

Internet Draft

Avi Berger
PowerDsine Inc.
Dan Romascanu
Avaya Inc.
19 December 2002

Power Ethernet (DTE Power via MDI) MIB

<[draft-ietf-hubmib-power-ethernet-mib-04.txt](#)>

Status of this Memo

This document is an Internet-Draft and is in full conformance with all provisions of [Section 10 of 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."

To view the list Internet-Draft Shadow Directories, see <http://www.ietf.org/shadow.html>.

Copyright Notice

Copyright (C) The Internet Society (2002). All Rights Reserved.

Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. The document proposes an extension to the Ethernet-like Interfaces MIB [[RFC2665](#)] with a set of objects for managing a power Ethernet Powered Device (PD) and/or Power Source Equipment (PSE).

Distribution of this memo is unlimited.

Table of Contents

Status of this Memo	1
Abstract	1
1 Introduction	2
2 The SNMP Management Framework	2

INTERNET DRAFT

Power Ethernet MIB

December 2002

3 Overview	3
4 MIB Structure	4
5 Evolution of the Document, Limitations and Future Work	4
6 Changes log	4
7 Definitions	10
8 Normative References	24
9 Informative References	25
10 Intellectual Property	26
11 Security Considerations	27
12 Authors Addresses	27
A Full Copyright Statement	28

1. Introduction

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 set of MIB objects to manage a Power Ethernet (DTE Power via MDI) Powered Device (PD) and/or power Source Equipment (PSE).

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 [[RFC2863](#)].

2. The SNMP Management Framework

The SNMP Management Framework presently consists of five major components:

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

[3.](#) Overview

The emergence of IP telephony as an application that allows for voice applications to be run over the same infrastructure as data applications led to the emergence of Ethernet IP phones, with similar functions and characteristics as the traditional phones. Powering a phone is one of these functions that are being taken as granted. The IEEE 802.3 Working Group initiated a standard work on this subject, currently known as the IEEE 802.3af work [[IEEE-802.3af](#)].

The IEEE 802.3af WG will not define a full management interface, but only the hardware registers that will allow for a management interfaces to be built for a powered Ethernet device. The MIB module defined in this document extends the Ethernet-like Interfaces MIB [[RFC2665](#)] with the management objects required for the management of the powered Ethernet devices and ports.

The following abbreviations are defined in [[IEEE-802.3af](#)] and will be used with the same significance in this document:

PSE - Power Sourcing Equipment;

PD - Powered Device

[4.](#) MIB Structure

This MIB objects are included in four MIB groups - three of them include MIB tables, and the fourth scalar objects

The pethPsePortTable defines the objects used for the configuration and describing the status of ports on a PSE device. Examples of PSE devices are Ethernet switches that support power Ethernet and mid-span boxes.

The pethPdPortTable defines the objects used for the configuration and describing the status of ports on a PD device. Examples of PD devices are Ethernet phones.

The pethMainPseObjects MIB group defines the management objects for a managed main power source in a PSE device. Ethernet switches are one example of boxes that would support these objects.

The pethTrapsControlTable includes objects that control the transmission of traps by the agent to a management application.

[5.](#) Evolution of the Document, Limitations and Future Work

The IEEE 802.3af is at this stage work in progress. The scope of this document is to do the standards work in the IETF in parallel with the

IEEE standardization activity, in order to allow for the publication of a standard track document containing an SNMP MIB simultaneously or close to the date of the publication of the IEEE revised standard. It is possible that changes may be brought to the IEEE proposal, and the Ethernet MIB Working Group will work in order to ensure consistency between the two standards proposals.

6. Changes Log

The following changes were introduced relative to the first proposal for a Power Ethernet MIB [[PWR-MIB](#)]

- a. pethPsePortTable has to index pethPsePortGroupIndex & pethPsePortIndex
- b. pethPsePortIndex INTEGER instead of InterfaceIndex
- c. Name change pethPsePortStatus insted of pethPsePortFaultError

- d. Name change pethPsePortStatusClear instead of pethPsePortFaultErrorClear
- e. DESCRIPTION update for pethPsePortPowerDetectionStatus test(3)
- f. DESCRIPTION update pethPsePortDetectionOperStatus off(2)
- g. Adding to pethPsePortStatus one more item both(4)
- h. Adding pethMainPseTable with a pethMainPseGroupIndex
- i. Deletting to objects pethMainPseMaxVoltage & pethMainPseMinVoltage
- j. Change SYNTAX of pethMainPseUsagePower form INTEGER to Gauge32
- k. Change SYNTAX of pethMainPseUsageCurrent form INTEGER to Gauge32
- l. Adding pethMainPseBackupActivated & pethMainPseBackupPresent
- m. Adding Traps Control Objects
- n. Adding Notifications Section (5 notifications)

- o. Adding pethTrapsControlGroup to Conformance Section
- p. Adding pethPsePortPowerClassifications to pethPsePortTable Class 1-5
- q. Adding pethPsePortPowerClassifications to pethPsePortGroup
- r. Change in pethPsePortStatus none(1) to ok(1)
- s. Change in DESCRIPTION of pethMainPseUsagePower from mW to Watt
- t. Change pethMainPseUsagePower to pethMainPseConsumptionPower
- u. Delete of pethMainPseUsageCurrent

The following changes were introduced between [draft-ietf-hubmib-power-ethernet-mib-00.txt](#) and [draft-ietf-hubmib-power-ethernet-mib-01.txt](#):

1. change pethMainPowerUsageTrap to pethMainPowerUsageOnTrap
2. add pethMainPowerUsageOffTrap
3. change pethMainPowerTrapGroup

4. change pethPsePorPowerEnable to pethPsePortAdminEnable
5. pethPsePortPowerIdPairsControl to pethPsePortPowerPairsControlAbility
6. pethPsePortPowerIdPairs to pethPsePortPowerPairs
7. delete both from pethPsePortPowerPairs object
8. change pethPsePortPowerDetectionStatus to pethPsePortPowerDetectionControl
9. delete from pethPsePortPowerDetectionControl off , and change test to 2

10. change pethPsePortDetectionOperStatus to pethPsePortDetectionStatus
11. change pethPsePortDetectionStatus to:
 - disabled(1),
 - searching(2),
 - detected(3),
 - deliveringPower(4),
 - fault(5),
 - invalidPD(6),
 - test(7),
 - denyLowPriority(8)
12. change description for pethPsePortPowerClassifications
13. change pethPsePortStatus to pethPsePortCurrentStatus
14. Update description for pethPsePortCurrentStatus
15. change pethPsePortStatusClear to pethPsePortCurrentStatusClear
16. change pethPdPortDetectionOperStatus to pethPdPortDetectionStatus
17. change in description of pethPdPortPowerPairs
18. change in pethPdPortDetectionStatus description
19. delete pethPdPortPowerClassifications object
20. change in pethPsePortGroup
21. change in pethPdPortGroup

22. change pethPsePortOnOffTrap with pethPsePortDetectionStatus object
23. change pethPsePortStatusTrap to pethPsePortCurrentStatusTrap
24. change pethPsePortTrapGroup

The following changes were introduced between [draft-ietf-hubmib-](#)

[power-ethernet-mib-01.txt](#) and [draft-ietf-hubmib-power-ethernet-mib-02.txt](#):

1. change pethMainPsePower SYNTAX Integer32 (0..65535) to (1..65535)
 2. change pethTrapsControlGroupIndex SYNTAX Integer32 (0..65535) to (1..65535)
 3. change int pethMainPseBackUpActivatedTrap pethPsePortGroupIndex to pethMainPseGroupIndex
 4. change int pethMainPowerUsageOnTrap pethPsePortGroupIndex to pethMainPseGroupIndex
 5. change int pethMainPowerUsageOffTrap pethPsePortGroupIndex to pethMainPseGroupIndex
 6. change pethMainPseGroupIndex MAX-ACCESS to read-only
- updates from IEEE Draft P802.3af/D3.1, June 5, 2002
7. remove from pethPsePortPowerClassifications class5
 8. remove from pethPsePortCurrentStatus both(4) and description
 9. add pethPsePortUnderCurrentCounter object
 10. add pethPsePortOverCurrentCounter object
 11. remove pethPsePortCurrentStatusClear object
 12. change pethPsePortType OID to end with 13
 13. change pethPsePortPowerClassifications OID to end with 14
 14. update pethPsePortGroup OBJECT-GROUP
 15. change reference to new IEEE Draft
 16. change pethPdCompliance description.

The following changes were introduced between [draft-ietf-hubmib-](#)

[power-ethernet-mib-02.txt](#) and [draft-ietf-hubmib-power-ethernet-mib-03.txt](#):

1. remove pethPsePortGroupIndex and pethPsePortIndex from pethPsePortOnOffTrap and pethPsePortCurrentStatusTrap
2. change pethPsePortGroupIndex and pethPsePortIndex MAX-ACCESS to not-accessible
3. remove pethMainPseGroupIndex from pethMainPseBackUpActivatedTrap
4. replace pethMainPseGroupIndex with pethMainPseConsumptionPower in pethMainPowerUsageOnTrap and pethMainPowerUsageOffTrap
5. change pethMainPseGroupIndex MAX-ACCESS to not-accessible
6. move pethPsePortTrapGroup NOTIFICATION-GROUP and pethMainPowerTrapGroup NOTIFICATION-GROUP to the Conformance [Section 7](#).
7. update the discription of pethPsePortOnOffTrap
8. add pethPsePortPowerDetectionControl to pethPsePortGroup
9. change reference to IEEE Draft P802.3af/D3.3 October 2002
10. delete enumeration pethPsePortDetectionStatus detected(3) and invalidPD(6)
11. change pethPsePortCurrentStatus to pethPsePortPowerMaintenanceStatus
- 12 . change pethPsePortUnderCurrentCounter to pethPsePortMPSAbsentCounter
13. add pethPdPortAdminEnable object.
14. replace Trap with Notification.
15. update pethPsePortOnOffNotification description.
16. update pethPsePortDetectionStatus description.
17. remove pethPdPortPowerPairs object.
18. remove pethPdPortDetectionStatus object.
19. remove pethPdPortType object.

20. change pethPdPortAdminEnable OID.

The following changes were introduced between [draft-ietf-hubmib-power-ethernet-mib-03.txt](#) and [draft-ietf-hubmib-power-ethernet-mib-04.txt](#):

1. remove pethMainPseMaximumDcPower object
2. remove pethMainPseBackupPresent object
3. remove pethMainPseBackupActivated object.
4. remove pethMainPseBackUpActivatedNotification
5. change reference from IEEE Draft P802.3af/D3.3, October, 2002 to IEEE Draft P802.3af/D4.0, November, 2002
6. DESCRIPTION "Initial version, published as RFC yyyy."
7. change the syntax of pethPsePortGroupIndex from INTEGER (1..2147483647) to Integer32 (1..2147483647).
8. change the syntax of pethPsePortIndex from INTEGER (1..2147483647) to Integer32 (1..2147483647).
9. change the syntax of pethPdPortIndex from INTEGER (0..65535) to InterfaceIndex.
10. import InterfaceIndex from IF-MIB.
11. change the syntax of pethMainPseGroupIndex from INTEGER (0..65535) to Integer32 (1..2147483647)
12. change the syntax of pethMainPseUsageThreshold from INTEGER (1..99) to Integer32 (1..99).
13. change the syntax of pethNotificationControlGroupIndex from INTEGER (1..65535) to Integer32 (1..2147483647)
14. replace OID: ! pethNotifications OBJECT IDENTIFIER ::= { powerEthernetMIB 0 } ! pethObjects OBJECT IDENTIFIER ::= { powerEthernetMIB 1 } ! pethConformance OBJECT IDENTIFIER ::= { powerEthernetMIB 2 }
15. change the discription of the pethPsePortGroup and pethPdPortGroup

16. pethMainPsePower changed to Gauge32

INTERNET DRAFT

Power Ethernet MIB

December 2002

17. add: REVISION "200212020000Z" -- December 02, 2002
 DESCRIPTION "Initial version, published as RFC yyyy."
 18 change the MIB registered from { dot3 20 } ::= {
mib-2 XXX } -- RFC Ed.: replace XXX with IANA-assigned
number & remove this notice

7. Definitions

POWER-ETHERNET-MIB DEFINITIONS ::= BEGIN

IMPORTS

MODULE-IDENTITY, mib-2, OBJECT-TYPE, Integer32,
Gauge32, Counter32, NOTIFICATION-TYPE
FROM SNMPv2-SMI
TruthValue
FROM SNMPv2-TC
InterfaceIndex
FROM IF-MIB
MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
FROM SNMPv2-CONF;

powerEthernetMIB MODULE-IDENTITY

LAST-UPDATED "200212020000Z" -- December 02, 2002
ORGANIZATION "IETF Ethernet Interfaces and Hub MIB
Working Group"
CONTACT-INFO
"

Chair: Dan Romascanu
Avaya Inc.
Tel: +972-3-645-8414
Email: dromasca@avaya.com

Editor: Avi Berger
PowerDsine Inc.

Tel: 972-9-7755100 Ext 307
Fax: 972-9-7755120
E-mail: avib@PowerDsine.com

"

DESCRIPTION

"The MIB module for for managing Powered Devices (PD) or Power Source Equipment (PSE) working according to the IEEE 802.af Powered Ethernet (DTE Power via MDI) standard.

Ethernet MIB WG

Expires June 2003

[Page 10]

INTERNET DRAFT

Power Ethernet MIB

December 2002

The following terms are used throughout this MIB module. For complete formal definitions, the IEEE 802.3 standards should be consulted wherever possible:

Group - A recommended, but optional, entity defined by the IEEE 802.3 management standard, in order to support a modular numbering scheme. The classical example allows an implementor to represent field-replaceable units as groups of ports, with the port numbering matching the modular hardware implementation.

Port - This entity identifies the port within the group for which this entry contains information. The numbering scheme for ports is implementation specific."

REVISION "200212020000Z" -- December 02, 2002

DESCRIPTION "Initial version, published as RFC yyyy."

-- RFC Ed.: replace yyyy with actual RFC number & remove this notice

::= { mib-2 XXX }

-- RFC Ed.: replace XXX with IANA-assigned number & remove this notice

pethNotifications OBJECT IDENTIFIER ::= { powerEthernetMIB 0 }

pethObjects OBJECT IDENTIFIER ::= { powerEthernetMIB 1 }

pethConformance OBJECT IDENTIFIER ::= { powerEthernetMIB 2 }

-- PSE Objects

pethPsePortTable OBJECT-TYPE

SYNTAX SEQUENCE OF PethPsePortEntry

MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"A table of objects that display and control the power characteristics power Ethernet ports on a Power Source Entity (PSE) device. This group will be implemented in managed power Ethernet switches and mid-span devices."
 ::= { pethObjects 1 }

pethPsePortEntry OBJECT-TYPE
SYNTAX PethPsePortEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"A set of objects that display and control the power characteristics of a power Ethernet PSE port."

INDEX { pethPsePortGroupIndex , pethPsePortIndex }
 ::= { pethPsePortTable 1 }

PethPsePortEntry ::= SEQUENCE {
 pethPsePortGroupIndex
 Integer32,
 pethPsePortIndex
 Integer32,
 pethPsePortAdminEnable
 INTEGER,
 pethPsePortPowerPairsControlAbility
 TruthValue,
 pethPsePortPowerPairs
 INTEGER,
 pethPsePortPowerDetectionControl
 INTEGER,
 pethPsePortDetectionStatus
 INTEGER,
 pethPsePortPowerPriority
 INTEGER,
 pethPsePortPowerMaintenanceStatus
 INTEGER,
 pethPsePortMPSAbsentCounter
 Counter32,

```
pethPsePortOverCurrentCounter
    Counter32,
pethPsePortType
    INTEGER,
pethPsePortPowerClassifications
    INTEGER
}
```

```
pethPsePortGroupIndex OBJECT-TYPE
    SYNTAX      Integer32 (1..2147483647)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This variable uniquely identifies the group
        containing the port to which a power Ethernet PSE is connected.
        Group means box in the stack, module in a rack and the value 1
        MUST be used for non-modular devices .

        pethPseMidSpanGroupCapacity is the number of Mid-Span PSE
        groups that can be contained within the Mid-Span PSE."
    ::= { pethPsePortEntry 1 }
```

```
pethPsePortIndex OBJECT-TYPE
```

```
SYNTAX      Integer32 (1..2147483647)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "This variable uniquely identifies the power Ethernet PSE
    port within group pethPseGroupIndex to which the
    power Ethernet PSE entry is connected."
    ::= { pethPsePortEntry 2 }
```

```
pethPsePortAdminEnable OBJECT-TYPE
SYNTAX INTEGER {
    enable(1),
    disable(2)
}
MAX-ACCESS read-write
STATUS current
DESCRIPTION
```

"Enables power supply on this port.
Setting this object at a value enable(1) enables power
and detection mechanism for this port.
Setting this object at a value disable(2) disables power
for this port."

::= { pethPsePortEntry 3 }

pethPsePortPowerPairsControlAbility OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Describes the capability of controlling the power pairs
functionality to switch pins for sourcing power.

The value true indicate that the device has the capability
to control the power pairs"

::= { pethPsePortEntry 4 }

pethPsePortPowerPairs OBJECT-TYPE

SYNTAX INTEGER {
 signal(1),
 spare(2)
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Describes or controls the pairs in use. If the value of
pethPsePortPowerPairsControl is true, this object is
writable.

A value of signal(1) means that the signal pairs

only are in use.

A value of spare(2) means that the spare pairs
only are in use."

::= { pethPsePortEntry 5 }

pethPsePortPowerDetectionControl OBJECT-TYPE

SYNTAX INTEGER {
 auto(1),
 test(2)
}

MAX-ACCESS read-write

STATUS current
DESCRIPTION
"Controls the power detection mechanism of the port.
Setting the value auto(1) enables the power detection mechanism of the port.
Setting the value test(2) puts the port in a testmode: force continuous discovery without applying power regardless of whether PD detected."
::= { pethPsePortEntry 6 }

pethPsePortDetectionStatus OBJECT-TYPE
SYNTAX INTEGER {
disabled(1),
searching(2),
deliveringPower(4),
fault(5),
test(7),
denyLowPriority(8)
}

MAX-ACCESS read-only
STATUS current
DESCRIPTION

"Describes the operational status of the port PD detection.
A value of disabled(1)- indicates that the PSE State diagram is in the state IDLE
A value of searching(2)- indicates that the PSE State diagram is in the state DETECTION, CLASSIFICATION, SIGNATURE_INVALID or BACKOFF.
A value of deliveringPower(4) - indicates that the PSE State diagram is in the state POWER_UP, POWER_ON or POWER_OFF.
A value of fault(5) - indicates that the PSE State diagram is in the state TEST_ERROR or the state IDLE due to the variable error condition.
Faults detected are vendor specific.
A value of test(7) - indicates that the PSE State diagram is in the state TEST_MODE.
A value of denyLowPriority(8) indicates that the port was

disabled by the power management system, in order to keep active higher priority ports.
"
::= { pethPsePortEntry 7 }


```

    pethPsePortPowerPriority OBJECT-TYPE
SYNTAX INTEGER {
    critical(1),
    high(2),
    low(3)
}
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "This object controls the priority of the port from the point
    of view of a power management algorithm. The priority that
    is set by this variable could be used by a control mechanism
    that prevents over current situations by disconnecting first
    ports with lower power priority. Ports that connect devices
    critical to the operation of the network - like the E911
    telephones ports - should be set to higher priority."
 ::= { pethPsePortEntry 8 }

    pethPsePortPowerMaintenanceStatus OBJECT-TYPE
SYNTAX INTEGER {
    ok(1),
    underCurrent(2),
    mPSAbsent(3)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The value ok(1) indicates the Power Maintenance
    Signature is present and the overcurrent condition has not been
    detected.
    The value overCurrent (2) indicates an overcurrent condition
    has been detected.
    The value mPSAbsent(3) indicates that the Power Maintenance
    Signature is absent."

REFERENCE    "[IEEE Draft P802.3af/D4.0, November, 2002, 30.9.1.1.8
    aPSEPowerMaintenanceStatus]"
 ::= { pethPsePortEntry 10 }

    pethPsePortMPSAbsentCounter OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only

```

STATUS current

DESCRIPTION

"Counts the number of times that the
pethPsePortPowerMaintenanceStatus attribute changes from any
value to the value mPSAbsent(3)."

REFERENCE "[IEEE Draft P802.3af/D4.0, November, 2002, object 30.9.1.1.
aPSEUnderCurrentCounter]"

::= { pethPsePortEntry 11 }

pethPsePortOverCurrentCounter OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the aPSEPowerCurrentStatus
attribute changes from any value to the value overCurrent(2)."

REFERENCE "[IEEE Draft P802.3af/D4.0, November, 2002, object 30.9.1.1.
aPSEOverCurrentCounter]"

::= { pethPsePortEntry 12 }

pethPsePortType OBJECT-TYPE

SYNTAX INTEGER {
 other(1),
 telephone(2),
 webcam(3),
 wireless(4)

}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"A manager will set the value of this variable to a value
that indicates the type of the device that is connected
to theport. This value can be the result of the mapping
the address of the stationPort connected to the port and of
the value of the pethPdPortType of the respective PD port."

::= { pethPsePortEntry 13 }

pethPsePortPowerClassifications OBJECT-TYPE

SYNTAX INTEGER {
 class0(1),
 class1(2),
 class2(3),
 class3(4),
 class4(5)

}

MAX-ACCESS read-only

DESCRIPTION

"Classification is a way to tag different terminals on the Power over LAN network according to their power consumption. Devices such as IP telephones, WLAN access points and others, will be classified according to their power requirements.

The value is only valid while a valid PD is being detected as indicated by the attribute pethPsePortDetectionStatus reporting the value or deliveringPower(4)."

REFERENCE "[IEEE Draft P802.3af/D4.0, November, 2002,
object 30.9.1.1.7 aPSEPowerClassification]"

::= { pethPsePortEntry 14 }

-- PD Port table

pethPdPortTable OBJECT-TYPE

SYNTAX SEQUENCE OF PethPdPortEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table of objects that display and control the power characteristics power Ethernet ports on a Powered Device(PD) device. This group will be implemented in managed powered and mid-span devices."

::= { pethObjects 2 }

pethPdPortEntry OBJECT-TYPE

SYNTAX PethPdPortEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A set of objects that display and control the power characteristics of a Powered Device port."

INDEX { pethPdPortIndex }

::= { pethPdPortTable 1 }

PethPdPortEntry ::= SEQUENCE {

pethPdPortIndex

InterfaceIndex,

```
    pethPdPortAdminEnable
        INTEGER
}
```

```
pethPdPortIndex OBJECT-TYPE
    SYNTAX      InterfaceIndex
    MAX-ACCESS  not-accessible
    STATUS      current
```

DESCRIPTION

"An index value that uniquely identifies an interface to a PD device. The interface identified by a particular value of this index is the same interface as identified by the same value of ifIndex. The mapping between the ifIndex values and the numbering of the port on the device is an implementation issue."

```
::= { pethPdPortEntry 1 }
```

```
pethPdPortAdminEnable OBJECT-TYPE
```

```
SYNTAX INTEGER {
    enable(1),
    disable(2)
}
```

```
MAX-ACCESS read-write
STATUS current
```

DESCRIPTION

"This value identifies the operational state of the PD functions. An interface which can provide the PD functions will be enable to do so when this attribute has the value enable. When this attribute has the value disable the interface will act as it would if it had no PD function."

```
::= { pethPdPortEntry 2 }
```

-- Main PSE Objects

```
pethMainPseObjects      OBJECT IDENTIFIER ::= { pethObjects 3 }
```

pethMainPseTable OBJECT-TYPE

SYNTAX SEQUENCE OF PethMainPseEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table of objects that display and control the Main power on a PSE device. Example - an Ethernet switch midspan device can control an Ethernet port and the Main Power supply unit's."

::= { pethMainPseObjects 1 }

pethMainPseEntry OBJECT-TYPE

SYNTAX PethMainPseEntry

MAX-ACCESS not-accessible

STATUS current

Ethernet MIB WG

Expires June 2003

[Page 18]

INTERNET DRAFT

Power Ethernet MIB

December 2002

DESCRIPTION

"A set of objects that display and control the Main power of a PSE. "

INDEX { pethMainPseGroupIndex }

::= { pethMainPseTable 1 }

PethMainPseEntry ::= SEQUENCE {

pethMainPseGroupIndex

Integer32,

pethMainPsePower

Gauge32 ,

pethMainPseOperStatus

INTEGER,

pethMainPseConsumptionPower

Gauge32,

pethMainPseUsageThreshold

Integer32

}

pethMainPseGroupIndex OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This variable uniquely identifies the group to which power Ethernet PSE is connected. Group means (box in the stack, module in a rack) and the value 1 MUST be used for non-modular

```

        devices "
 ::= { pethMainPseEntry 1 }

pethMainPsePower OBJECT-TYPE
    SYNTAX      Gauge32  (1..65535)
    UNITS       "Watts"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The nominal power of the PSE expressed in Watts."
 ::= { pethMainPseEntry 2 }

pethMainPseOperStatus OBJECT-TYPE
    SYNTAX INTEGER  {
        on(1),
        off(2),
        faulty(3)
    }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION

```

```

        "The operational status of the main PSE."
 ::= { pethMainPseEntry 3 }

pethMainPseConsumptionPower OBJECT-TYPE
    SYNTAX      Gauge32
    UNITS       "Watts"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Measured usage power expressed in Watts."
 ::= { pethMainPseEntry 4 }

pethMainPseUsageThreshold OBJECT-TYPE
    SYNTAX      Integer32  (1..99)
    UNITS       "%"
    MAX-ACCESS  read-write

```

```
STATUS      current
DESCRIPTION
    "The usage threshold expressed in percents for
    comparing the measured power and initiating
    an alarm if the threshold is exceeded."
 ::= { pethMainPseEntry 7 }
```

-- Notification Control Objects

```
pethNotificationControl      OBJECT IDENTIFIER ::= { pethObjects 4 }
```

```
pethNotificationControlTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PethNotificationControlEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table of objects that display and control the Notification
        on a PSE device."
    ::= { pethNotificationControl 1 }
```

```
pethNotificationControlEntry OBJECT-TYPE
    SYNTAX      PethNotificationControlEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A set of objects that control the Notification events."
    INDEX      { pethNotificationControlGroupIndex }
    ::= { pethNotificationControlTable 1 }
```

```
PethNotificationControlEntry ::= SEQUENCE {
    pethNotificationControlGroupIndex
        Integer32,
    pethNotificationControlEnable
        INTEGER
}
```

```
pethNotificationControlGroupIndex OBJECT-TYPE
    SYNTAX      Integer32 (1..2147483647)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This variable uniquely identifies the group. Group means
```

```
    box in the stack, module in a rack and it is RECOMENDED
    that the value 1 be used for non-modular devices "
 ::= { pethNotificationControlEntry 1 }
```

```
pethNotificationControlEnable OBJECT-TYPE
    SYNTAX          INTEGER
    {
        enable(1),
        disable(2)
    }
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "Enable Notification from Agent"
 ::= { pethNotificationControlEntry 2 }
```

```
--
-- Notifications Section
--
--
```

```
pethPsePortOnOffNotification NOTIFICATION-TYPE
    OBJECTS        { pethPsePortDetectionStatus }
    STATUS          current
    DESCRIPTION
        " This Notification indicates if Pse Port is delivering o
        not power to the PD. This Notification SHOULD be sent on
        every status change except in the searching mode."
 ::= { pethNotifications 1 }
```

```
pethPsePortPowerMaintenanceStatusNotification NOTIFICATION-TYPE
    OBJECTS        { pethPsePortPowerMaintenanceStatus }
```

```
STATUS          current
DESCRIPTION
    " This Notification indicates a Port Change Status and it
    SHOULD be sent on every status change."
 ::= { pethNotifications 2 }
```



```

pethMainPowerUsageOnNotification NOTIFICATION-TYPE
    OBJECTS      { pethMainPseConsumptionPower }
    STATUS       current
    DESCRIPTION
        " This Notification indicate PSE Threshold usage indication i
          on, the usage power is above the threshold."
    ::= { pethNotifications 4 }

pethMainPowerUsageOffNotification NOTIFICATION-TYPE
    OBJECTS      { pethMainPseConsumptionPower }
    STATUS       current
    DESCRIPTION
        " This Notification indicate PSE Threshold usage indication
          off, the usage power is below the threshold."
    ::= { pethNotifications 5 }

--
-- Conformance Section
--
pethCompliances OBJECT IDENTIFIER ::= { pethConformance 1 }
pethGroups      OBJECT IDENTIFIER ::= { pethConformance 2 }

pethCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "Describes the requirements for conformance to the
         Power Ethernet MIB."
    MODULE -- this module
        GROUP pethPsePortGroup
        DESCRIPTION
            "The pethPsePortGroup is mandatory for systems which
             implement PSE ports."
        GROUP pethPdPortGroup
        DESCRIPTION
            "The pethPdPortGroup is mandatory for systems which
             implement PD Ports."
        GROUP pethMainPseGroup
        DESCRIPTION

```

```

        "The pethMainPseGroup is mandatory for systems which
        implement main power supply within a PSE Device."
    GROUP    pethNotificationControlGroup
    DESCRIPTION
        "The pethNotificationControlGroup is mandatory for systems which
        implement PSE ports."
    ::= { pethCompliances 1 }

pethPseCompliance MODULE-COMPLIANCE
    STATUS    current
    DESCRIPTION
        "Describes the requirements for conformance to the PSE and MID-
        Span."
    MODULE    -- this module
    MANDATORY-GROUPS {pethPsePortGroup, pethMainPseGroup,pethNotificationCon
    ::= { pethCompliances 2 }

pethPdCompliance MODULE-COMPLIANCE
    STATUS    current
    DESCRIPTION
        "Describes the requirements for conformance to the PD."
    MODULE    -- this module
    MANDATORY-GROUPS {pethPdPortGroup}
    ::= { pethCompliances 3}

pethPsePortGroup OBJECT-GROUP
    OBJECTS {
        pethPsePortAdminEnable,
        pethPsePortPowerPairsControlAbility,
        pethPsePortPowerDetectionControl,
        pethPsePortPowerPairs,
        pethPsePortDetectionStatus,
        pethPsePortPowerPriority,
        pethPsePortPowerMaintenanceStatus ,
        pethPsePortMPSAbsentCounter,
        pethPsePortOverCurrentCounter,
        pethPsePortType,
        pethPsePortPowerClassifications
    }
    STATUS    current
    DESCRIPTION
        "The pethPsePortGroup is mandatory for systems which
        implement PSE ports."
    ::= { pethGroups 1 }

pethPdPortGroup OBJECT-GROUP
    OBJECTS {

```

INTERNET DRAFT

Power Ethernet MIB

December 2002

```
        pethPdPortAdminEnable
    }
    STATUS current
    DESCRIPTION
        "The pethPdPortGroup is mandatory for systems which
        implement PD Ports."
    ::= { pethGroups 2 }

pethMainPseGroup OBJECT-GROUP
    OBJECTS {
        pethMainPsePower,
        pethMainPseOperStatus,
        pethMainPseConsumptionPower,
        pethMainPseUsageThreshold
    }
    STATUS current
    DESCRIPTION
        "Main PSE Objects. "
    ::= { pethGroups 3 }

pethNotificationControlGroup OBJECT-GROUP
    OBJECTS {
        pethNotificationControlEnable
    }
    STATUS current
    DESCRIPTION
        "Notification Control Objects. "
    ::= { pethGroups 4 }

pethPsePortNotificationGroup NOTIFICATION-GROUP
    NOTIFICATIONS { pethPsePortOnOffNotification,
                    pethPsePortPowerMaintenanceStatusNotification}
    STATUS current
    DESCRIPTION "Pse Notification indications"
    ::= { pethCompliances 4 }

pethMainPowerNotificationGroup NOTIFICATION-GROUP
    NOTIFICATIONS { pethMainPowerUsageOnNotification,
                    pethMainPowerUsageOffNotification}
    STATUS current
    DESCRIPTION "Pse Notification indications"
    ::= { pethCompliances 5 }
```

END

8. Normative References

[RFC2571] Harrington, D., Presuhn, R., and B. Wijnen, "An Architecture

Ethernet MIB WG

Expires June 2003

[Page 24]

INTERNET DRAFT

Power Ethernet MIB

December 2002

for Describing SNMP Management Frameworks", [RFC 2571](#), April 1999.

[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.

[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.

[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.

[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.
- [RFC2665] Flick, J., and J. Johnson, "Definitions of Managed Objects for the Ethernet-like Interface Types", [RFC 2665](#), August 1999.
- [IEEE-802.3af] IEEE 802.3af Working Group, "Data Terminal Equipment (DTE) Power via Media Dependent Interface (MDI)", Draft D4.0, December 2002.

[9](#). Informative References

- [RFC1155] Rose, M., and K. McCloghrie, "Structure and Identification

Ethernet MIB WG

Expires June 2003

[Page 25]

INTERNET DRAFT

Power Ethernet MIB

December 2002

- 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.
- [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.
- [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.
- [PWR-MIB] Romascanu, D., " Power Ethernet (DTE Power via MDI) MIB", Internet-Draft, [draft-romascanu-hubmib-power-ethernet-mib-00.txt](#) June 2002.

10. Intellectual Property

The IETF takes no position regarding the validity or scope of any intellectual property 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; neither does it represent that it has made any effort to identify any such rights. Information on the IETF's procedures with respect to rights in standards-track and standards-related documentation can be found in [BCP-11](#). Copies of claims of rights made available for publication 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 implementors or users of this specification can be obtained from the IETF Secretariat.

The IETF invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary

rights which may cover technology that may be required to practice this standard. Please address the information to the IETF Executive Director.

[11](#). Security Considerations

There are a number of management objects defined in this MIB that have a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations.

There are a number of managed objects in this MIB that may contain sensitive information. These are:

pethPsePortPowerPairsControlAbility
pethPsePortPowerPriority
pethPsePortPowerClassifications

It is thus important to control even GET access to these objects and possibly to even encrypt the values of these object when sending them over the network via SNMP. Not all versions of SNMP provide features for such a secure environment.

SNMPv1 by itself is not a secure environment. 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.

It is RECOMMENDED that the implementers consider the security features as provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model [[RFC2274](#)] and the View-based Access Control Model [[RFC2275](#)] is RECOMMENDED.

It is then a customer/user responsibility to ensure that the SNMP entity giving access to an instance of this MIB, 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.

12. Authors Addresses

Avi Berger
PowerDsine Inc.

Ethernet MIB WG

Expires June 2003

[Page 27]

INTERNET DRAFT

Power Ethernet MIB

December 2002

1, Hanagar St., P.O. Box 7220
Hod Hasharon 45421,
Israel
Tel: +972-9-7755100 Ext 307
Fax: +972-9-7755120
E-mail: avib@PowerDsine.com

Dan Romascanu
Avaya Inc.
Atidim Technology Park, Bldg. #3
Tel Aviv, 61131
Israel
Tel: +972-3-645-8414

Email: dromasca@avaya.com

A. Full Copyright Statement

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 languages other than English.

The limited permissions granted above are perpetual and will not be revoked by the Internet Society or its successors or assigns.

This document and the information contained herein is provided on an "AS IS" basis and THE INTERNET SOCIETY AND THE INTERNET ENGINEERING TASK FORCE DISCLAIMS 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.