Management Event MIB
for PacketCable/IPCablecom MTAs

Status of this Memo

By submitting this Internet-Draft, each author represents that any applicable patent or other IPR claims of which he or she is aware have been or will be disclosed, and any of which he or she becomes aware will be disclosed, in accordance with Section 6 of BCP 79.

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.html

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

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 provides a common data and format representation for events generated by PacketCable and IPCablecom compliant Multimedia Terminal Adapter devices.
1. The Internet-Standard Management Framework

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

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIv2, which is described in STD 58, RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580 [RFC2580].

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

A MTA is provisioned by the MSO for broadband Internet, data, and/or voice service. For more information on MTA provisioning refer to [PKT-SP-PROV] and [RFCXYZ]. MTA devices include one or more endpoints (e.g., telephone ports) which receive call signaling information to establish ring cadence, and codecs used for providing telephony service.

For more information on call signaling refer to [PKT-SP-MGCP] and [RFC3435].

For more information on codecs refer to [PKT-SP-CODEC].

Given the complexity of such systems it is important that a suitable event management mechanism be defined to allow for effective management. This MIB module provides objects suitable for generation and management of events on the MTA.

3. Terminology

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

The terms "MIB module" and "information module" are used interchangeably in this memo. As used here, both terms refer to any of the three types of information modules defined in Section 3 of RFC 2578 [RFC2578]. Some of the terms used in this memo are defined below. Some additional terms are also defined in the PacketCable(TM) Management Event Mechanism Specification [PKT-SP-MEM1.5] and the PacketCable MTA Device Provisioning Specification [PKT-SP-PROV].

3.1 PacketCable

PacketCable is a CableLabs-led initiative that is aimed at developing interoperable interface specifications for delivering advanced, real-time multimedia services over two-way cable plants.

3.2 IPCableCom

IPCableCom is an ITU Telecommunication Standardization Sector (ITU-T) project that includes architecture and a series of recommendations that enable the delivery of real time services over the cable television networks using cable modems.
3.3 MTA

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

3.4 Endpoint

An endpoint or MTA endpoint is a standard RJ-11 telephony physical port located on the MTA and used for attaching the telephone device to the MTA.

3.5 MSO

Multi-System Operator. A cable company that operates many head-end locations in several cities.

3.6 UDP

User Datagram Protocol. A connectionless protocol built upon Internet Protocol (IP), as per RFC 768 [RFC768].

4. Overview

This MIB module provides a set of objects required for generation and management of events on PacketCable, European Telecommunications Standards Institute (ETSI), and International Telecommunication Union Telecommunication Standardization Sector (ITU-T) IPCablecom compliant Multimedia Terminal Adapter (MTA) devices. The EVENT MIB module is intended to supersede various EVENT MIB modules from which it is partly derived:

- the PacketCable 1.5 Management Event MIB Specification [PKT-SP-EVENMIB1.5],
- the ITU-T IPCablecom management event mechanism MIB requirements [ITU-T-J176]

Several normative and informative references are used to help define Management Event MIB objects. As a convention, wherever the requirements are equivalent at the time of the writing, the PacketCable reference is used. However, MTA implementations MUST refer to the corresponding specifications to ensure compliance.
4.1 Structure of the MIB

This MIB is structured in six groups:

- Management information that controls the event reporting (pktcDevEventControl).

- Management information that configures the event throttling control (pktcDevEventThrottle).

- Management information reflecting the status of the event transmission (pktcDevEventStatus).

- Management information that specifies the possible events that can be generated by the MTA (pktcDevEventDescr).

- Management information related to the events generated by the MTA (pktcDevEventLog).

- Management information that defines the trap and inform messages (pktcDevEvNotification).

4.1.1 pktcDevEventControl

The objects in this group contain information related to the destination Syslog Server and actions related to the event tables.

pktcDevEvControl - this object defines the actions related to the event tables.

pktcDevEvSyslogAddressType - this object defines the address type of the Syslog Server.

pktcDevEvSyslogAddress - this object specifies the address of the Syslog server.

pktcDevEvSyslogUdpPort - this object specifies the UDP-port to which the Syslog messages need to be send.

4.1.2 pktcDevEventThrottle

The objects in this group control the throttling of the reported events.
4.1.3 pktcDevEventStatus
The objects in this group relate to the status of the event transmissions.

4.1.4 pktcDevEventDescr
The objects in this group contain the description of the possible events that can be generated.

4.1.5 pktcDevEventLog
The objects in this group contain the management information related to the events that can be generated by the MTA.

4.1.6 pktcDevEvNotification
The objects in this group define the structure for the SNMP trap and SNMP Inform notifications.

5. Definitions

PKTC-IETF-EVENT-MIB DEFINITIONS ::= BEGIN

IMPORTS
MODULE-IDENTITY,
OBJECT-TYPE,
Unsigned32,
NOTIFICATION-TYPE,
mib-2 FROM SNMPv2-SMI
TEXTUAL-CONVENTION,
TruthValue,
DateAndTime FROM SNMPv2-TC
SnmpAdminString FROM SNMP-FRAMEWORK-MIB
OBJECT-GROUP,
MODULE-COMPLIANCE,
NOTIFICATION-GROUP FROM SNMPv2-CONF
ifPhysAddress FROM IF-MIB
InetAddressType,
InetAddress,
InetPortNumber FROM INET-ADDRESS-MIB ;

pktcIetfEventMib MODULE-IDENTITY
LAST-UPDATED "200606250000Z" -- June 25, 2006
ORGANIZATION "IETF IP over Cable Data Network Working Group"
CONTACT-INFO
"Sumanth Channabasappa
Cable Television Laboratories, Inc.
858 Coal Creek Circle,
Louisville, CO 80027, USA
+1 303-661-3307
Sumanth@cablelabs.com

De Ketelaere/Nechamkin/Channabasappa Expires - August 2006 [Page 6]
DESCRIPTION
"This MIB module supplies the basic management objects for the reporting events generated by the Multimedia Terminal Adapter devices compliant with the PacketCable and IPCablecom requirements.

Copyright (C) The Internet Society (2006). This version of this MIB module is part of RFC nnnn; see the RFC itself for full legal notices."
-- RFC Ed: replace nnnn with actual RFC number and remove this note.

REVISION
"200606250000Z"

DESCRIPTION
"Initial version, published as RFC yyyy."
-- RFC Ed: replace yyyy with actual RFC number and remove this note

 ::=  { mib-2 XXX }
-- RFC Ed: replace XXX with IANA-assigned number and remove this note
-- note
--
-- Textual Conventions
--

SeverityLevel := TEXTUAL-CONVENTION
STATUS current
DESCRIPTION

"This textual convention represents the severity levels for the various events reported by the MTA. The levels are as described below:

- emergency(0) - A condition that makes the system unusable.
- alert(1) - A service-affecting condition for which immediate action must be taken.
- critical(2) - A service-affecting critical condition.
- error(3) - An error condition.
- warning(4) - A warning condition.
- notice(5) - A normal but significant condition.
- info(6) - An informational message.
- debug(7) - A debug message."

SYNTAX

BITS {
  emergency(0),
  alert(1),
  critical(2),
  error(3),
  warning(4),
  notice(5),
  info(6),
  debug(7)
}

---
---
--- Event Reporting control objects
---

pktcDevEvControl OBJECT-TYPE
SYNTAX  BITS {
  resetEventLogTable(0),
  resetEventDescrTable(1)
}
MAX-ACCESS  read-write
STATUS  current

De Ketelaere/Nechamkin/Channabasappa Expires - August 2006 [Page 8]
DESCRIPTION

"This MIB object defines the actions related to the event log configuration.

The MTA MUST take the appropriate action whenever a bit is set to a value of '1'.

Setting the resetEventLogTable(0) bit to a value of '1'
- deletes all entries in pktcDevEventLogTable,
- resets the value of pktcDevEvLogIndex to '0'

Setting resetEventDescrTable(1) to a value of '1'
- resets the pktcDevEventDescrTable to the factory default values.

Setting a control bit to a value of '0' MUST not result in any action.

Reading this MIB object MUST always return '00'.
MTA MUST perform the same actions regardless of persistancce (i.e. storage in non-volatile memory)."

::= { pktcDevEventControl 1 }

pktcDevEvSyslogAddressType OBJECT-TYPE
SYNTAX      InetAddressType
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION

"This MIB Object defines the Internet address type of the Syslog server. MTAs implementing this MIB module MUST support an InetAddressType of ipv4(1). MTAs MAY optionally support other address types."

REFERENCE

"PacketCable MTA Device Provisioning Specification, [PKT-SP-PROV]."

DEFVAL { ipv4 }

::= { pktcDevEventControl 2 }

pktcDevEvSyslogAddress OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION

"This MIB Object contains the IP address of the Syslog server. If this is set to either 0.0.0.0 or 255.255.255.255 the device MUST inhibit syslog
transmission.
The use of FQDNs is syntactically allowed, but
discouraged since a failure to resolve them in a
timely manner may leave the device without access to
the Syslog daemon during critical network events.
The type of address this object represents is defined
by the MIB Object pktDevEvSyslogAddressType.""
INDEX { pktcDevEventClass }
::= { pktcDevEventClassReportTable 1 }

PktcDevEventClassReportEntry ::= SEQUENCE {
    pktcDevEventClass SnmpAdminString,
    pktcDevEventReportStatus TruthValue,
    pktcDevEventClassSeverityLevel SeverityLevel
}

pktcDevEventClass OBJECT-TYPE
SYNTAX SnmpAdminString (SIZE (1..100))
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This MIB Object contains the identifier of an event class supported by the device. Vendors MAY define different event classes (e.g. DHCP, SNMP, DEBUG) to group together related events. It is to be noted that the absence of vendor defined event classes still calls for an event class termed ‘generic’ (refer ‘pktcDevEventClassReportEntry’)."
::= { pktcDevEventClassReportEntry 1 }

pktcDevEventReportStatus OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This MIB Object indicates if events belonging to a particular event class are to be enabled or disabled for reporting.

Setting this object to a value of ‘true’ enables reporting as per the MIB Object ‘pktcDevEventDescrReporting’.

Setting this object to a value of ‘false’ disables any reporting, irrespective of the value of the MIB Object ‘pktcDevEventDescrReporting’.

The default value of this MIB Object is vendor specific. However, the vendor SHOULD enable all event categories defined by PacketCable or IPCableCom, by default."
::= { pktcDevEventClassReportEntry 2 }
pktcDevEventClassSeverityLevel OBJECT-TYPE
SYNTAX    SeverityLevel
MAX-ACCESS read-write
STATUS    current
DESCRIPTION
 "This MIB Object defines the reporting levels
of events for the corresponding event class,
that need to be included for reporting.

This MIB Object has no effect on the event
generation unless the MIB Object
'pktcDevEventReportStatus' is set to a value
of 'true', for the corresponding event class.

Setting a bit to a value of '1' implies that
events corresponding to that level MUST be
reported as defined by the corresponding
value of 'pktcDevEventDescrReporting'.

Setting a bit to a value of '0' implies that
events corresponding to that level MUST NOT be
reported, irrespective of the corresponding
value of 'pktcDevEventDescrReporting'.

It is recommended that the bits corresponding
to emergency(0), alert(1), critical(2) and error(3)
always be set to a value of '1'. "
REFERENCE
 "RFC 3164, The BSD syslog Protocol, [RFC3164]."
 ::= { pktcDevEventClassReportEntry 3 }
 --
-- Event throttling control
--

pktcDevEvThrottleAdminStatus OBJECT-TYPE
SYNTAX    INTEGER {
 unconstrained(1),
 maintainBelowThreshold(2),
 stopAtThreshold(3),
 inhibited(4)
 }
MAX-ACCESS read-write
STATUS    current
DESCRIPTION
 "This MIB Object controls the throttling of of the
transmitted messages upon generation of an event
(SNMP/Syslog)."
A value of unconstrained(1) causes event messages to be transmitted without regard to the threshold settings.

A value of maintainBelowThreshold(2) causes event messages to be suppressed if the number of transmissions would otherwise exceed the threshold. A value of stopAtThreshold(3) causes event message transmission to cease at the threshold, and not resume until directed to do so.

A value of inhibited(4) causes all event message Transmission to be suppressed.

An event causing both an SNMP and a Syslog message is still treated as a single event.

Writing to this object resets the thresholding state.

Refer to MIB Objects pktcDevEventThrottleThreshold and pktcDevEventThrottleInterval for information on throttling."

DEFVAL { unconstrained }
::= { pktcDevEventThrottle 1 }

pktcDevEvThrottleThreshold OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"This MIB Object contains the number of events per pktcDevEventThrottleInterval to be transmitted before throttling.

An event causing both an SNMP and a Syslog message is still treated as a single event."

DEFVAL { 2 }
::= { pktcDevEventThrottle 2 }

pktcDevEvThrottleInterval OBJECT-TYPE
SYNTAX Unsigned32
UNITS "seconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"This MIB Object contains the interval over which the throttle threshold applies."

DEFVAL { 1 }
::= { pktcDevEventThrottle 3 }

---
-- Status Reporting
---

pktcDevEvTransmissionStatus OBJECT-TYPE
SYNTAX      BITS {
    syslogThrottled(0),
    snmpThrottled(1),
    validSyslogServerAbsent(2),
    validSnmpManagerAbsent(3),
    syslogTransmitError(4),
    snmpTransmitError(5)
}
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "This MIB Object reflects the status of the event transmission.

If a bit corresponding to a state is set to a value of:
    '1', it indicates that the state is true
    '0', it indicates that the state is false

'Event throttling' is based on thresholds and the current setting of pktcDevEvThrottleAdminStatus.

'Server/Manager' indicators must be based on the availability of valid Syslog server/SNMP managers.

'Transmit Errors' must only be used in cases where the MTA can identify unavailable servers."

::= { pktcDevEventStatus 1 }

---
-- Event Descriptions
---

pktcDevEventDescrTable OBJECT-TYPE
SYNTAX      SEQUENCE OF PktcDevEventDescrEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION

De Ketelaere/Nechamkin/Channabasappa Expires - August 2006   [Page 14]
"This MIB table contains all possible events that can be generated by the device. This includes both PacketCable/IPCableCom defined and vendor-specific events."

::= { pktcDevEventDescr 1 }

pktcDevEventDescrEntry OBJECT-TYPE
SYNTAX PktcDevEventDescrEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "An entry in this table is created for each event the MTA implementing this MIB is capable of reporting."
INDEX { pktcDevEventDescrId, pktcDevEventDescrEnterprise }

::= { pktcDevEventDescrTable 1 }

PktcDevEventDescrEntry::= SEQUENCE {
  pktcDevEventDescrId              Unsigned32,
pktcDevEventDescrEnterprise      Unsigned32,
pktcDevEventDescrFacility        INTEGER,
pktcDevEventDescrSeverityLevel   SeverityLevel,
pktcDevEventDescrReporting       BITS,
pktcDevEventDescrText            SnmpAdminString,
pktcDevEventDescrClass           SnmpAdminString
}

pktcDevEventDescrId OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This MIB Object contains the event identifier for the specific event to which the priority and display strings belong. The event identifier can either be PacketCable/IPCableCom defined or vendor-specific."

REFERENCE "PacketCable Management Event Mechanism Specification, [PKT-SP-MEM1.5]; PacketCable MTA Device Provisioning Specification, [PKT-SP-PROV]."

::= { pktcDevEventDescrEntry 1 }

pktcDevEventDescrEnterprise OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This MIB Object provides the IANA enterprise number of the Organization defining the event. Thus, all PacketCable or IPCableCom defined events will contain the PacketCable or IPCableCom IANA enterprise number and for vendor-specific events it will contain the IANA enterprise number of the defining organization."

::= { pktcDevEventDescrEntry 2 }

defined events will contain the
PacketCable or IPCableCom IANA enterprise number and for vendor-specific events it will contain the IANA enterprise number of the defining organization.

pktcDevEventDescrFacility OBJECT-TYPE
SYNTAX      INTEGER {
               kernel(0),
               user(1),
               mail(2),
               daemon(3),
               auth(4),
               syslog(5),
               lpr(6),
               news(7),
               uucp(8),
               cron(9),
               authPriv(10),
               ftp(11),
               ntp(12),
               security(13),
               console(14),
               clockDaemon(15),
               local0(16),
               local1(17),
               local2(18),
               local3(19),
               local4(20),
               local5(21),
               local6(22),
               local7(23)
          }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This MIB Object contains the facility for the event. For PacketCable/IPCableCom events this MUST be set to local0(16)."
REFERENCE
"RFC 3164, The BSD syslog Protocol, [RFC3164]."
::= { pktcDevEventDescrEntry 3 }

defined events will contain the PacketCable or IPCableCom IANA enterprise number and for vendor-specific events it will contain the IANA enterprise number of the defining organization.

pktcDevEventDescrSeverityLevel OBJECT-TYPE
SYNTAX      SeverityLevel

De Ketelaere/Nechamkin/Channabasappa Expires - August 2006 [Page 16]
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This MIB Object contains the severity level that is applicable to the corresponding event."
REFERENCE "RFC 3164, The BSD syslog Protocol, [RFC3164]."
 ::= { pktcDevEventDescrEntry 4 }

pktcDevEventDescrReporting OBJECT-TYPE
SYNTAX BITS {
    local(0),
    syslog(1),
    snmpTrap(2),
    snmpInform(3)
}
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This MIB Object defines the action to be taken on occurrence of this event. Bit local(0) refers to local logging of events, bit syslog(1) refers to the transmission of events using Syslog, bit snmpTrap(2) refers to the transmission of events using SNMP Trap and bit snmpInform(3) refers to the transmission of events using SNMP INFORMs.

Setting a bit to a value of ‘1’ indicates that the corresponding action will be taken upon occurrence of this event, provided the required parameters are present. (e.g.: Syslog Server for Syslog messages, SNMP targets for SNMP traps and SNMP INFORMs etc). If none of the bits are set then no action is taken upon occurrence of the event.

The default value of this MIB Object is dependent on the value of the MIB Object ‘pktcDevEventDescrSeverityLevel’, for the corresponding event.

For the following values of ‘pktcDevEventDescrSeverityLevel’: emergency(0), alert(1), critical(2) and error(3), the MTA MUST set the bits for local(0), syslog(1) and snmpInform(3) to a value of ‘1’ and the rest to a value of ‘0’.

For all the remaining values of ‘pktcDevEventDescrSeverityLevel’,
the MTA MUST set the bits for local(0) and syslog(1) to a value of ’1’ and the rest to a value of ’0’.

::= { pktcDevEventDescrEntry 5 }

pktcDevEventDescrText OBJECT-TYPE
SYNTAX SnmpAdminString(SIZE (0..127))
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This MIB Object provides a human-readable description of the event."
::= { pktcDevEventDescrEntry 6 }

pktcDevEventDescrClass OBJECT-TYPE
SYNTAX SnmpAdminString(SIZE (1..100))
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This MIB Object represents an event class associated with the corresponding event. Vendors MAY choose to define different event classes (e.g. DHCP, SNMP, DEBUG) to group together related events. Vendors SHOULD use standard protocol acronyms for well known protocols. However, separating packetcable defined from vendor-specific events for the same protocol is recommended (e.g DHCP and V-DHCP for the DHCP protocol).

If vendors choose not to define event classes, then the value of this MIB Object MUST be set to 'generic'.'

::= { pktcDevEventDescrEntry 7 }

---

-- Events generated
---

pktcDevEventLogTable OBJECT-TYPE
SYNTAX SEQUENCE OF PktcDevEventLogEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This MIB table contains a log of the events generated by the MTA. A description of all the events that can be generated by the device can be obtained from the
MIB table ‘pktcDevEventDescrTable’.
The contents of this table MAY persist in non-volatile memory.

::= { pktcDevEventLog 1 }

pktcDevEventLogEntry OBJECT-TYPE
SYNTAX PktcDevEventLogEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "Each entry in this table describes an event that has occurred, indexed in the chronological order of generation. The details of the event are borrowed from the parameters associated with the corresponding event entry in ‘pktcDevEventDescrTable’, at the time of the event generation. While all entries created as such can be cleared using the MIB Object pktcDevEvControl, the Event entries themselves cannot be individually deleted."

INDEX { pktcDevEvLogIndex }
::= { pktcDevEventLogTable 1 }

PktcDevEventLogEntry ::= SEQUENCE {
    pktcDevEvLogIndex          Unsigned32,
    pktcDevEvLogTime            DateAndTime,
    pktcDevEvLogEnterprise      Unsigned32,
    pktcDevEvLogId              Unsigned32,
    pktcDevEvLogText             SnmpAdminString,
    pktcDevEvLogEndpointName     SnmpAdminString,
    pktcDevEvLogType             BITS,
    pktcDevEvLogTargetInfo       SnmpAdminString,
    pktcDevEvLogCorrelationId    Unsigned32,
    pktcDevEvLogAdditionalInfo   SnmpAdminString
}

pktcDevEvLogIndex OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This MIB Object provides relative ordering of the objects in the event log. This object will always increase except when (a) the log is reset via pktcDevEvControl, (b) the device reboots and does not implement non-volatile storage for this log, (c) it reaches the value 2^31. The next entry for all the above cases is 0."
This also serves as an indicator of event sequence.

::= { pktcDevEventLogEntry 1 }

pktcDevEvLogTime OBJECT-TYPE
SYNTAX       DateAndTime
MAX-ACCESS   read-only
STATUS       current
DESCRIPTION
"This MIB Object provides a human-readable description of the time at which the event occurred. The actual time used SHOULD be defined by the architecture using this MIB definition. If unspecified, this MUST be the local time."

REFERENCE
"RFC 3164, The BSD syslog Protocol, [RFC3164]."

::= { pktcDevEventLogEntry 2 }

pktcDevEvLogEnterprise OBJECT-TYPE
SYNTAX      Unsigned32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This MIB Object provides the IANA enterprise number of the Organization defining the event. Thus, all PacketCable or IPCableCom defined events will contain the CableLabs or IPCableCom IANA enterprise number and for vendor-specific events it will contain the IANA enterprise number of the defining organization."

::= { pktcDevEventLogEntry 3 }

pktcDevEvLogId OBJECT-TYPE
SYNTAX      Unsigned32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This MIB Object contains the event identifier for the specific event to which the priority and display strings belong. The event identifier can either be PacketCable defined or vendor-specific."

::= { pktcDevEventLogEntry 4 }

pktcDevEvLogText OBJECT-TYPE
SYNTAX      SnmpAdminString
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This MIB Object contains the contents of
pktcDevEventDescrText, corresponding to the event, at
the moment of generation."
::= { pktcDevEventLogEntry 5 }

pktcDevEvLogEndpointName OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This MIB Object provides the endpoint identifier
followed by the PacketCable MTA’s Fully Qualified
Domain Name (FQDN) and the IP Address (IP)
of the PacketCable MTA device.

This will be denoted as follows:
aaln/n:<FQDN>/<IP>, where ‘n’ is the Endpoint number.
or
<FQDN>/<IP> if it is not specific to an endpoint."
::= { pktcDevEventLogEntry 6 }

pktcDevEvLogType OBJECT-TYPE
SYNTAX BITS {
    local(0),
    syslog (1),
    trap (2),
    inform (3)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This MIB Object contains the kind of actions taken by
the MTA when the event under consideration occurred.

A bit with a value of 1 indicates the corresponding
action was taken. Setting it to a value of 0 indicates
that the corresponding action was not taken.

An event may trigger one or more actions (e.g.: Syslog
and SNMP) or may remain as a local event since
transmissions could be disabled or inhibited as defined
by the Throttle MIB Objects."
::= { pktcDevEventLogEntry 7 }

pktcDevEvLogTargetInfo OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This MIB Object contains a comma separated list of the actions taken for external notifications, along with the target IP address for the generated events. Locally stored events must not be recorded in this MIB Object.

The syntax is as:

Where <action-n/IP> is to be denoted as follows:
For Syslog events:
   syslog/<IP address of the Syslog Server:port>
For SNMP traps:
   snmpTrap/<IP address of the SNMP Server:port>
For SNMP INFORMS:
   snmpInform/<IP address of the SNMP Server:port>

If there are multiple targets for the same type (SNMP Traps sent to multiple IP addresses) or if there are multiple messages sent to the same IP (Syslog and SNMP sent to the same IP address) they need to be reported individually."
::= { pktcDevEventLogEntry 8 }

pktcDevEvLogCorrelationId OBJECT-TYPE
SYNTAX      Unsigned32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This MIB Object contains the correlation ID generated by the MTA during the initiation of the last provisioning flow, within or following which the event occurred.

Although a Correlation-ID, once generated after MTA reset, does not change until next MTA reset, the value of this object will differ for the events preserved across MTA resets in case of a persistent pktcDevEventLogTable.

For more information on the generation of correlation ids, refer to the corresponding PacketCable/IPCableCom Device Provisioning specifications."
REFERENCE
"PacketCable MTA Device Provisioning Specification, [PKT-SP-PROV]."
::= { pktcDevEventLogEntry 9 }
pktcDevEvLogAdditionalInfo OBJECT-TYPE
SYNTAX      SnmpAdminString
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
"This MIB Object contains additional, useful information in relation to the corresponding event that a MTA might wish to report (for example: parameterized data or debugging information). The format is vendor-specific.
If MTA cannot provide any additional information for the particular event generated, it MUST populate this MIB Object with a string of zero-length."
 ::= { pktcDevEventLogEntry 10 }

---

-- Notifications
---

pktcDevEvNotificationIndex OBJECT IDENTIFIER ::= { pktcDevEvNotification 0 }

pktcDevEvInform NOTIFICATION-TYPE
OBJECTS { pktcDevEvLogTime,
pktcDevEvLogEnterprise,pktcDevEvLogId,
pktcDevEvLogEndpointName,pktcDevEvLogCorrelationId,ifPhysAddress}
STATUS      current
DESCRIPTION
"This Notification MIB Objects contains the Inform contents for event reporting.

It contains the event log time, the enterprise number of the organization defining the event, the event identifier, the endpoint identifier, the correlation id and the MTA MAC address (obtained in the MTA ifTable in the ifPhysAddress object that corresponds to the ifIndex 1) and a correlation ID."
 ::= { pktcDevEvNotificationIndex 1 }

pktcDevEvTrap NOTIFICATION-TYPE
OBJECTS { pktcDevEvLogTime,
pktcDevEvLogEnterprise,pktcDevEvLogId,
pktcDevEvLogEndpointName,pktcDevEvLogCorrelationId,ifPhysAddress}
STATUS      current
DESCRIPTION
"This Notification MIB Objects contains the Trap contents for event reporting."
It contains the event log time, the enterprise number of the organization defining the event, the event identifier, the endpoint identifier, the correlation id and the MTA MAC address (obtained in the MTA ifTable in the ifPhysAddress object that corresponds to the ifIndex 1) and a correlation ID.

::= { pktcDevEvNotificationIndex 2 }

---

--- Conformance/Compliance
---

pktcEventCompliances OBJECT IDENTIFIER ::= 
  { pktcDevEvConformance 1 }

pktcEventGroups OBJECT IDENTIFIER ::= 
  { pktcDevEvConformance 2 }

pktcEventBasicCompliance MODULE-COMPLIANCE

STATUS    current

DESCRIPTION
  "The compliance statement for devices that implement Event reporting feature."

MODULE    --pktcEventMib

MANDATORY-GROUPS {
  pktcEventGroup,
  pktcEventNotificationGroup
}

-- units of conformance
::= { pktcEventCompliances 3 }

pktcEventGroup OBJECT-GROUP

OBJECTS {
  pktcDevEvControl,
  pktcDevEvSyslogAddressType,
  pktcDevEvSyslogAddress,
  pktcDevEvSyslogUdpPort,
  pktcDevEvThrottleAdminStatus,
  pktcDevEvThrottleThreshold,
  pktcDevEvThrottleInterval,
  pktcDevEvTransmissionStatus,
  pktcDevEventDescrFacility,
  pktcDevEventDescrSeverityLevel,
  pktcDevEventDescrReporting,
  pktcDevEventDescrText,
  pktcDevEvLogTime,

pktcDevEvLogEnterprise, 
pktcDevEvLogId, 
pktcDevEvLogText, 
pktcDevEvLogEndpointName, 
pktcDevEvLogType, 
pktcDevEvLogTargetInfo, 
pktcDevEvLogCorrelationId, 
pktcDevEvLogAdditionalInfo, 
pktcDevEventDescrClass, 
pktcDevEventReportStatus, 
pktcDevEventClassSeverityLevel 
}

STATUS current
DESCRIPTION "Group of MIB objects for PacketCable Management Event MIB."
 ::= { pktcEventGroups 1 }

pktcEventNotificationGroup NOTIFICATION-GROUP
 NOTIFICATIONS { pktcDevEvInform, pktcDevEvTrap }
 STATUS current
DESCRIPTION "Group of MIB objects for notifications related to change in status of the MTA Device."
 ::= { pktcEventGroups 2 }
END

6. Relationship to Other MIB Modules
Some management objects defined in other MIB modules are applicable to an entity implementing this MIB. In particular, it is assumed that an entity implementing the PKTC-IETF-EVENT-MIB module will also implement the ‘interfaces’ group of the IF-MIB [RFC2863].

6.1 MIB modules required for IMPORTS
The PKTC-IETF-EVENT-MIB MIB module IMPORTS objects from SNMPv2-SMI [RFC2578], SNMPv2-TC [RFC2579], SNMP-FRAMEWORK-MIB [RFC3411], SNMPv2-CONF [RFC2580], IF-MIB [RFC2863] and the INET-ADDRESS-MIB [RFC4001].

7. Acknowledgments

This document is a production of the PacketCable Working Group.

The current editors wish to express their gratitude to the following individuals (in alphabetical order): David Harrington, Greg Nakanishi, Jean-Francois Mule, John Berg, Kevin Marez, Paul Duffy, Peter Bates, Randy Presuhn, Rich Woundy, Rick Vetter, Roy Spitzer, and Satish Kumar.
8. Normative References

[PKT-SP-PROV] Packetcable MTA Device Provisioning Specification
PKT-SP-PROV-I11-050812.

(MTA) Management Information Base for PacketCable and IPCablecom
compliant devices", RFCXYZ, <Date>.

Editor’s Note (to be removed prior to publication): This is the
reference to 'draft-ietf-ipcdn-pktc-mtamib’ which is expected to
accepted at the same time as this draft. When the draft is
accepted, the RFC Editor is requested to replace XYZ (and in the
reference earlier) with the assigned value and to remove this
note.

[ITU-T-J176] IPCablecom management event mechanism MIB, J.176, ITU-T,
August 2002.

[PKT-SP-EVEMIB1.5] PacketCable(TM) Management Event MIB
Specification, PKT-SP-EVEMIB1.5-I01-050128, January 2006.

[PKT-SP-MEM1.5] PacketCable(TM) Management Event Mechanism
Specification, PKT-SP-MEM1.5-I01-050128.

[RFC768] J. Postel, "User Datagram Protocol", STD0006, RFC 768,
August, 1980.

[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.

[RFC3410] Case, J., Mundy, R., Partain, D. and B. Stewart,
"Introduction and Applicability Statements for Internet –

[RFC3164] Lonvick, C., "The BSD syslog Protocol", RFC 3164, August


9. Informative References


10. IANA Considerations

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

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>OBJECT IDENTIFIER Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pktcIetfEventMib</td>
<td>{ mib-2 XXX }</td>
</tr>
</tbody>
</table>

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

11. Security Considerations

There are a number of management objects defined in this MIB module with a MAX-ACCESS clause of read-write and read-create. Such
objects may be considered sensitive or vulnerable in some network environments. Security threats include events unreported on errors, redirection of events (deliberately or otherwise) or minimized reporting of errors. Such threats can mask certain misconfiguration attempts and denial of service attacks that can be recognized and thwarted via event reporting.

MIB objects of significance include:
- those that control the event generation, the target syslog address for events and the reporting status, i.e.:
  - pktcDevEvControl
  - pktcDevEvSyslogAddressType
  - pktcDevEvSyslogAddress
  - pktcDevEvSyslogUdpPort
  - pktcDevEventReportStatus

- those related to event classes, i.e.:
  - pktcDevEventClassSeverityLevel

- those related to throttling, i.e.:
  - pktcDevEvThrottleAdminStatus
  - pktcDevEvThrottleThreshold
  - pktcDevEvThrottleInterval

- those related to the event reporting capabilities of an MTA, i.e:
  - pktcDevEventDescrSeverityLevel
  - pktcDevEventDescrReporting
  - pktcDevEventDescrText
  - pktcDevEventDescrClass

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control even GET access to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP. These are the tables and objects and their sensitivity/vulnerability:

pktcDevEventLogTable: This table contains the log of generated event messages. Read access to this table might reveal some specific information that should be kept confidential.

pktcDevEvTransmissionStatus: This MIB Object reveals the status of event transmission and MAY be sensitive in some environments.

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

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

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

Authors’ Addresses
Sumanth Channabasappa
Cable Television Laboratories, Inc.
858 Coal Creek Circle,
Louisville, CO 80027, USA
+1 303-661-3307
Sumanth@cablelabs.com

Wim De Ketelaere
tComLabs
Gildestraat 8
9000 Gent, Belgium
+32 9 269 22 90
deketelaere@tComLabs.com

Eugene Nechamkin
Broadcom Corporation
200 - 13711 International Place
Richmond, BC, V6V 2Z8, Canada
+1 604 233 8500
enechamkin@broadcom.com

Disclaimer of validity:
The IETF takes no position regarding the validity or scope of any Intellectual Property Rights or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license
under such rights might or might not be available; nor does it represent that it has made any independent effort to identify any such rights. Information on the procedures with respect to rights in RFC documents can be found in BCP 78 and BCP 79.

Copies of IPR disclosures made to the IETF Secretariat and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementers or users of this specification can be obtained from the IETF on-line IPR repository at http://www.ietf.org/ipr.

The IETF invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights that may cover technology that may be required to implement this standard. Please address the information to the IETF at ietf-ipr@ietf.org.

Full Copyright Statement

Copyright (C) The Internet Society (2006). This document is subject to the rights, licenses and restrictions contained in BCP 78, and except as set forth therein, the authors retain all their rights.

This document and the information contained herein are provided on an "AS IS" basis and THE CONTRIBUTOR, THE ORGANIZATION HE/SHE REPRESENTS OR IS SPONSORED BY (IF ANY), THE INTERNET SOCIETY AND THE INTERNET ENGINEERING TASK FORCE DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.