Management Event MIB
for PacketCable/IPCablecom MTAs

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.

This memo specifies a MIB module in a manner that is compliant to the SNMP SMIv2. The set of objects are consistent with the SNMP framework and existing SNMP standards.
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", "NOT RECOMMENDED", "MAY", and "OPTIONAL", when used in the guidelines in this memo, are to be interpreted as described in RFC 2119 [RFC2119].

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].

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
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 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 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

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-EVEMIB1.5],
- the ITU-T IPCablecom management event mechanism MIB requirements [ITU-T-J176]

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 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
  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 "200510230000Z" -- 10/23/2005
  ORGANIZATION "IETF IP over Cable Data Network Working Group"
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  DESCRIPTION
    "This MIB module supplies the basic management objects
     for event reporting"
Acknowledgements:
John Berg - CableLabs
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Kevin Marez - Motorola, Inc.
Satish Kumar - Texas Instruments

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-- RFC Ed: replace nnnn with actual RFC number and remove this note.

REVISION "200510230000Z"

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

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

pktcDevEvControl OBJECT-TYPE
SYNTAX  BITS {
  resetEventLogTable(0),
  resetEventDescrTable(1)
}
MAX-ACCESS  read-write
STATUS      current
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' clears the entire event log (Deletes all entries in pktcDevEventLogTable).

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'."

::= { pktcDevEventControl 1 }

pktcDevEvSyslogAddressType OBJECT-TYPE
SYNTAX InetAddressType
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This MIB Object defines the address type of the Syslog server. MTAs implementing this MIB MUST support an InetAddressType of ipv4(1). MTAs MAY optionally implement other address types.

If an unsupported InetAddressType is used to set this object, the MTA MUST reject it and report an SNMP error stating 'wrong value'.

If an SNMP SET results in a type that does not match the value contained in the MIB Object pktcDevEvSyslogAddress, the MTA MUST reject the SNMP SET with an 'inconsistent value' error."

::= { 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.

If an SNMP SET results in a type that does not match
that indicated by the MIB Object
pktcDevEvSyslogAddressType, the MTA MUST
reject the SNMP SET with an 'inconsistent value'
error."

::= { pktcDevEventControl 3 }

pktcDevEvSyslogUdpPort OBJECT-TYPE
SYNTAX InetPortNumber
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"This MIB Object contains the UDP Port Number of the
Syslog Server. The MTA must send the
Syslog messages to this port on the Syslog Server."
DEFVAL { 514 }
::= { pktcDevEventControl 4 }

pktcDevEvReportingLevel OBJECT-TYPE
SYNTAX BITS {
   emergency(0),
   alert(1),
   critical(2),
   error(3),
   warning(4),
   notice(5),
   info(6),
   debug(7)
}
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"This MIB Object can be used to collectively
turn on/off event levels for all enabled
event classes as described in the MIB table
'pktcDevEventClassReportTable'.

The value of a 'reporting level bit' set
through this MIB Object results in the
corresponding bit in the MIB Object
'pktcDevEventClassReportLevel' set to the
same value, for all event classes that
are enabled for reporting
('pktcDevEventReportStatus' set to a value
of 'true').

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'.

::= { pktcDevEventControl 5 }

pktcDevEventClassReportTable OBJECT-TYPE
SYNTAX SEQUENCE OF PktcDevEventClassReportEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This MIB table contains all the event classes
and the reporting status information."
::= { pktcDevEventControl 6 }

pktcDevEventClassReportEntry OBJECT-TYPE
SYNTAX PktcDevEventClassReportEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "An entry in this table MUST be created for each
event class defined by a vendor for the events
described as part of 'pktcDevEventDescrTable'.

By definition of the MIB Object
'pktcDevEventDescrClass', an entry MUST be
created for the event class 'generic'."
INDEX { pktcDevEventClass }
::= { pktcDevEventControl 1 }

PktcDevEventClassReportEntry ::= SEQUENCE {
pktcDevEventClass SnmpAdminString, 
pktcDevEventReportStatus TruthValue, 
pktcDevEventClassReportLevel BITS
}

pktcDevEventClass OBJECT-TYPE
SYNTAX SnmpAdminString (SIZE (1..10))
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This MIB Object contains the identifier
of an event class supported by the device."
::= { pktcDevEventControl 1 }

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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 }

pktcDevEventClassReportLevel OBJECT-TYPE
SYNTAX      BITS {
    emergency(0),
    alert(1),
    critical(2),
    error(3),
    warning(4),
    notice(5),
    info(6),
    debug(7)
}
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 unless the
'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
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'.

\[::=\{\text{pktcDevEventClassReportEntry}~3\}\]
-- Event throttling control
--

\text{pktcDevEvThrottleAdminStatus} \text{ OBJECT-TYPE}
SYNTAX \text{INTEGER} \{ unconstrained(1),
         maintainBelowThreshold(2),
         stopAtThreshold(3),
         inhibited(4) \}
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"This MIB Object controls the throttling 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 pktcDevEvThrottleThreshold and pktcDevEvThrottleInterval 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 pktcDevEvThrottleInterval to be transmitted before throttling.

An event causing both a 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)
}

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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
  "This MIB table contains all the 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,
    pktcDevEventDescrLevel          INTEGER,
    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."
::= { 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 }

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)."
 ::= { pktcDevEventDescrEntry 3 }

pktcDevEventDescrLevel OBJECT-TYPE
SYNTAX        INTEGER {
    emergency(0),
    alert(1),
    critical(2),
    error(3),
    warning(4),
    notice(5),
    info(6),
    debug(7)
}
MAX-ACCESS     read-write
STATUS        current
DESCRIPTION  "This MIB Object contains the priority level that
is applicable to the corresponding event.
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.

::= { 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 'pktcDevEventDescrLevel', for the corresponding event.

For the following values of 'pktcDevEventDescrLevel': 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 'pktcDevEventDescrLevel', 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

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

pktcDevEventDescrClass OBJECT-TYPE
SYNTAX     SnmpAdminString(SIZE (1..10))
MAX-ACCESS read-write
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'."
 ::= { 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."
::= { 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
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.
For information on the generation of correlation ids, refer to the corresponding PacketCable/IPCableCom Device Provisioning specifications."

::= { 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.
However, the MTA is not required to implement this functionality."

::= { 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 
::= { 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 
::= { 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 }

---
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pktcEventGroup OBJECT-GROUP
    OBJECTS {
        pktcDevEvControl,
        pktcDevEvSyslogAddressType,
        pktcDevEvSyslogAddress,
        pktcDevEvSyslogUdpPort,
        pktcDevEvThrottleAdminStatus,
        pktcDevEvThrottleThreshold,
        pktcDevEvThrottleInterval,
        pktcDevEvTransmissionStatus,
        pktcDevEventDescrFacility,
        pktcDevEventDescrLevel,
        pktcDevEventDescrReporting,
        pktcDevEventDescrText,
        pktcDevEvLogTime,
        pktcDevEvLogEnterprise,
        pktcDevEvLogId,
        pktcDevEvLogText,
        pktcDevEvLogEndpointName,
        pktcDevEvLogType,
        pktcDevEvLogTargetInfo,
        pktcDevEvLogCorrelationId,
        pktcDevEvLogAdditionalInfo,
        pktcDevEvReportingLevel,
        pktcDevEventDescrClass,
        pktcDevEventReportStatus,
        pktcDevEventClassReportLevel
    }

    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. Acknowledgments

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7. Normative References

[PKT-SP-PROV] Packetcable MTA Device Provisioning Specification
PKT-SP-PROV-I10-040730.

(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 2005.

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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
8. Informative References


9. 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
10. 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 levels, i.e.:
  - pktcDevEvControl
  - pktcDevEvSyslogAddressType
  - pktcDevEvSyslogAddress
  - pktcDevEvSyslogUdpPort
  - pktcDevEvReportingLevel
  - pktcDevEventReportStatus
- those related to event classes, i.e.:
  - pktcDevEventClassReportLevel
- those related to throttling, i.e.:
  - pktcDevEvThrottleAdminStatus
  - pktcDevEvThrottleThreshold
  - pktcDevEvThrottleInterval
- those related to the event reporting capabilities of an MTA, i.e.:
  - pktcDevEventDescrLevel
  - 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.

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