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Power Ethernet (DTE Power via MDI) MIB

<draft-ietf-hubmib-power-ethernet-mib-03.txt>

Status of this Memo

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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

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:

- An overall architecture, described in RFC 2571 [RFC2571].
- 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].
- 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].
- 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. chage 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. update the discription of pethPsePortOnOffTrap

8. add pethPsePortPowerDetectionControl to pethPsePortGroup

9. change reference to IEEE Draft P802.3af/D3.3 October 2002

10. delete enumaration 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.

7. Definitions

```
POWER-ETHERNET-MIB DEFINITIONS ::= BEGIN

   IMPORTS
        MODULE-IDENTITY, OBJECT-TYPE, Integer32 , Gauge32,Counter32,
        NOTIFICATION-TYPE
                FROM SNMPv2-SMI
        dot3
                FROM EtherLike-MIB
        TruthValue
                FROM SNMPv2-TC
        MODULE-COMPLIANCE, OBJECT-GROUP ,NOTIFICATION-GROUP
                FROM SNMPv2-CONF;

   powerEthernetMIB MODULE-IDENTITY
        LAST-UPDATED "200210190000Z"  -- October 19, 2002
        ORGANIZATION "IETF Ethernet Interfaces and Hub MIB
                      Working Group"
        CONTACT-INFO
        "

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        "

       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.

               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."
         ::= { dot3 20 }

   pethObjects       OBJECT IDENTIFIER ::= { powerEthernetMIB 1 }
   pethNotifications OBJECT IDENTIFIER ::= { powerEthernetMIB 2 }
   pethConformance   OBJECT IDENTIFIER ::= { powerEthernetMIB 3 }

   -- 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
             INTEGER,
          pethPsePortIndex
             INTEGER,
          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      INTEGER (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      INTEGER(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) menas 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/D3.3, October, 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/D3.3, October, 2002,  object
30.9.1.1.9
                     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/D3.3, October, 2002, object
30.9.1.1.10
                      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 station 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
       STATUS current
       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/D3.3, October , 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
              INTEGER,
          pethPdPortAdminEnable
              INTEGER
       }

         pethPdPortIndex OBJECT-TYPE
          SYNTAX      INTEGER (0..65535)
          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
enabled
                 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 Ethnternet port and the Main Power supply unit's."
          ::= { pethMainPseObjects 1 }

      pethMainPseEntry OBJECT-TYPE
          SYNTAX      PethMainPseEntry
          MAX-ACCESS  not-accessible
          STATUS      current
          DESCRIPTION
               "A set of objects that display and control the Main power
                of a PSE. "
          INDEX    { pethMainPseGroupIndex }
          ::= { pethMainPseTable 1 }

      PethMainPseEntry ::= SEQUENCE {
          pethMainPseGroupIndex
              INTEGER,
          pethMainPsePower
              Integer32,
          pethMainPseOperStatus
              INTEGER,
```

pethMainPseConsumptionPower

```
            Gauge32,
          pethMainPseBackupPresent
                INTEGER,
           pethMainPseBackupActivated
                TruthValue,
          pethMainPseUsageThreshold
              INTEGER,
          pethMainPseMaximumDcPower
                INTEGER
      }
        pethMainPseGroupIndex OBJECT-TYPE
          SYNTAX      INTEGER (0..65535)
          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      Integer32 (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 }


        pethMainPseBackupPresent  OBJECT-TYPE
          SYNTAX  INTEGER    {
                                present(1),
                                notPresent(2),
                                faulty(3)
          }
          MAX-ACCESS         read-only
          STATUS             current
          DESCRIPTION
                       "reflects the presence of a backup PSE ."
          ::= { pethMainPseEntry 5 }

        pethMainPseBackupActivated  OBJECT-TYPE
                    SYNTAX         TruthValue
                    MAX-ACCESS      read-only
                    STATUS          current
                    DESCRIPTION
                         "- reflects the activation status of the backup PSE .
                         The value true Backup is activated."
                    ::= { pethMainPseEntry 6 }

        pethMainPseUsageThreshold OBJECT-TYPE
          SYNTAX      INTEGER (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 }

      pethMainPseMaximumDcPower  OBJECT-TYPE
         SYNTAX             INTEGER
         UNITS               "Watts"
         MAX-ACCESS         read-write
         STATUS             current
         DESCRIPTION
                       "Describes the maximum available power  in
                       Watt to be supplied by the DC backup source to this
                       device."
         ::= { pethMainPseEntry 8 }
```

```
   -- 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
              INTEGER,
          pethNotificationControlEnable
                INTEGER
      }
        pethNotificationControlGroupIndex OBJECT-TYPE
          SYNTAX      INTEGER (1..65535)
          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
or
                      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 }

        pethMainPseBackUpActivatedNotification NOTIFICATION-TYPE
            OBJECTS     { pethMainPseBackupActivated }
            STATUS      current
            DESCRIPTION
                  " This Notification indicate BackUp is Activated or BackUp is
                       released."
            ::= { pethNotifications 3 }

        pethMainPowerUsageOnNotification NOTIFICATION-TYPE
            OBJECTS     { pethMainPseConsumptionPower  }
            STATUS      current
            DESCRIPTION
                  " This Notification indicate PSE Threshold usage indication
is
                      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,pethNotificationControlGroup}
        ::= { 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
                "PSE Port Objects."
        ::= { pethGroups 1 }

    pethPdPortGroup OBJECT-GROUP
        OBJECTS {
           pethPdPortAdminEnable
        }
        STATUS  current
        DESCRIPTION
                "PD Port Objects."
        ::= { pethGroups 2 }

    pethMainPseGroup OBJECT-GROUP
        OBJECTS {
           pethMainPsePower,
           pethMainPseOperStatus,
           pethMainPseConsumptionPower,
           pethMainPseBackupPresent,
           pethMainPseBackupActivated,
           pethMainPseUsageThreshold,
           pethMainPseMaximumDcPower
        }
        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 { pethMainPseBackUpActivatedNotification,
                              pethMainPowerUsageOnNotification,
                              pethMainPowerUsageOffNotification}
              STATUS          current
              DESCRIPTION  "Pse Notification indications"
             ::= { pethCompliances 5 }

    END
```

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9.Intellectual Property

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10. 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.

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A. Full Copyright Statement