Tech Note 132

Using RFC3621 PoE MIB

With

Microsemi Midspans

Revision 1.2
Catalog Number 06-0011-81

Introduction

In today's world of networking, where management capability is a crucial factor, it is vitally important to allow access to each network device via standard Management Information Bases (MIBs).

The RFC3621 standard defines the standard MIB for Power over Ethernet (PoE) devices.

This document explains how to manage Microsemi's™ Midspans using the standard PoE MIB via SNMP management stations such as HP OpenView, SNMPc, etc.

The document applies to users wishing to manage their Midspans via SNMP, and not via the Web. The MIB capabilities include:

- Monitoring the port power status
- Configuring the Enable / Disable ports option
- Providing statistics related to faulty ports
- Providing statistics related to power consumption
- Configuring indications of power consumption exceeding pre-determined percentages

Requirements

Ensure that the following requirements are met prior to implementing the instructions in this document:

1. Obtain the RFC3621 MIB from the Internet or the CD which comes with the Midspan:

2. Compile and install the downloaded RFC3621 MIB into the SNMP management application.

3. By browsing into the Midspan using a WEB browser, verify that Midspan's SNMPv2 or SNMPv3 option is enabled (refer to *Microsemi's User Guide (PowerView)* Catalogue Number 06-6911-056.

PoE MIB Tree Structure

The PoE MIB object ID is located under 1.3.6.1.2.1.105.

The MIB comprises three sections (see Figure 1): The first section deals with Port Parameters. The second deals with unit Main Power Supply parameters and the third with enabling/disabling PoE traps (Trap/Notification).

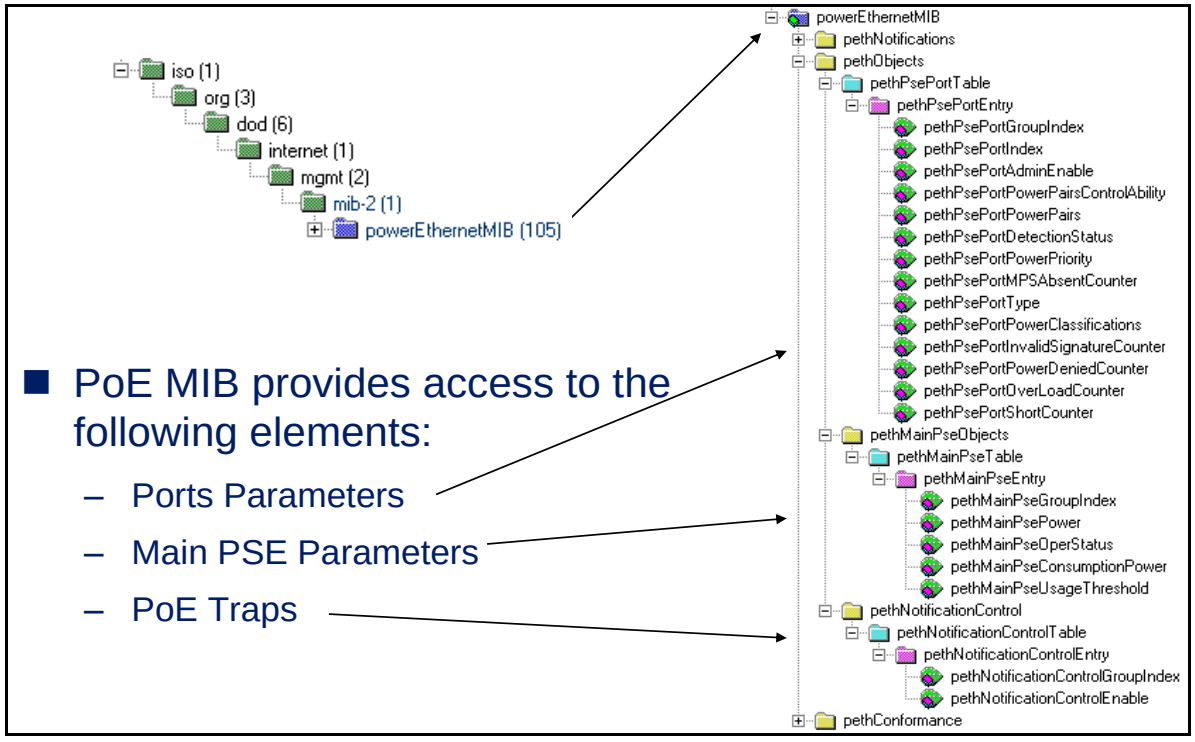
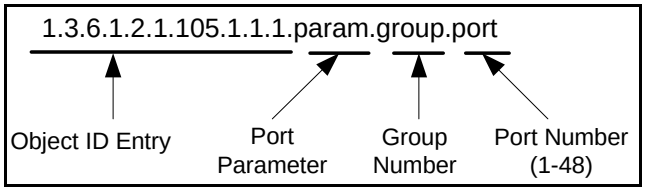


Figure 1: PoE MIB Tree Structure

Port Parameters

Port parameters are accessed as a two dimensional array table, where:



The first index Group Number is always '1', since the Midspan is a stand alone product and not a blade based product.

The second index is the PoE port number (1-48).

The Object IDs (Oid) types (Read-only / Read-Write) are indicated in brackets next to each command parameter.

Port On/Off (pethPsePortAdminEnable)

1.3.6.1.2.1.105.1.1.1.3 (Read-Write)

The Port On/Off function is controlled by the pethPsePortAdminEnable parameter, represented by the 1.3.6.1.2.1.105.1.1.1.3 object ID, so Port #8 for example is represented as 1.3.6.1.2.1.105.1.1.1.3.1.8.

- '1' ('TRUE'): Enables PoE port to provide power whenever a valid PD device is detected.
- '2' ('FALSE'): Disables PoE port from providing power.

Port Pairs Capability (pethPsePortPowerPairsControlAbility)

1.3.6.1.2.1.105.1.1.1.4 (Read-Only)

This parameter indicates whether a device is capable of switching power from Ethernet data pairs, to spare pairs.

It is accessed via 1.3.6.1.2.1.105.1.1.1.4.1. <Port>

- '1': Capable of switching power from Ethernet data pairs to spare pairs.
- '2': Incapable of switching power from Ethernet data pairs to spare pairs.

Port Pairs (pethPsePortPowerPairs)

1.3.6.1.2.1.105.1.1.1.5 (Read-Write)

Midspan only provides power on spare pins, so a write command is not applicable to Midspan devices.

This parameter reports the specific Ethernet pairs on which power is provided.

- '1'= Signal (RJ-45 pins 1, 2, 3, 6)
- '2'= Spare (RJ-45 pins 4, 5, 7, 8)

A Midspan reports '2' (spare). It is accessed via 1.3.6.1.2.1.105.1.1.1.5.1.<Port>

Port Detection Status (pethPsePortDetectionStatus)

1.3.6.1.2.1.105.1.1.1.6 (Read-Only)

This parameter reports the PSE port status which may acquire one of the values below.

It is accessed via: 1.3.6.1.2.1.105.1.1.1.6.1.<Port>.

- '1' = disabled
- '2' = searching
- '3' = deliveringPower
- '4' = fault
- '5' = test
- '6' = otherFault

Port Priority (pethPsePortPowerPriority)

1.3.6.1.2.1.105.1.1.1.7 (Read-Write)

This parameter defines port priority (Critical, High, and Low) and is accessed via 1.3.6.1.2.1.105.1.1.1.7.1. <Port>.

- '1' = Critical
- '2' = High
- '3' = Low

Port Type (pethPsePortType)

1.3.6.1.2.1.105.1.1.1.9 (Read-Write)

This parameter is a text field which can be used to describe the port's user (for example 'John's Office').

It is accessed via 1.3.6.1.2.1.105.1.1.1.9.1.<Port>.

Error Counters

The RFC3621 MIB defines five (5) error counters:

pethPsePortMPSAbsentCounter

1.3.6.1.2.1.105.1.1.1.8 (Read-Only)

This counter increments each time that a powered PoE port stops delivering power to a PD device (PD device was unplugged).

It is accessed via 1.3.6.1.2.1.105.1.1.1.8.1.<port>

pethPsePortInvalidSignatureCounter
1.3.6.1.2.1.105.1.1.1.11 (Read-Only)
This counter increments each time that a PD detection signature exceeds the upper or lower resistance limit.

It is accessed via 1.3.6.1.2.1.105.1.1.1.11.1.<port>

pethPsePortPowerDeniedCounter

1.3.6.1.2.1.105.1.1.1.12 (Read-Only)
This counter increments each time that a valid PD device is detected, but due to system power limits a PSE port is not powered.

It is accessed via 1.3.6.1.2.1.105.1.1.1.12.1.<port>

pethPsePortOverLoadCounter

1.3.6.1.2.1.105.1.1.1.13 (Read-Only)
This counter increments each time that a PD device tries to consume more than it's allowed power and the port has to be shut down.

It is accessed via 1.3.6.1.2.1.105.1.1.1.13.1.<port>

pethPsePortShortCounter

1.3.6.1.2.1.105.1.1.1.14 (Read-Only)
This counter increments each time that a powered PD device (already receiving 48 VDC) is shorted.

It is accessed via 1.3.6.1.2.1.105.1.1.1.14.1.<port>

Product Parameters

Group Parameters deal with parameters that are product related, such as Maximum Power Supply.

Maximum Power Supply (pethMainPsePower)

1.3.6.1.2.1.105.1.3.1.1.2 (Read-Only)

This parameter reports maximum the Power Supply available power and is accessed via 1.3.6.1.2.1.105.1.3.1.1.2.1.

Note that the last '1' represents Group #1.

A typical value, for example '200', represents 200 Watts.

Operation Status (pethMainPseOperStatus)

1.3.6.1.2.1.105.1.3.1.1.3 (Read-Only)

This field indicates if the unit is working properly.

- '1'= On
- '2'= Off
- '3'= Fault

Typical reading should be '1' and it is accessed via 1.3.6.1.2.1.105.1.3.1.1.3.1.

Total Power Consumption (pethMainPseConsumptionPower)

1.3.6.1.2.1.105.1.3.1.1.4 (Read-Only)

This parameter reports total power consumption, in watts (for example '120' value represents 120 Watts). It is accessed via 1.3.6.1.2.1.105.1.3.1.1.4.1.

Power Over-Usage in % (pethMainPseUsageThreshold)

1.3.6.1.2.1.105.1.3.1.1.5 (Read-Write)

This parameter defines the percentage at which a trap/notification is sent in cases where total power consumption exceeds the pre-determined limit (can be set from 1-99%). For example, a value of '80', with a power supply of 200 Watts, causes a trap to be sent whenever total power consumption exceeds 200*0.8=160 Watts. It is accessed via 1.3.6.1.2.1.105.1.3.1.1.5.1.

Trap/Notification Parameters (Group)

This section describes the trap/notification Parameters and actually contains only a single parameter. The parameter enables/disables sending RFC3621 MIB Traps/Notifications to the SNMP management station. A trap is sent whenever PoE port status changes, or total power consumption exceeds pre-defined limits.

Note that the Midspan can send the same trap to up to ten different SNMP management stations.

Trap Enable/Disable (pethNotificationControlEnable)

1.3.6.1.2.1.105.1.4.1.1.2 (Read-Write)

This parameter either enables or disables the Midspan from sending traps to a remote SNMP manager.

This parameter is accessed by 1.3.6.1.2.1.105.1.4.1.1.2.1. Note that since this parameter is represented by a single dimensional table, the last '1' represents Group #1.

Traps

The RFC3621 standard defines three types of traps/notifications:

- Trap sent whenever a port status change occurs (except for cases where port returns to 'searching' state).
- Trap sent in cases where the total power exceeds xy% of the power usage (in respect to power supply capability).
- Trap sent if total power consumption decreases below xy% (only if previous total power exceeded xy% and a trap was sent).

Figure 2 describes an example of a notification trap sent by a Midspan to an SNMP management station, using the SNMPv3 protocol.

This trap reports that power was provided to a PD device connected to Port #7.

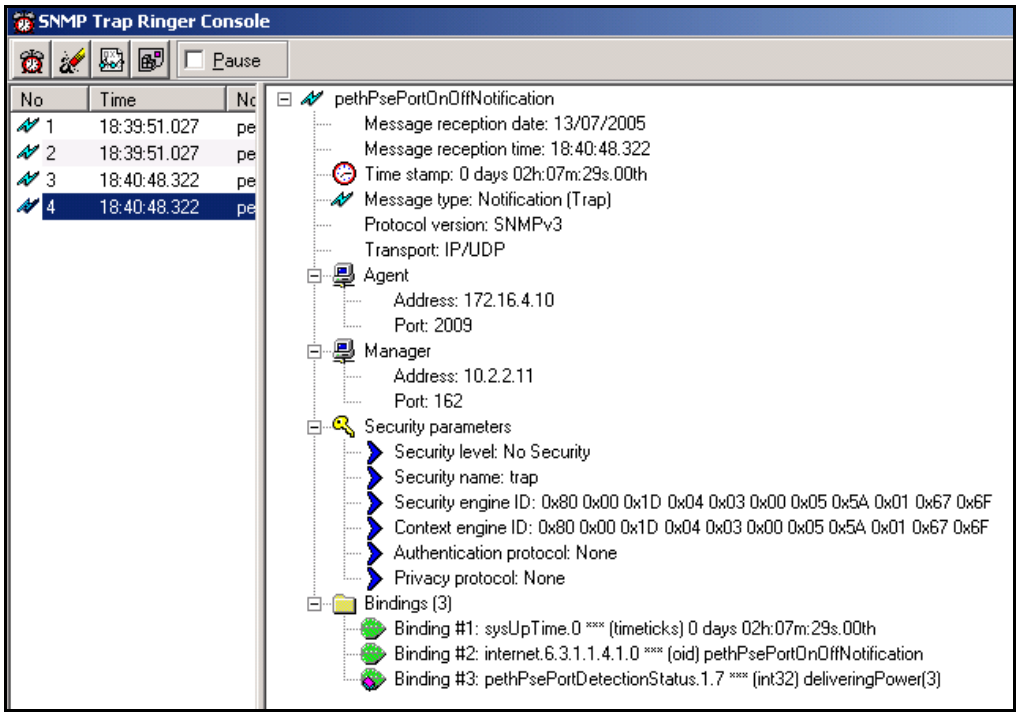


Figure 2: Example of SNMPv3 Notification Trap Sent by a Midspan

Covered under one or more of US Patents: #6,473,608; 6,986,071; 7,006,815; 7,254,734; 7,257,724; 7,305,573; 7,325,150; 7,437,217

Revision History

Revision Level / Date	Para. Affected	Description
1.1 / 15-Sep-09	Entire document	Formatting, English
1.2 / 4-Nov-11	Entire document	Formatting
1.3 / 24-May-16	Entire document	Replace “Powerdsine” by “Microsemi”

For support contact: PoEsupport@microsemi.com

Visit our website at: www.microsemi.com/products/poe-systems/poe-systems

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