SW group contain objects for control of up- and download of software to the INA. A table for administration of several software images is found.

4.1.4 DHCP group

The DHCP group contains objects for specification of the DHCP servers used by the INA, the NIUS or the CPE. Both primary and secondary DHCP servers can be specified.

Pedersen	Informational - Expires August 2001	4
	DVB Cable INA Device MIB	Feb 2001

4.1.5 Event group

The Event group contain a syslog server address and object for limiting the number of syslog messages and traps.

Trap throttling can be done with maintainBelowThreshold or stopAtThreshold in which case the management station must reset the threshold state in order to restart the trap sending.

A table that controls the action taken depending on the error severity is found.

Finally controls for an error log is found. The error numbers will be vendor specific.

Traps are not defined in this MIB, but can be vendor specific.

4.1.6 IP Filter group

The IP filter group specifies objects for making an IP filter function.

4.1.6.1 IP Filter rows

The filter can be connected to the MAC interface or any other network interface in inbound, outbound or both directions.

The filter action can be accept, discard or tosmap. Furthermore there

is a continue flag.

When an IP packet enters the filter, the packet is tested against the rows in the filter in increasing order starting with the lowest numbered filter row.

If there is a match and the action is discard, then the packet is discarded no matter what the continue flag is or what other filter rows the packet has matched.

If the action is accept, then the continue flag is tested. If continue is cleared, then the packet is simply accepted and no more filter rows are tested. If the continue flag is set, the packet is tested against the next filter row.

If the action is tosmapi, then the TOS in the IP packet is changed according to the specified row in the TOS map table. If no matching row is found in the TOS map table or if the TOS map index in the filter row is 0, then no TOS mapping is done. Apart from changing the TOS the tosmapi action is treated as the accept action.

If all filter rows have been tested and there has been at least one accept or tosmapi match, the packet is accepted. If there has been no match at all, the packet is discarded. This means that if the filter is enabled at least one filter row that can accept packets must exist in order to let anything at all through.

If the TOS in the IP packet is changed by a TOS map action, then the test in the next filter rows must use the new TOS value.

4.1.6.2 IP Filter operation

The IP filter enable mode can be enable in which case the IP filter works as explained above.

When the IP filter enable mode is set to countHits, the filter works as explained above, except that the IP packets are never discarded, but filter row hits are just counted. If the filter action is discard, then no more rows are tested just as in normal operation.

If the IP filter enable mode is disabled, all packets are let through.

In the enable mode enableAuto, the IP filter works as normal except it is automatically populated with anti-spoofing rows. Each time an IP address is assigned to a NIU or a CPE with DHCP or BOOTP the INA must sniff the assigned IP address and make corresponding filter rows. A filter row on the MAC interface must be set to accept the IP address as source address and another filter row must be set to accept the IP address as destination address. Both filter rows must have the continue flag set and dvbInaIpFilterAssigned by must be

dhcp.

The filter rows are made with the lowest free filter index at the time of creation. This mean that the automatically generated filter rows can be intermixed with the static and management generated ones. To ensure the automatically generated filter rows always is applied first, the management generated rows must start with a sufficiently high filter index.

The automatically generated filter rows do not need to be persistent across an INA restart. If the INA restarts then the a new DHCP or BOOTP request should be send from the NIU or CPE to renew the entries in the IP filter. The automatically generated filter rows should automatically timeout when the DHCP lease times out unless the management system has changed `dvbInaIpFilterAssigned` to static. Automatically created filter rows can only be deleted or changed to static by the management system.

For filter rows created by the management system it should only be possible to set `dvbInaIpFilterAssigned` to snmp.

4.1.7 Ethernet Filter group

The Ethernet filter group specifies objects for making a filter function on the link layer level.

The filter is applied before the IP filter and is only active on the input.

The filter enable mode can be enable, disable or countHits. In the last case filter matches are counted, but all packets are always let through.

When an Ethernet packet enters the filter, the packet is tested against the rows in the filter in increasing order starting with the lowest numbered filter row.

If the packet match the action is checked. If the action is discard, then the packet is discarded. If the action is accept, the packet is accepted. In both cases there is no further testing.

The `dvbInaEthFilterEtherType` specifies the Ethernet encapsulation the filter row applies to. In the case ethernet2 Ethernet version2 framing is matched and the protocol value must match the 2 byte type field with offset 12. In the case snap the IEEE 802.3 SNAP format is matched and the protocol value must match the 2 byte type field with

offset 20. In the case llc the IEEE 802.2 LLC format is matched and the protocol value must match the 1 byte DSAP field with offset 14.

If the packet does not match any filter rows, the packet is let through.

4.1.8 NIU Error group

The NIU error group specifies objects for reading error reports for the recently failed NIUs and for control of the error table.

The error parameter code and error parameter value refers to the values in the Status Response Message specified in ES 200 800 [ES200800]

4.1.9 NIU IP group

The NIU IP group specifies object for control of NIU IP addresses and subnets. Also the addresses of the primary and secondary DHCP server to be used by the NIU can be specified.

Please note that it is compliant to implement all the configuration objects as read-only.

5. Definitions

DVB-CABLE-INA-MIB DEFINITIONS ::= BEGIN

IMPORTS

MODULE-IDENTITY,
OBJECT-TYPE,
Counter32,
Integer32,
Unsigned32,
experimental
FROM SNMPv2-SMI
RowStatus,
DateAndTime,
DisplayString,
TruthValue,
TEXTUAL-CONVENTION,
MacAddress
FROM SNMPv2-TC

Pedersen Informational - Expires August 2001

7

DVB Cable INA Device MIB

Feb 2001

SnmpAdminString
FROM SNMP-FRAMEWORK-MIB

```
InetAddress,
InetAddressType
    FROM INET-ADDRESS-MIB
OBJECT-GROUP,
MODULE-COMPLIANCE
    FROM SNMPv2-CONF
InterfaceIndexOrZero,
InterfaceIndex
    FROM IF-MIB;
```

```
-- Before this MIB will parse it requires a valid SMI subtree
-- For the purposes of parsing the MIB I have put the MIB under the
-- 'experimental' subtree. Strictly this is reserved for MIBs being
-- developed by IETF working groups. xx should be replaced with a
-- numeric value which will not clash with any MIBs local to your
-- organisation and it should only be used for the purpose of
-- testing. If this MIB becomes part of the IETF IPCDN work then
-- the issue of a valid subtree will be resolved, otherwise it is
-- recommended that ECCA obtain an enterprise number from IANA under
-- which this MIB can be placed.
```

```
dvbDevice OBJECT IDENTIFIER ::= { experimental 1 } -- See Above
```

```
dvbIna MODULE-IDENTITY
```

```
LAST-UPDATED      "200101100000Z"

ORGANIZATION      "DVB/DAVIC Interoperability Consortium Technical
                  Working Group"

CONTACT-INFO
    "              Ian Wheelock
    Postal: Com21, Ireland
              4400 Cork Airport Business Park
              Kinsale Road,
              Cork,
              IRELAND

              Tel: +353 2173 05800
              Fax: +353 2143 21972
              E-mail: ianw@com21.com"

DESCRIPTION      "The MIB modules for INAs that
                  conform to the EuroModem specification. This
                  MIB assumes the INA implements MIB-II RFC 1213

                  The original MIB definition work was carried
                  out for the DVB-RC group by
                  Bert Van Willigen
                  Philips Research Laboratory Eindhoven,
                  The Netherlands."
```

REVISION "200101100000Z"

Pedersen

Informational - Expires August 2001

8

DVB Cable INA Device MIB

Feb 2001

DESCRIPTION "Changed all groups to be optional.
jmp@cisco.com"

REVISION "200012210000Z"

DESCRIPTION "Changed TOS map in IP filter.
Correcting errors.
jmp@cisco.com"

REVISION "200011160000Z"

DESCRIPTION "Shortening lines.
Corrections of typing errors.
jmp@cisco.com"

REVISION "200011140000Z"

DESCRIPTION "DHCP table made optional.
Corrections of typing errors."

REVISION "200011080000Z"

DESCRIPTION "New agreement on mandatory groups.
NIU IP table made. Server table and alarm
summary removed."

REVISION "200010020000Z"

DESCRIPTION "Update of Device-MIB to include proper
conformance section and addition of InetAddress
and InetAddressType."

REVISION "200008310000Z"

DESCRIPTION "The original mib organisation that included the
the Device and IF related information in one
large MIB.
Split of the MIB was proposed by the WGT on
the 29 August 2000. This resulted in this
Device-MIB being created."

REVISION "200008190000Z"

DESCRIPTION "The original MIB organisation that included the
Device and IF related information in one large
MIB."

::= {dvbDevice 4}

-- Sub divided dvbIna into MIB Objects and conformance

dvbInaMibObjects OBJECT IDENTIFIER ::= {dvbIna 1}

dvbInaMibConform OBJECT IDENTIFIER ::= {dvbIna 2}

-- Define identifiers under dvbInaMibObjects

```

dvbInaDevice      OBJECT IDENTIFIER ::= {dvbInaMibObjects 1}
dvbInaNmAccess    OBJECT IDENTIFIER ::= {dvbInaMibObjects 2}
dvbInaSw          OBJECT IDENTIFIER ::= {dvbInaMibObjects 3}
dvbInaDhcp        OBJECT IDENTIFIER ::= {dvbInaMibObjects 4}
dvbInaEvent       OBJECT IDENTIFIER ::= {dvbInaMibObjects 5}
dvbInaIpFilter    OBJECT IDENTIFIER ::= {dvbInaMibObjects 6}
dvbInaEthFilter   OBJECT IDENTIFIER ::= {dvbInaMibObjects 7}

```

Pedersen Informational - Expires August 2001 9

DVB Cable INA Device MIB Feb 2001

```

dvbInaNiuError    OBJECT IDENTIFIER ::= {dvbInaMibObjects 8}
dvbInaNiuIp       OBJECT IDENTIFIER ::= {dvbInaMibObjects 9}

```

-- Define identifiers under dvbInaMibConform

```

dvbInaCompliances OBJECT IDENTIFIER ::= {dvbInaMibConform 1}
dvbInaGroups       OBJECT IDENTIFIER ::= {dvbInaMibConform 2}

```

```

-- - - - - -
-- Device group
--
-- The device group provides general information and control of
-- the device.
-- It is a supplement to the MIB-II system group.
-- - - - - -

```

```

dvbInaDeviceDateTime OBJECT-TYPE
    SYNTAX      DateAndTime
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "The date and time, with optional timezone information."
    ::= { dvbInaDevice 1 }

```

```

dvbInaDeviceResetNow OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "Setting this object to true(1) causes the device to reset.
        Reading this object always returns false(2)."
    ::= { dvbInaDevice 2 }

```

```

dvbInaDeviceSerialNumber OBJECT-TYPE
    SYNTAX      DisplayString
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "The manufacturer's serial number for this device."

```

```
::= { dvbInaDevice 3 }
```

dvbInaDeviceUptime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The amount of time since this device was last initialized.
Note that this is different from sysUpTime in MIB-II
because sysUpTime is the uptime of the network management
portion of the device."

```
::= { dvbInaDevice 4 }
```

dvbInaDeviceCurrentState OBJECT-TYPE

SYNTAX INTEGER {

Pedersen Informational - Expires August 2001

10

DVB Cable INA Device MIB

Feb 2001

init (1),
starting (2),
operational (3),
standby (4),
stopping (5),
alarm (6),
dead (7)

}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Current (operational) state of the INA."

```
::= { dvbInaDevice 5 }
```

dvbInaDeviceDesiredState OBJECT-TYPE

SYNTAX INTEGER {

init (1),
operational (3),
standby (4)

}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The desired state of the INA. The following values are
possible: 'Standby(4)' and 'Operational(3)'"

DEFVAL { standby }

```
::= { dvbInaDevice 6 }
```

dvbInaDeviceMibVersion OBJECT-TYPE

SYNTAX DisplayString

MAX-ACCESS read-only

```

STATUS      current
DESCRIPTION
    "This string object specifies the MIB version number of this
      MIB Default is '1.0' "
 ::= { dvbInaDevice 7 }

```

```

dvbInaDeviceDhcpRelaySupport    OBJECT-TYPE

```

```

    SYNTAX      TruthValue
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "Specifies whether the INA support DHCP relay.
         If this parameter is true, the INA support DHCP relay."
 ::= { dvbInaDevice 8 }

```

```

-- -----
--
-- NMS Access Table
--
-- NMS Access Table controls access to the INA by the Network Management
-- Stations (NMSs).
-- Note. Enabling and disabling of trap levels is needed to specify for
-- each manager the individual priority levels of which it is going to

```

```

Pedersen          Informational - Expires August 2001          11

                                DVB Cable INA Device MIB          Feb 2001

```

```

-- receive traps. This is done to reduce the number of traps a manager
-- is going to receive.
--
-- -----

```

```

dvbInaNmAccessTable OBJECT-TYPE

```

```

    SYNTAX      SEQUENCE OF DvbInaNmAccessEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "This table controls access to SNMP objects by network
         management stations. If the table is empty, access
         to SNMP objects is unrestricted."
 ::= { dvbInaNmAccess 1 }

```

```

dvbInaNmAccessEntry OBJECT-TYPE

```

```

    SYNTAX      DvbInaNmAccessEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "Controls access to SNMP objects by a particular network
         management station. For each entry in this table, the
         contents are not readable unless the management station

```

```

        has read-write permission."
INDEX { dvbInaNmAccessIndex }
::= { dvbInaNmAccessTable 1 }

```

```

DvbInaNmAccessEntry ::= SEQUENCE {
    dvbInaNmAccessIndex      Integer32,
    dvbInaNmAccessIpType     InetAddressType,
    dvbInaNmAccessIp         InetAddress,
    dvbInaNmAccessIpMaskType InetAddressType,
    dvbInaNmAccessIpMask     InetAddress,
    dvbInaNmAccessCommunity  DisplayString,
    dvbInaNmAccessControl    INTEGER,
    dvbInaNmAccessInterfaces OCTET STRING,
    dvbInaNmAccessStatus     RowStatus,
    dvbInaNmAccessLevelEnable BITS
}

```

```

dvbInaNmAccessIndex OBJECT-TYPE
    SYNTAX      Integer32 (1..2147483647)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Index used to order the application of access entries."
    ::= { dvbInaNmAccessEntry 1 }

```

```

dvbInaNmAccessIpType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies the format of the IP address"

```

Pedersen	Informational - Expires August 2001	12
	DVB Cable INA Device MIB	Feb 2001

```

::= { dvbInaNmAccessEntry 2 }

```

```

dvbInaNmAccessIp OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The IP address (or subnet) of the network management
        station. The address 255.255.255.255 is defined to mean
        any NMS. If traps are enabled for this entry, then the
        value must be the address of a specific device."
    DEFVAL { 'ffffffff'h }
    ::= { dvbInaNmAccessEntry 3 }

```

```

dvbInaNmAccessIpMaskType OBJECT-TYPE

```

SYNTAX InetAddressType
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "Specifies the format of the IP address"
 ::= { dvbInaNmAccessEntry 4 }

dvbInaNmAccessIpMask OBJECT-TYPE
 SYNTAX InetAddress
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "The IP subnet mask of the network management stations.
 If traps are enabled for this entry, then the value must
 be 255.255.255.255."
 DEFVAL { 'ffffffff'h }
 ::= { dvbInaNmAccessEntry 5 }

dvbInaNmAccessCommunity OBJECT-TYPE
 SYNTAX DisplayString
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "The community string to be matched for access by this
 entry. If set to the null string then any community string
 will match."
 DEFVAL { "public" }
 ::= { dvbInaNmAccessEntry 6 }

dvbInaNmAccessControl OBJECT-TYPE
 SYNTAX INTEGER {
 none(1),
 read(2),
 readWrite(3),
 roWithTraps(4),
 rwWithTraps(5),
 trapsOnly(6)
 }
 MAX-ACCESS read-create

Pedersen Informational - Expires August 2001 13

DVB Cable INA Device MIB Feb 2001

STATUS current
 DESCRIPTION
 "Specifies the type of access allowed to this NMS. Setting
 this object to none(1) causes the table entry to be
 destroyed. Read(2) allows access by 'get' and 'get-next'
 PDUs. ReadWrite(3) allows access by 'set' as well.
 RoWithtraps(4), rwWithTraps(5), and trapsOnly(6)

```

        control distribution of Trap PDUs transmitted by this
        device."
DEFVAL { read }
::= { dvbInaNmAccessEntry 7 }

```

dvbInaNmAccessInterfaces OBJECT-TYPE

```

SYNTAX      OCTET STRING ( SIZE(4) )
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION

```

"Specifies the set of interfaces from which requests from this NMS will be accepted.

Each octet within the value of this object specifies a set of eight interfaces, with the first octet specifying interfaces 1 through 8, the second octet specifying interfaces 9 through 16, etc. Within each octet, the most significant bit represents the lowest numbered interface, and the least significant bit represents the highest numbered interface. Thus, each interface is represented by a single bit within the value of this object. If that bit has a value of '1' then that interface is included in the set.

Note that entries in this table apply only to link-layer interfaces (e.g., Ethernet and CATV MAC). Upstream and downstream channel interfaces must not be specified."

```

::= { dvbInaNmAccessEntry 8 }

```

dvbInaNmAccessStatus OBJECT-TYPE

```

SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION

```

"Controls and reflects the status of rows in this table."

```

::= { dvbInaNmAccessEntry 9 }

```

dvbInaNmAccessLevelEnable OBJECT-TYPE

```

SYNTAX      BITS
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION

```

"Each bit of this 16 bit unsigned object flags whether the manager in question shall receive traps of the associated priority level. Bit 0 specifies whether the manager shall receive traps of level 1, bit 1 of level 2 etc.

Bit 0 is the least significant bit of this object."

```

::= { dvbInaNmAccessEntry 10 }

```

```

-- - - - - -
-- Software Group
--
-- The Software Group controls software upload from and download into
-- the INA using TFTP. This group includes the Software Version Table.
-- The group is optional.
-- - - - - -

```

```

dvbInaSwTftpServerAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "Format of IP address of the Tftp Server"
    ::= { dvbInaSw 1 }

```

```

dvbInaSwTftpServer OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "Cached IP address of the TFTP server for software
        upgrades."
    ::= { dvbInaSw 2 }

```

```

dvbInaSwTftpFilename OBJECT-TYPE
    SYNTAX      DisplayString (SIZE (0..64))
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "File name of file on TFTP server. In the case of a file
        upload, this object contains the filename of the file on
        the TFTP server. In the case of a file download this object
        contains the path and file name of the file to be
        downloaded on the TFTP server."
    ::= { dvbInaSw 3 }

```

```

dvbInaSwFilename OBJECT-TYPE
    SYNTAX      DisplayString (SIZE (0..64))
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "File name of file on INA. In the case of a file upload,
        this object contains the file on the INA to be uploaded.
        In the case of a file download this object contains the
        path and file name of the file on the INA."
    ::= { dvbInaSw 4 }

```

dvbInaSwAdminStatus OBJECT-TYPE

```
SYNTAX      INTEGER {
    initImageDownload(1),
    initImageUpload(2),
```

Pedersen Informational - Expires August 2001

15

DVB Cable INA Device MIB

Feb 2001

```
    initFileDownload(3),
    initFileUpload(4),
    idle(8)
}
```

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Request software download or upload. The following values can be set: 'InitImageDownload(1)', 'InitImageUpload(1)', 'InitFileDownload(1)', 'InitFileUpload(1)' and 'Idle(8)'. Default value of this parameter is 'Idle(8)'. As long as a file or image transfer is in progress its value is equal to the value set, otherwise 'Idle(8)'."

::= { dvbInaSw 5 }

dvbInaSwOperStatus OBJECT-TYPE

```
SYNTAX      INTEGER {
    initImageDownload(1),
    contactingTFTPServer(2),
    downloadInProgress(3),
    failed(4),
    downloadSuccessful(5),
    idle(6),
    initImageUpload(7),
    imageDownload(8),
    initFileDownload(9),
    initFileUpload(10),
    uploadInProgress(11),
    uploadSuccessful(12)
}
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Indicates actual status of TFTP download. This object can have one of the following states:

'InitImageDownload(1)',
'ContactingTFTPServer(2)',
'DownloadInProgress(3)',
'Failure(4)',
'DownloadSuccessful(5)',
'Idle(6)',
'InitImageUpload(7)',

```

        'ImageDownload(8)',
        'InitFileDownload(9)',
        'InitFileUpload(10)',
        'UploadInProgress(11)'
    and 'UploadSuccessful(12)'.
    After reset the state is 'Idle(6)'."
 ::= { dvbInaSw 6 }

```

```

dvbInaSwDownloadSlot OBJECT-TYPE
    SYNTAX      Integer32 (0..10)
    MAX-ACCESS   read-write
    STATUS       current

```

```

Pedersen          Informational - Expires August 2001          16

                  DVB Cable INA Device MIB                    Feb 2001

```

DESCRIPTION

```

    "This identifies the image slot in which the image is to be
    downloaded. Slot 0 is a special case that is used to
    identify a direct to RAM download. This can be used e.g.
    for diagnostics or debugging purposes.
    By default this object will point to the first empty slot.
    If there are no empty slots, it will point to the first
    backup image."
 ::= { dvbInaSw 7 }

```

```

-- - - - -
-- Software Version Table
--
-- The software version table contains a number of entries i.e. slots.
-- Each slot can contain an image and information about the image
-- in question
-- The table is optional.
-- - - - -

```

```

dvbInaSwVersTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF DvbInaSwVersEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "This table contains a number of entries i.e. slots.
        Each slot can contain an image and information
        about the image."
 ::= { dvbInaSw 8 }

```

```

dvbInaSwVersEntry OBJECT-TYPE
    SYNTAX      DvbInaSwVersEntry
    MAX-ACCESS   not-accessible
    STATUS       current

```

DESCRIPTION

"""

INDEX { dvbInaSwIndex }
::= { dvbInaSwVersTable 1 }

DvbInaSwVersEntry ::= SEQUENCE {
 dvbInaSwIndex Integer32,
 dvbInaSwSlot Integer32,
 dvbInaSwVersion DisplayString,
 dvbInaSwState INTEGER,
 dvbInaSwAction INTEGER,
 dvbInaSwDateTime DateAndTime
}

dvbInaSwIndex OBJECT-TYPE

SYNTAX Integer32
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

"This 32-bit integer is the current index of this entry."

Pedersen Informational - Expires August 2001 17

 DVB Cable INA Device MIB Feb 2001

::= { dvbInaSwVersEntry 1 }

dvbInaSwSlot OBJECT-TYPE

SYNTAX Integer32 (0..10)
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This is the image slot number of this entry. Slot 0 is reserved for RAM, it is used to identify an image directly loaded into RAM e.g. for debugging purposes."

::= { dvbInaSwVersEntry 2 }

dvbInaSwVersion OBJECT-TYPE

SYNTAX DisplayString
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The version of the software loaded in this slot. This is a manufacturer dependent string."

::= { dvbInaSwVersEntry 3 }

dvbInaSwState OBJECT-TYPE

SYNTAX INTEGER {
 executing(1),
 failed(2),
 none(3)

```

}
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "The execution state of the image in this slot.
    The following states are possible:
        'Executing(1)', 'Failed(2)' or 'None(3)'."
 ::= { dvbInaSwVersEntry 4 }

```

```

dvbInaSwAction OBJECT-TYPE
    SYNTAX      INTEGER {
        boot(1),
        backup(2),
        none(3),
        emptySlot(4)
    }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This identifies the image to be used during boot.
        The following actions are possible:
            'Boot(1)', 'Backup(2)', 'None(3)' and 'EmptySlot(4)'."
 ::= { dvbInaSwVersEntry 5 }

```

```

dvbInaSwDateTime OBJECT-TYPE
    SYNTAX      DateAndTime
    MAX-ACCESS  read-only
    STATUS      current

```

Pedersen Informational - Expires August 2001 18

DVB Cable INA Device MIB Feb 2001

```

DESCRIPTION
    "This specifies the date and time the image was loaded
    in this slot.
    This identifies the image to be used during boot."
 ::= { dvbInaSwVersEntry 6 }

```

```

-- - - - -
-- BOOTP/DHCP Table
--
-- The BOOTP/DHCP Table contains the BOOTP and DHCP servers used by this
-- INA. The index into this table is the ifIndex and the IP address of
-- the BOOTP or DHCP server in question.
-- The table is mandatory if the DHCP relay function is supported.
-- Otherwise it is optional.
-- - - - -

```

```

dvbInaDhcpServerTable OBJECT-TYPE

```

```

SYNTAX      SEQUENCE OF DvbInaDhcpServerEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "Server table contains the DHCP/BOOTP servers used by this
    INA."
 ::= { dvbInaDhcp 1 }

```

dvbInaDhcpServerEntry OBJECT-TYPE

```

SYNTAX      DvbInaDhcpServerEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "Server table is indexed through the ifIndex and the
    IP address of the BOOTP or DHCP server in question."
INDEX {dvbInaDhcpServerIfIndex,
       dvbInaDhcpServerIpType,
       dvbInaDhcpServerIp}
 ::= { dvbInaDhcpServerTable 1 }

```

DvbInaDhcpServerEntry ::= SEQUENCE {

```

    dvbInaDhcpServerIfIndex      InterfaceIndexOrZero,
    dvbInaDhcpServerIpType       InetAddressType,
    dvbInaDhcpServerIp           InetAddress,
    dvbInaDhcpServerRowAccessStatus RowStatus,
    dvbInaDhcpServerRelayEnable  TruthValue,
    dvbInaDhcpServerAssociation  INTEGER,
    dvbInaDhcpServerPrimaryOrSecondary INTEGER
}
```

dvbInaDhcpServerIfIndex OBJECT-TYPE

```

SYNTAX      InterfaceIndexOrZero
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "This object contains the ifIndex of the interface via

```

Pedersen Informational - Expires August 2001 19

DVB Cable INA Device MIB Feb 2001

```

    which the DHCP server is communicating with the INA."
 ::= { dvbInaDhcpServerEntry 1 }

```

dvbInaDhcpServerIpType OBJECT-TYPE

```

SYNTAX      InetAddressType
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "Specifies the format of the IP Address"
 ::= { dvbInaDhcpServerEntry 2 }

```

```

dvbInaDhcpServerIp OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The IP address of this DHCP server. In the case the IP
        address is the all ones address, the DHCP message will
        be broadcast on the connected IP network."
    ::= { dvbInaDhcpServerEntry 3 }

dvbInaDhcpServerRowAccessStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Controls and reflects the status of this row in
        this table."
    ::= { dvbInaDhcpServerEntry 4 }

dvbInaDhcpServerRelayEnable OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This object enables or disables the INA to relay the DHCP
        message to this DHCP server."
    ::= { dvbInaDhcpServerEntry 5 }

dvbInaDhcpServerAssociation OBJECT-TYPE
    SYNTAX      INTEGER {
        ina(1),
        niu(2),
        client(3)
    }
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This object defines the server association either
        ina/niu/client.
        It is optional to support the ina value."
    ::= { dvbInaDhcpServerEntry 6 }

```

dvbInaDhcpServerPrimaryOrSecondary OBJECT-TYPE

Pedersen	Informational - Expires August 2001	20
	DVB Cable INA Device MIB	Feb 2001

```

SYNTAX      INTEGER {
    primary(1),

```

```

        secondary(2)
    }
    MAX-ACCESS    read-create
    STATUS        current
    DESCRIPTION
        "This object defines the Primary/Secondary server
        association."
    ::= { dvbInaDhcpServerEntry 7 }

```

```

-- - - - - -
-- Event Group
--
-- The Event Group is used for trap throttling, event filtering and
-- event logging
-- - - - - -

```

```

dvbInaEvControl OBJECT-TYPE
    SYNTAX        INTEGER {
        resetLog(1),
        useDefaultReporting(2)
    }
    MAX-ACCESS    read-write
    STATUS        current
    DESCRIPTION
        "Setting this object to resetLog(1) empties the event log.
        All data is deleted. Setting it to useDefaultReporting(2)
        returns all event priorities to their factory-default
        reporting. Reading this object always returns
        useDefaultReporting(2)."
    ::= { dvbInaEvent 1 }

```

```

dvbInaEvSyslogIpType OBJECT-TYPE
    SYNTAX        InetAddressType
    MAX-ACCESS    read-write
    STATUS        current
    DESCRIPTION
        "The IP address type of the SysLog server."
    ::= { dvbInaEvent 2}

```

```

dvbInaEvSyslogIp    OBJECT-TYPE
    SYNTAX        InetAddress
    MAX-ACCESS    read-write
    STATUS        current
    DESCRIPTION
        "The IP address of the Syslog server. If 0.0.0.0, syslog
        transmission is inhibited."
    ::= { dvbInaEvent 3}

```

```

dvbInaEvThrottleAdminStatus    OBJECT-TYPE
    SYNTAX        INTEGER {

```

unconstrained(1),

Pedersen

Informational - Expires August 2001

21

DVB Cable INA Device MIB

Feb 2001

maintainBelowThreshold(2),
stopAtThreshold(3),
inhibited(4)
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Controls the transmission of traps and syslog messages with respect to the trap pacing threshold.

unconstrained(1) causes traps and syslog messages to be transmitted without regard to the threshold settings.

maintainBelowThreshold(2) causes trap transmission and syslog messages to be suppressed if the number of traps would otherwise exceed the threshold.

stopAtThreshold(3) causes trap transmission to cease at the threshold, and not resume until directed to do so.

inhibited(4) causes all trap transmission and syslog messages to be suppressed.

A single event is always treated as a single event for threshold counting. That is, an event causing both a trap and a syslog message is still treated as a single event.

Writing to this object resets the thresholding state.

At initial startup, this object has a default value of unconstrained(1)."

::= { dvbInaEvent 4 }

dvbInaEvThrottleInhibited OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If true(1), trap and syslog transmission is currently inhibited due to thresholds and/or the current setting of dvbInaEvThrottleAdminStatus. In addition, this is set to true(1) if transmission is inhibited due to no syslog (dvbInaEvSyslogIp) or trap (dvbInaNmAccessEntry) destinations having been set."

::= { dvbInaEvent 5 }

```

dvbInaEvThrottleThreshold      OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION
        "Number of trap/syslog events per dvbInaEvThrottleInterval
        to be transmitted before throttling.

```

```

Pedersen          Informational - Expires August 2001          22

                                DVB Cable INA Device MIB          Feb 2001

```

A single event is always treated as a single event for threshold counting. That is, an event causing both a trap and a syslog message is still treated as a single event.

```

    At initial startup, this object returns 0."
 ::= { dvbInaEvent 6 }

```

```

dvbInaEvThrottleInterval      OBJECT-TYPE
    SYNTAX      Integer32 ( 1..2147483647 )
    UNITS       "seconds"
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION
        "The interval over which the trap threshold applies.
        At initial startup, this object has a value of 1."
 ::= { dvbInaEvent 7 }

```

```

-- - - - -
-- Event Control Table
-- - - - -

```

```

dvbInaEvControlTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF DvbInaEvControlEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "The Event Control Table allows configuration of the
        reporting mechanisms used for a particular event
        priority. The event priority level indexes the table"
 ::= { dvbInaEvent 9 }

```

```

dvbInaEvControlEntry OBJECT-TYPE
    SYNTAX      DvbInaEvControlEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "Allows configuration of the reporting mechanisms for a

```

```
        particular event priority."
INDEX { dvbInaEvPriority }
::= { dvbInaEvControlTable 1 }
```

```
DvbInaEvControlEntry ::= SEQUENCE {
    dvbInaEvPriority      INTEGER,
    dvbInaEvReporting    BITS
}
```

```
dvbInaEvPriority OBJECT-TYPE
    SYNTAX INTEGER {
        emergency (1),
        alert (2),
        critical (3),
        error (4),
```

```
Pedersen          Informational - Expires August 2001          23
                    DVB Cable INA Device MIB                  Feb 2001
```

```
        warning (5),
        notice (6),
        information (7),
        debug (8)
    }
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The priority level that is controlled by this entry."
    ::= { dvbInaEvControlEntry 1 }
```

```
dvbInaEvReporting OBJECT-TYPE
    SYNTAX BITS {
        local (0),
        traps (1),
        syslog (2)
    }
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "Defines the action to be taken on occurrence of this
        event class. If the local(0) bit is set, then log to the
        internal log, if the traps(1) bit is set, then generate
        a trap, if the syslog(2) bit is set, then send a syslog
        message."
    ::= { dvbInaEvControlEntry 2 }
```

```
-- - - - - -
-- Event Table
-- - - - - -
```

dvbInaEvTable OBJECT-TYPE

SYNTAX SEQUENCE OF DvbInaEvEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The Event Table contains a log of network and device
events. The table is indexed by an arbitrary integer."
::= { dvbInaEvent 10 }

dvbInaEvMaxNumberOfEntries OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"Describes the maximum number of entries that can be
contained in the Event table"
::= { dvbInaEvent 11 }

dvbInaEvEntry OBJECT-TYPE

SYNTAX DvbInaEvEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

Pedersen Informational - Expires August 2001 24
DVB Cable INA Device MIB Feb 2001

"Describes a network or device event that may be of
interest in fault isolation and troubleshooting."
INDEX { dvbInaEvIndex }
::= { dvbInaEvTable 1 }

DvbInaEvEntry ::= SEQUENCE {
dvbInaEvIndex Integer32,
dvbInaEvFirstTime DateAndTime,
dvbInaEvLastTime DateAndTime,
dvbInaEvCount Counter32,
dvbInaEvLevel Integer32,
dvbInaEvId Unsigned32,
dvbInaEvText DisplayString
}

dvbInaEvIndex OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"Provides relative ordering of the objects in the event
log. This object will always increase except when
(a) the log is reset via dvbInaEvControl,

(b) the device reboots and does not implement nonvolatile storage for this log, or (c) it reaches the value 2^{31} .

The next entry for all the above cases is 1."

::= { dvbInaEvEntry 1 }

dvbInaEvFirstTime OBJECT-TYPE

SYNTAX DateAndTime

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time that this entry was created."

::= { dvbInaEvEntry 2 }

dvbInaEvLastTime OBJECT-TYPE

SYNTAX DateAndTime

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If multiple events are reported via the same entry, the time that the last event for this entry occurred."

::= { dvbInaEvEntry 3 }

dvbInaEvCount OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of consecutive event instances reported by this entry."

::= { dvbInaEvEntry 4 }

Pedersen Informational - Expires August 2001

25

DVB Cable INA Device MIB

Feb 2001

dvbInaEvLevel OBJECT-TYPE

SYNTAX Integer32 (0..255)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The priority level of this event as defined by the vendor."

::= { dvbInaEvEntry 5 }

--

-- Vendors will provide their own enumerations for the following.

-- The interpretation of the enumeration is unambiguous for a

-- particular value of the vendor's enterprise number in sysObjectID.

--

```

dvbInaEvId OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "For this product, uniquely identifies the type of event
        that is reported by this entry."
    ::= { dvbInaEvEntry 6 }

```

```

dvbInaEvText OBJECT-TYPE
    SYNTAX      DisplayString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Provides a human-readable description of the event."
    ::= { dvbInaEvEntry 7 }

```

```

-- - - - - -
-- Optional IP Filter Group
--
-- The IP Filter Group is used to configure IP filters. These filters
-- can be configured to forward packets or to drop packets matching a
-- set of layer three protocols.
-- - - - - -

```

```

dvbInaIpFilterEnable OBJECT-TYPE
    SYNTAX INTEGER {
        enable (1),
        enableAuto (2),
        countHits (3),
        disabled (4)
    }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "This controls the IP filter table. This object can be set
        to the following values:
        'enable(1)': Enables the IP filter table.

```

Pedersen Informational - Expires August 2001 26

DVB Cable INA Device MIB Feb 2001

```

'enableAuto(2)': Enables the IP filter table with automatic
IP anti-spoofing population by sniffing DHCP messages.
'countHits(3)': This option is used to debug the filter
table. It allows packets to be checked against the filter
table and increments dvbInaIpFilterMaches for a matching
filter. However, all packets are allowed through.
'disabled(4)': Disables IP filtering, all packets are

```

```

        allowed through."
 ::= { dvbInaIpFilter 1 }

```

dvbInaIpFilterTable OBJECT-TYPE

SYNTAX SEQUENCE OF DvbInaIpFilterEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The IP Filter Table describes a filter to apply to IP traffic as received on a specified interface. Both source and destination addresses must match for the filter to apply. To create an entry in this table, dvbInaIpFilterIndex must be specified. Filter application is ordered by the filter index."

```

 ::= { dvbInaIpFilter 2 }

```

dvbInaIpFilterEntry OBJECT-TYPE

SYNTAX DvbInaIpFilterEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Describes a filter to apply to IP traffic received on a specified interface. Both source and destination addresses must match for the filter to apply."

INDEX { dvbInaIpFilterIndex }

```

 ::= { dvbInaIpFilterTable 1 }

```

DvbInaIpFilterEntry ::= SEQUENCE {

dvbInaIpFilterIndex	Integer32,
dvbInaIpFilterStatus	RowStatus,
dvbInaIpFilterAssignedBy	INTEGER,
dvbInaIpFilterIfIndex	InterfaceIndexOrZero,
dvbInaIpFilterDirection	INTEGER,
dvbInaIpFilterTos	OCTET STRING,
dvbInaIpFilterTosMask	OCTET STRING,
dvbInaIpFilterSrcAddrType	InetAddressType,
dvbInaIpFilterSrcAddr	InetAddress,
dvbInaIpFilterSrcMaskType	InetAddressType,
dvbInaIpFilterSrcMask	InetAddress,
dvbInaIpFilterDstAddrType	InetAddressType,
dvbInaIpFilterDstAddr	InetAddress,
dvbInaIpFilterDstMaskType	InetAddressType,
dvbInaIpFilterDstMask	InetAddress,
dvbInaIpFilterProtocol	INTEGER,
dvbInaIpFilterSourcePortLow	Integer32,
dvbInaIpFilterSourcePortHigh	Integer32,
dvbInaIpFilterDestPortLow	Integer32,

dvbInaIpFilterDestPortHigh	Integer32,
dvbInaIpFilterAction	INTEGER,
dvbInaIpFilterMatches	Counter32,
dvbInaIpFilterContinue	TruthValue,
dvbInaIpFilterTosMapIndex	Integer32

}

dvbInaIpFilterIndex OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "Index used to order the application of filters.
 The filter with the lowest index is always applied
 first."
 ::= { dvbInaIpFilterEntry 1 }

dvbInaIpFilterStatus OBJECT-TYPE

SYNTAX RowStatus
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "Controls and reflects the status of rows in this table.
 The filter is not applied until this object is set to
 (or changes to) active."
 ::= { dvbInaIpFilterEntry 2 }

dvbInaIpFilterAssignedBy OBJECT-TYPE

SYNTAX INTEGER {
 dhcp (1),
 static (2),
 snmp (3)
 }
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "This object identifies what created this entry and is
 automatically set when a filter is created. This object
 shall have one of the following values: 'dhcp(1)',
 'static(2)' and 'snmp(3)'."
 ::= { dvbInaIpFilterEntry 3 }

dvbInaIpFilterIfIndex OBJECT-TYPE

SYNTAX InterfaceIndexOrZero
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "The entry interface to which this filter applies. The
 value corresponds to ifIndex for either a CATV MAC or
 another network interface."

::= { dvbInaIpFilterEntry 4 }

dvbInaIpFilterDirection OBJECT-TYPE
SYNTAX INTEGER {

Pedersen Informational - Expires August 2001 28

 DVB Cable INA Device MIB Feb 2001

 inbound (1),
 outbound (2),
 both (3)
 }
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "Determines whether the filter is applied to inbound(1)
 traffic, outbound(2) traffic, or traffic in both(3)
 directions."
 ::= { dvbInaIpFilterEntry 5 }

dvbInaIpFilterTos OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (1))
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "This is the value to be matched to the packet's TOS
 (Type of Service) value (after the TOS value is AND'd
 with dvbInaIpFilterTosMask)."
 ::= { dvbInaIpFilterEntry 6 }

dvbInaIpFilterTosMask OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (1))
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The mask to be applied to the packet's TOS value before
 matching."
 ::= { dvbInaIpFilterEntry 7 }

dvbInaIpFilterSrcAddrType OBJECT-TYPE
SYNTAX InetAddressType
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The type of the source IP address."
 ::= { dvbInaIpFilterEntry 8 }

dvbInaIpFilterSrcAddr OBJECT-TYPE
SYNTAX InetAddress
MAX-ACCESS read-create

STATUS current
 DESCRIPTION
 "The source IP address, or portion thereof, that is to be
 matched for this filter."
 ::= { dvbInaIpFilterEntry 9 }

dvbInaIpFilterSrcMaskType OBJECT-TYPE

SYNTAX InetAddressType
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "The type of the source mask IP address."

Pedersen Informational - Expires August 2001 29
 DVB Cable INA Device MIB Feb 2001

::= { dvbInaIpFilterEntry 10 }

dvbInaIpFilterSrcMask OBJECT-TYPE

SYNTAX InetAddress
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "A bit mask that is to be applied to the source address
 prior to matching. This mask is not necessarily the same
 as a subnet mask, but 1's bits must be leftmost and
 contiguous."
 ::= { dvbInaIpFilterEntry 11 }

dvbInaIpFilterDstAddrType OBJECT-TYPE

SYNTAX InetAddressType
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "The type of the destination IP address."
 ::= { dvbInaIpFilterEntry 12 }

dvbInaIpFilterDstAddr OBJECT-TYPE

SYNTAX InetAddress
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "The destination IP address, or portion thereof, that is
 to be matched for this filter."
 ::= { dvbInaIpFilterEntry 13 }

dvbInaIpFilterDstMaskType OBJECT-TYPE

SYNTAX InetAddressType
 MAX-ACCESS read-create
 STATUS current

DESCRIPTION

"The type of the destination mask IP address."

::= { dvbInaIpFilterEntry 14 }

dvbInaIpFilterDstMask OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"A bit mask that is to be applied to the destination address prior to matching. This mask is not necessarily the same as a subnet mask, but 1's bits must be leftmost and contiguous "

::= { dvbInaIpFilterEntry 15 }

dvbInaIpFilterProtocol OBJECT-TYPE

SYNTAX INTEGER {

icmp (1),

tcp (6),

udp (17),

Pedersen Informational - Expires August 2001

30

DVB Cable INA Device MIB

Feb 2001

any (256)

}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The IP protocol value that is to be matched. For example: icmp is 1, tcp is 6, udp is 17. A value of 256 matches ANY protocol."

::= { dvbInaIpFilterEntry 16 }

dvbInaIpFilterSourcePortLow OBJECT-TYPE

SYNTAX Integer32 (0..65535)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"If dvbInaIpFilterProtocol is udp or tcp, this is the inclusive lower bound of the transport-layer source port range that is to be matched."

::= { dvbInaIpFilterEntry 17 }

dvbInaIpFilterSourcePortHigh OBJECT-TYPE

SYNTAX Integer32 (0..65535)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"If dvbInaIpFilterProtocol is udp or tcp, this is the

```

    inclusive upper bound of the transport-layer source
    port range that is to be matched."
::= { dvbInaIpFilterEntry 18 }

```

dvbInaIpFilterDestPortLow OBJECT-TYPE

```

SYNTAX      Integer32 (0..65535)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "If dvbInaIpFilterProtocol is udp or tcp, this is the
    inclusive lower bound of the transport-layer
    destination port range that is to be matched."
::= { dvbInaIpFilterEntry 19 }

```

dvbInaIpFilterDestPortHigh OBJECT-TYPE

```

SYNTAX      Integer32 (0..65535)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "If dvbInaIpFilterProtocol is udp or tcp, this is the
    inclusive upper bound of the transport-layer
    destination port range that is to be matched."
::= { dvbInaIpFilterEntry 20 }

```

dvbInaIpFilterAction OBJECT-TYPE

```

SYNTAX INTEGER {
    discard (1),
    accept (2),

```

Pedersen Informational - Expires August 2001 31

DVB Cable INA Device MIB Feb 2001

```

    tosmap (3)
}
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "discard(1) : Discard all packets matching this filter.

    accept(2) : Accept packet for further processing.
                If dvbInaIpFilterContinue is set to true,
                see if there are other matches, otherwise
                done.

    tosmap(3) : Change the TOS in the IP packet according to
                the specification in the TOS MAP table.
                If the TOS MAP index is 0 or no entry is
                found in the TOS MAP table. Otherwise treat as
                accept.
                If dvbInaIpFilterContinue is set to true,

```

```

                                see if there are other matches, otherwise
                                done."
 ::= { dvbInaIpFilterEntry 21 }

dvbInaIpFilterMatches OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Counts the number of times this filter was matched."
 ::= { dvbInaIpFilterEntry 22 }

dvbInaIpFilterContinue OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "If this value is set to true(1), and
         dvbInaIpFilterControl is anything but discard(1),
         continue test of next filter rows and applying actions."
 ::= { dvbInaIpFilterEntry 23 }

dvbInaIpFilterTosMapIndex OBJECT-TYPE
    SYNTAX      Integer32 (0..65535)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This object points to an entry in dvbInaIpTosMapTable.
         If dvbInaIpFilterControl is set to tosmap(3), do the
         TOS mapping in dvbInaIpTosMapTable with this index.
         If no matching TOS map index exists, treat as if
         dvbInaIpFilterControl were set to accept(1).
         If this object is set to the value of 0, there is no
         matching TOS map."
 ::= { dvbInaIpFilterEntry 24 }

Pedersen                Informational - Expires August 2001                32

                                DVB Cable INA Device MIB                                Feb 2001

-- TOS Map Table

dvbInaIpTosMapTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF DvbInaIpTosMapEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table which specifies a TOS change.
         dvbInaIpFilterTosMapIndex points to a specific row in this
         table that specifies a TOS change."

```

This table applies only to the TOS within the IP header.
 Index 0 is reserved."
 ::= { dvbInaIpFilter 3 }

dvbInaIpTosMapEntry OBJECT-TYPE

SYNTAX DvbInaIpTosMapEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table used to describe Type of Service (TOS) bits processing.

If the action in a filter row in dvbInaIpFilterTable is tosmmap and dvbInaIpFilterTosMapIndex points on a row in this table, then the Type of Service bits in the IP header of the matched packet is manipulated as follows:

Set the tosBits of the packet to
 (tosBits & dvbInaIpTosMapAndMask) | dvbInaIpTosMapOrMask

This construct allows you to do a clear and set of all the TOS bits in a flexible manner."

INDEX { dvbInaIpTosMapIndex }

::= { dvbInaIpTosMapTable 1 }

DvbInaIpTosMapEntry ::= SEQUENCE {

dvbInaIpTosMapIndex Integer32,

dvbInaIpTosMapStatus RowStatus,

dvbInaIpTosMapAndMask OCTET STRING (SIZE (1)),

dvbInaIpTosMapOrMask OCTET STRING (SIZE (1))

}

dvbInaIpTosMapIndex OBJECT-TYPE

SYNTAX Integer32 (1..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The index for this row."

::= { dvbInaIpTosMapEntry 1 }

dvbInaIpTosMapStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The object used to create and delete entries in this table. A row created by specifying just this object

results in a row which specifies no change to the TOS bits. A row may be created using either the create-and-go or create-and-wait paradigms. There is no restriction on the ability to change values in this row while the row is active."

```
::= { dvbInaIpTosMapEntry 2 }
```

dvbInaIpTosMapAndMask OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (1))

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This value is bitwise AND'd with the matched packet's TOS bits."

DEFVAL { 'ff'h }

```
::= { dvbInaIpTosMapEntry 3 }
```

dvbInaIpTosMapOrMask OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (1))

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"After bitwise AND'ing with the above bits, the packet's TOS bits are bitwise OR'd with these bits."

DEFVAL { '00'h }

```
::= { dvbInaIpTosMapEntry 4 }
```

-- End of TOS Map table

```
-- - - - - -
```

-- Optional Ethernet Filter Group

--

-- The Ethernet Filter Table describes a filter to apply to Ethernet traffic as received on a specified interface. To create an entry in this table, dvbInaEthFilterIfIndex must be specified. Filter application is ordered by the filter index.

--

```
-- - - - - -
```

dvbInaEthFilterEnable OBJECT-TYPE

```
SYNTAX INTEGER {
    enable (1),
    countHits (2),
    disabled (3)
}
```

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This controls the Ethernet filter table. This object can be set to the following values:

'enable(1)': Enables the Ethernet filter table.

Pedersen

Informational - Expires August 2001

34

DVB Cable INA Device MIB

Feb 2001

'countHits(2)': This option is used to debug the filter table. It allows packets to be checked against the filter table and increments dvbInaEthFilterMatches for a matching filter. However, all packets are allowed through.

'disabled(3)': Disables Ethernet filtering, all packets are allowed through."

::= { dvbInaEthFilter 1 }

dvbInaEthFilterTable OBJECT-TYPE

SYNTAX SEQUENCE OF DvbInaEthFilterEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The Ethernet Filter Table describes a filter to apply to Ethernet traffic as received on a specified interface. To create an entry in this table, dvbInaEthFilterIndex must be specified. Filter application only relates to Ethernet Port Number"

::= { dvbInaEthFilter 2 }

dvbInaEthFilterEntry OBJECT-TYPE

SYNTAX DvbInaEthFilterEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Describes a filter to apply to Ethernet traffic received on a specified interface. Traffic is filtered only on ethernet port addresses."

INDEX { dvbInaEthFilterIndex }

::= { dvbInaEthFilterTable 1 }

DvbInaEthFilterEntry ::= SEQUENCE {

dvbInaEthFilterIndex	Integer32,
dvbInaEthFilterStatus	RowStatus,
dvbInaEthFilterIfIndex	InterfaceIndexOrZero,
dvbInaEthFilterEtherType	INTEGER,
dvbInaEthFilterProtocol	Integer32,
dvbInaEthFilterAction	INTEGER,
dvbInaEthFilterMatches	Counter32

}

dvbInaEthFilterIndex OBJECT-TYPE


```
    "The protocol to filter on."
 ::= { dvbInaEthFilterEntry 5 }
```

dvbInaEthFilterAction OBJECT-TYPE

```
    SYNTAX INTEGER {
        accept (1),
        discard (2)
    }
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "The action to be taken when there is a filter match.
        This object shall have one the following values:
        'accept(1)' or 'discard(2)'."
 ::= { dvbInaEthFilterEntry 6 }
```

Pedersen Informational - Expires August 2001 36

 DVB Cable INA Device MIB Feb 2001

dvbInaEthFilterMatches OBJECT-TYPE

```
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Counts the number of times this filter was matched."
 ::= { dvbInaEthFilterEntry 7 }
```

```
-- - - - - -
-- NIU Error Table
--
-- The NIU Error Table contains the errors reported by the NIU in
-- question.
--
-- - - - - -
```

dvbInaNiuErrorReset OBJECT-TYPE

```
    SYNTAX TruthValue
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "If true the NIU error table is cleared.
        If read it always returns false."
 ::= { dvbInaNiuError 1 }
```

dvbInaNiuErrorMaxTableSize OBJECT-TYPE

```
    SYNTAX Integer32 ( 1..65535 )
    MAX-ACCESS read-write
    STATUS current
```

DESCRIPTION

"The maximum size of the NIU error table."

::= { dvbInaNiuError 2 }

dvbInaNiuErrorStatReqInterval OBJECT-TYPE

SYNTAX Integer32 (1..65535)

UNITS "minutes"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The Status Request Message interval."

::= { dvbInaNiuError 3 }

dvbInaNiuErrorTable OBJECT-TYPE

SYNTAX SEQUENCE OF DvbInaNiuErrorEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains the errors reported by all NIUs"

::= { dvbInaNiuError 4 }

dvbInaNiuErrorEntry OBJECT-TYPE

SYNTAX DvbInaNiuErrorEntry

MAX-ACCESS not-accessible

Pedersen Informational - Expires August 2001

37

DVB Cable INA Device MIB

Feb 2001

STATUS current

DESCRIPTION

"The entry contains information about the errors reported by all NIUs.

The table is indexed by an arbitrary integer.

The table is updated according to the NIU status response messages."

INDEX { dvbInaNiuErrorIndex }

::= { dvbInaNiuErrorTable 1 }

DvbInaNiuErrorEntry ::= SEQUENCE {

dvbInaNiuErrorIndex Unsigned32,

dvbInaNiuErrorMacAddress MacAddress,

dvbInaNiuErrorParamCode INTEGER,

dvbInaNiuErrorParamValue Unsigned32

}

dvbInaNiuErrorIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

```
        "Specifies the index for this error."
 ::= { dvbInaNiuErrorEntry 1 }
```

```
dvbInaNiuErrorMacAddress OBJECT-TYPE
```

```
    SYNTAX      MacAddress
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Specifies the MAC address of the NIU by which this error
         is reported."
 ::= { dvbInaNiuErrorEntry 2 }
```

```
dvbInaNiuErrorParamCode OBJECT-TYPE
```

```
    SYNTAX      INTEGER (0..255)
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Specifies the type of error reported by the NIU."
 ::= { dvbInaNiuErrorEntry 3 }
```

```
dvbInaNiuErrorParamValue OBJECT-TYPE
```

```
    SYNTAX      Unsigned32 (0..65535)
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Specifies the value of this error."
 ::= { dvbInaNiuErrorEntry 4 }
```

```
-- - - - - -
-- NIU IP Table
--
```

```
Pedersen          Informational - Expires August 2001          38

                      DVB Cable INA Device MIB                  Feb 2001
```

```
-- The NIU IP Table contains information on the IP addresses and
-- subnets of the NIU.
-- - - - - -
```

```
dvbInaNiuIpTable OBJECT-TYPE
```

```
    SYNTAX      SEQUENCE OF DvbInaNiuIpEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "Describes the attributes of Network Interface Units."
 ::= { dvbInaNiuIp 1 }
```

```
dvbInaNiuIpEntry OBJECT-TYPE
```

```
    SYNTAX      DvbInaNiuIpEntry
    MAX-ACCESS   not-accessible
```

STATUS current

DESCRIPTION

"Initially the table shall be empty. A new entry for a NIU is automatically created when the NIU in question signs on. Furthermore, the manager through the dvbInaNiuIpRowAccessStatus object can create new entries. This can be used in the case of re-provisioning where by the manager first makes an entry and sets all relevant parameters before the NIU is re-provisioned to this INA.

When a NIU entry is deleted, also all associated connection entries are deleted."

INDEX { dvbInaNiuIpMacAddress }
::= { dvbInaNiuIpTable 1 }

DvbInaNiuIpEntry ::= SEQUENCE {
 dvbInaNiuIpMacAddress MacAddress,
 dvbInaNiuIpRowAccessStatus RowStatus,
 dvbInaNiuIpHfcIpAddrType InetAddressType,
 dvbInaNiuIpHfcIpAddr InetAddress,
 dvbInaNiuIpHfcIpMaskType InetAddressType,
 dvbInaNiuIpHfcIpMask InetAddress,
 dvbInaNiuIpNetIpAddrType InetAddressType,
 dvbInaNiuIpNetIpAddr InetAddress,
 dvbInaNiuIpNetIpMaskType InetAddressType,
 dvbInaNiuIpNetIpMask InetAddress,
 dvbInaNiuIpAddressConfigType INTEGER,
 dvbInaNiuIpDhcpPrimarySrvType InetAddressType,
 dvbInaNiuIpDhcpPrimarySrv InetAddress,
 dvbInaNiuIpDhcpSecondarySrvType InetAddressType,
 dvbInaNiuIpDhcpSecondarySrv InetAddress
}

dvbInaNiuIpMacAddress OBJECT-TYPE

SYNTAX MacAddress
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

Pedersen Informational - Expires August 2001

39

DVB Cable INA Device MIB

Feb 2001

" A 48-bit value representing the unique MAC address of the NIU. "

::= { dvbInaNiuIpEntry 1 }

dvbInaNiuIpRowAccessStatus OBJECT-TYPE

SYNTAX RowStatus
MAX-ACCESS read-create

```

STATUS      current
DESCRIPTION
    " Controls and reflects the status of this row in this
      table. "
::= { dvbInaNiuIpEntry 2 }

```

```

dvbInaNiuIpHfcIpAddrType      OBJECT-TYPE
SYNTAX      InetAddressType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " The type of address used for the HFC side."
::= { dvbInaNiuIpEntry 3 }

```

```

dvbInaNiuIpHfcIpAddr          OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " Specifies the IP Address on the HFC side."
::= { dvbInaNiuIpEntry 4 }

```

```

dvbInaNiuIpHfcIpMaskType      OBJECT-TYPE
SYNTAX      InetAddressType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " The type of address used for the HFC side."
::= { dvbInaNiuIpEntry 5 }

```

```

dvbInaNiuIpHfcIpMask          OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " Specifies the IP Mask on the HFC side."
::= { dvbInaNiuIpEntry 6 }

```

```

dvbInaNiuIpNetIpAddrType      OBJECT-TYPE
SYNTAX      InetAddressType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " The type of address used for the network side."
::= { dvbInaNiuIpEntry 7 }

```

```

dvbInaNiuIpNetIpAddr          OBJECT-TYPE

```

```

SYNTAX      InetAddress
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    " Specifies the IP Address on the network (client) side."
 ::= { dvbInaNiuIpEntry 8 }

```

```

dvbInaNiuIpNetIpMaskType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " The type of address used for the network side."
    ::= { dvbInaNiuIpEntry 9 }

```

```

dvbInaNiuIpNetIpMask OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " Specifies the IP Address on the network (client) side."
    ::= { dvbInaNiuIpEntry 10 }

```

```

dvbInaNiuIpAddressConfigType OBJECT-TYPE
    SYNTAX      INTEGER {
        static(1),
        dhcp(2)
    }
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Specifies if the NIU HFC address was received through
        static configuration or through DHCP"
    ::= { dvbInaNiuIpEntry 11 }

```

```

dvbInaNiuIpDhcpPrimarySrvType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " Specifies the address type of the DHCP primary server."
    ::= { dvbInaNiuIpEntry 12 }

```

```

dvbInaNiuIpDhcpPrimarySrv OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        " Specifies the DHCP primary server."
    ::= { dvbInaNiuIpEntry 13 }

```

dvbInaNiuIpDhcpSecondarySrvType OBJECT-TYPE

SYNTAX InetAddressType

Pedersen Informational - Expires August 2001

41

DVB Cable INA Device MIB

Feb 2001

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" Specifies the address type of the DHCP secondary server."

::= { dvbInaNiuIpEntry 14 }

dvbInaNiuIpDhcpSecondarySrv OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" Specifies the DHCP secondary server."

::= { dvbInaNiuIpEntry 15 }

-- - - - -
-- Conformance statements
-- - - - -

dvbInaCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement for EuroModem INAs
which implement the DVB-CABLE-INA-MIB MIB. An
implementation only has to support IPv4 addresses to be
compliant."

MODULE -- dvbIna

GROUP dvbInaDeviceGroup

DESCRIPTION

"The Device group is optional to implement."

GROUP dvbInaNmAccessGroup

DESCRIPTION

"The NM Access group is optional to implement."

GROUP dvbInaSwGroup

DESCRIPTION

"Th SW group is optional to implement."

GROUP dvbInaDhcpGroup

DESCRIPTION

"The DHCP group is optional to implement."

GROUP dvbInaEventGroup

DESCRIPTION

"The Event group is optional to implement."

GROUP dvbInaIpFilterGroup

DESCRIPTION

"The IP filter group is optional to implement."

GROUP dvbInaEthFilterGroup

Pedersen

Informational - Expires August 2001

42

DVB Cable INA Device MIB

Feb 2001

DESCRIPTION

"The Ethernet filter group is optional to implement."

GROUP dvbInaNiuErrorGroup

DESCRIPTION

"The NIU Error group is optional to implement."

GROUP dvbInaNiuIpGroup

DESCRIPTION

"The NIU IP group is optional to implement."

OBJECT dvbInaDeviceFixedIpAddress

MIN-ACCESS read-only

DESCRIPTION

"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpHfcIpAddrType

MIN-ACCESS read-only

DESCRIPTION

"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpHfcIpAddr

MIN-ACCESS read-only

DESCRIPTION

"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpHfcIpMaskType

MIN-ACCESS read-only

DESCRIPTION

"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpHfcIpMask

MIN-ACCESS read-only

DESCRIPTION

"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpNetIpAddrType
MIN-ACCESS read-only
DESCRIPTION
"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpNetIpAddr
MIN-ACCESS read-only
DESCRIPTION
"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpNetIpMaskType
MIN-ACCESS read-only
DESCRIPTION
"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpNetIpMask
MIN-ACCESS read-only
DESCRIPTION

Pedersen	Informational - Expires August 2001	43
	DVB Cable INA Device MIB	Feb 2001

"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpAddressConfigType
MIN-ACCESS read-only
DESCRIPTION
"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpDhcpPrimarySrvType
MIN-ACCESS read-only
DESCRIPTION
"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpDhcpPrimarySrv
MIN-ACCESS read-only
DESCRIPTION
"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpDhcpSecondarySrvType
MIN-ACCESS read-only
DESCRIPTION
"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpDhcpSecondarySrv
MIN-ACCESS read-only
DESCRIPTION
"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpErrorMaxTableSize
MIN-ACCESS read-only

DESCRIPTION

"It is compliant to implement this object as read-only."

OBJECT dvbInaNiuIpErrorStatReqInterval

MIN-ACCESS read-only

DESCRIPTION

"It is compliant to implement this object as read-only."

::= { dvbInaCompliances 1 }

dvbInaDeviceGroup OBJECT-GROUP

OBJECTS {
 dvbInaDeviceDateTime,
 dvbInaDeviceResetNow,
 dvbInaDeviceSerialNumber,
 dvbInaDeviceUptime,
 dvbInaDeviceCurrentState,
 dvbInaDeviceDesiredState,
 dvbInaDeviceMibVersion,
 dvbInaDeviceDhcpRelaySupport
}

STATUS current

DESCRIPTION

"A collection of objects for managing the state of the
INA."

Pedersen Informational - Expires August 2001

44

DVB Cable INA Device MIB

Feb 2001

::= { dvbInaGroups 1 }

dvbInaNmAccessGroup OBJECT-GROUP

OBJECTS {
 dvbInaNmAccessIndex,
 dvbInaNmAccessIpType,
 dvbInaNmAccessIp,
 dvbInaNmAccessIpMaskType,
 dvbInaNmAccessIpMask,
 dvbInaNmAccessCommunity,
 dvbInaNmAccessControl,
 dvbInaNmAccessInterfaces,
 dvbInaNmAccessStatus,
 dvbInaNmAccessLevelEnable
}

STATUS current

DESCRIPTION

"A collection of objects for managing the state of the
INA."

::= { dvbInaGroups 2 }

dvbInaSwGroup OBJECT-GROUP

```
OBJECTS {
    dvbInaSwTftpServerAddrType,
    dvbInaSwTftpServer,
    dvbInaSwTftpFilename,
    dvbInaSwFilename,
    dvbInaSwAdminStatus,
    dvbInaSwOperStatus,
    dvbInaSwDownloadSlot,
    dvbInaSwIndex,
    dvbInaSwSlot,
    dvbInaSwVersion,
    dvbInaSwState,
    dvbInaSwAction,
    dvbInaSwDateTime
}
```

STATUS current

DESCRIPTION

"A collection of objects for managing the state of the
INA."

::= { dvbInaGroups 3 }

dvbInaDhcpGroup OBJECT-GROUP

```
OBJECTS {
    dvbInaDhcpServerIfIndex,
    dvbInaDhcpServerIpType,
    dvbInaDhcpServerIp,
    dvbInaDhcpServerRowAccessStatus,
    dvbInaDhcpServerRelayEnable,
    dvbInaDhcpServerAssociation,
    dvbInaDhcpServerPrimaryOrSecondary
}
```

STATUS current

Pedersen Informational - Expires August 2001

45

DVB Cable INA Device MIB

Feb 2001

DESCRIPTION

"A collection of objects providing control over the INAs
DHCP/BOOTP functionality."

::= { dvbInaGroups 4 }

dvbInaEventGroup OBJECT-GROUP

```
OBJECTS {
    dvbInaEvControl,
    dvbInaEvSyslogIpType,
    dvbInaEvSyslogIp,
    dvbInaEvThrottleAdminStatus,
    dvbInaEvThrottleInhibited,
    dvbInaEvThrottleThreshold,
}
```

```

        dvbInaEvThrottleInterval,
        dvbInaEvPriority,
        dvbInaEvReporting,
        dvbInaEvMaxNumberOfEntries,
        dvbInaEvIndex,
        dvbInaEvFirstTime,
        dvbInaEvLastTime,
        dvbInaEvCount,
        dvbInaEvLevel,
        dvbInaEvId,
        dvbInaEvText
    }
STATUS      current
DESCRIPTION
    "A collection of objects used to control and monitor events
    generated at and by the INA."
 ::= { dvbInaGroups 5 }

```

```

dvbInaIpFilterGroup OBJECT-GROUP
    OBJECTS {
        dvbInaIpFilterEnable,
        dvbInaIpFilterIndex,
        dvbInaIpFilterStatus,
        dvbInaIpFilterAssignedBy,
        dvbInaIpFilterIfIndex,
        dvbInaIpFilterDirection,
        dvbInaIpFilterTos,
        dvbInaIpFilterTosMask,
        dvbInaIpFilterSrcAddrType,
        dvbInaIpFilterSrcAddr,
        dvbInaIpFilterSrcMaskType,
        dvbInaIpFilterSrcMask,
        dvbInaIpFilterDstAddrType,
        dvbInaIpFilterDstAddr,
        dvbInaIpFilterDstMaskType,
        dvbInaIpFilterDstMask,
        dvbInaIpFilterProtocol,
        dvbInaIpFilterSourcePortLow,
        dvbInaIpFilterSourcePortHigh,
        dvbInaIpFilterDestPortLow,
        dvbInaIpFilterDestPortHigh,

```

Pedersen Informational - Expires August 2001

46

DVB Cable INA Device MIB

Feb 2001

```

        dvbInaIpFilterAction,
        dvbInaIpFilterMatches,
        dvbInaIpFilterContinue,
        dvbInaIpFilterTosMapIndex,
        dvbInaIpTosMapIndex,

```

```

        dvbInaIpTosMapStatus,
        dvbInaIpTosMapAndMask,
        dvbInaIpTosMapOrMask
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing a filtering capability
        at the IP layer."
    ::= { dvbInaGroups 6 }

```

dvbInaEthFilterGroup OBJECT-GROUP

```

    OBJECTS      {
        dvbInaEthFilterEnable,
        dvbInaEthFilterIndex,
        dvbInaEthFilterStatus,
        dvbInaEthFilterIfIndex,
        dvbInaEthFilterEtherType,
        dvbInaEthFilterProtocol,
        dvbInaEthFilterAction,
        dvbInaEthFilterMatches
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing a filtering capability
        at the Ethernet layer."
    ::= { dvbInaGroups 7 }

```

dvbInaNiuErrorGroup OBJECT-GROUP

```

    OBJECTS      {
        dvbInaNiuErrorReset,
        dvbInaNiuErrorMaxTableSize,
        dvbInaNiuErrorStatReqInterval,
        dvbInaNiuErrorIndex,
        dvbInaNiuErrorMacAddress,
        dvbInaNiuErrorParamCode,
        dvbInaNiuErrorParamValue
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects representing errors associated
        with all NIUs attached to the INA."
    ::= { dvbInaGroups 9 }

```

dvbInaNiuIpGroup OBJECT-GROUP

```

    OBJECTS      {
        dvbInaNiuIpMacAddress,
        dvbInaNiuIpRowAccessStatus,
        dvbInaNiuIpHfcIpAddrType,
        dvbInaNiuIpHfcIpAddr,

```

```
        dvbInaNiuIpHfcIpMaskType,
        dvbInaNiuIpHfcIpMask,
        dvbInaNiuIpNetIpAddrType,
        dvbInaNiuIpNetIpAddr,
        dvbInaNiuIpNetIpMaskType,
        dvbInaNiuIpNetIpMask,
        dvbInaNiuIpAddressConfigType,
        dvbInaNiuIpDhcpPrimarySrvType,
        dvbInaNiuIpDhcpPrimarySrv,
        dvbInaNiuIpDhcpSecondarySrvType,
        dvbInaNiuIpDhcpSecondarySrv
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects describing the IP address
         off all NIUs attached to the INA."
    ::= { dvbInaGroups 10 }
```

END

6. Security Considerations

Changing the settings of the INA can seriously affect the operation and performance of the DVB cable system. The access to changing the operation should be secured.

7. References

[RFC2026](#) Bradner, S., "The Internet Standards Process - Revision 3",
[BCP 9](#), [RFC 2026](#), October 1996

ES200800 ETSI Standard 200 800 Digital Video Broadcasting (DVB);
DVB interaction channel for Cable TV distribution systems (CATV).
Version 2.0

[RFC2578](#) McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J.,
Rose, M., and S. Waldbusser, "Structure of Management Information
Version 2 (SMIv2)", STD 58, [RFC 2578](#), April 1999.

[RFC2579](#) McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J.,
Rose, M., and S. Waldbusser, "Textual Conventions for SMIv2", STD
58, [RFC 2579](#), April 1999.

[RFC2580](#) McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J.,
Rose, M., and S. Waldbusser, "Conformance Statements for SMIv2",
STD 58, [RFC 2580](#), April 1999.

[RFC2571](#) Harrington, D., Presuhn, R., and B. Wijnen, "An Architecture for Describing SNMP Management Frameworks", [RFC 2571](#), April 1999.

Pedersen	Informational - Expires August 2001	48
	DVB Cable INA Device MIB	Feb 2001

[RFC1155](#) Rose, M., and K. McCloghrie, "Structure and Identification of Management Information for TCP/IP-based Internets", STD 16, [RFC 1155](#), May 1990.

[RFC1212](#) Rose, M., and K. McCloghrie, "Concise MIB Definitions", STD 16, [RFC 1212](#), March 1991.

[RFC1215](#) M. Rose, "A Convention for Defining Traps for use with the SNMP", [RFC 1215](#), March 1991.

[RFC2578](#) McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Structure of Management Information Version 2 (SMIv2)", STD 58, [RFC 2578](#), April 1999.

[RFC2579](#) McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Textual Conventions for SMIv2", STD 58, [RFC 2579](#), April 1999.

[RFC2580](#) McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Conformance Statements for SMIv2", STD 58, [RFC 2580](#), April 1999.

[RFC1157](#) Case, J., Fedor, M., Schoffstall, M., and J. Davin, "Simple Network Management Protocol", STD 15, [RFC 1157](#), May 1990.

[RFC1901](#) Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Introduction to Community-based SNMPv2", [RFC 1901](#), January 1996.

[RFC1906](#) Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Transport Mappings for Version 2 of the Simple Network Management Protocol (SNMPv2)", [RFC 1906](#), January 1996.

[RFC2572](#) Case, J., Harrington D., Presuhn R., and B. Wijnen, "Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)", [RFC 2572](#), April 1999.

[RFC2574](#) Blumenthal, U., and B. Wijnen, "User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)", [RFC 2574](#), April 1999.

[RFC1905](#) Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Protocol Operations for Version 2 of the Simple Network Management Protocol (SNMPv2)", [RFC 1905](#), January 1996.

[RFC2573](#) Levi, D., Meyer, P., and B. Stewart, "SNMPv3 Applications", [RFC 2573](#), April 1999.

[RFC2575](#) Wijnen, B., Presuhn, R., and K. McCloghrie, "View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)", [RFC 2575](#), April 1999.

Pedersen	Informational - Expires August 2001	49
	DVB Cable INA Device MIB	Feb 2001

[RFC2570](#) Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction to Version 3 of the Internet-standard Network Management Framework", [RFC 2570](#), April 1999.

[RFC2119](#) Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997

[RFC2851](#) M. Daniele, B. Haberman, S. Routhier, J. Schoenwaelder, "Textual Conventions for Internet Network Addresses", June 2000

8. Acknowledgments

This MIB was produced by the DVB RCCL group based on original work from Philips with contributions from among others COM21, Industree, Terayon, Harmonic and Cisco Systems

9. Author's Addresses

Jens Mose Pedersen
Cisco CPS
Automatikvej 1, DK-2860 Soeborg, Denmark
Phone: +45 39 55 00 00
Email: jmp@cisco.com

10. Full Copyright Statement

"Copyright (C) The Internet Society (December 2000). All Rights Reserved. This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without

restriction of any kind, provided that the above copyright notice and this paragraph are included on all such copies and derivative works. However, this document itself may not be modified in any way, such as by removing the copyright notice or references to the Internet Society or other Internet organizations, except as needed for the purpose of developing Internet standards in which case the procedures for copyrights defined in the Internet Standards process must be followed, or as required to translate it into.