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Power Ethernet (DTE Power via MDI) MIB

<draft-ietf-hubmib-power-ethernet-mib-01.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 expected 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

7. Definitions

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

   IMPORTS
        MODULE-IDENTITY, OBJECT-TYPE, Integer32 , Gauge32,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 "200111200000Z"  -- November 20, 2001
        ORGANIZATION "IETF Ethernet Interfaces and Hub MIB
                      Working Group"
        CONTACT-INFO
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        "

       DESCRIPTION
                "The MIB module for managing Powered Devices (PD) or
                Power Source Equipment (PSE) working according to the IEEE
                802.af Power 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,
          pethPsePortCurrentStatus
            INTEGER,
          pethPsePortCurrentStatusClear
            INTEGER,
          pethPsePortType
            INTEGER,
          pethPsePortPowerClassifications
              INTEGER
      }

        pethPsePortGroupIndex OBJECT-TYPE
          SYNTAX      INTEGER (1..2147483647)
          MAX-ACCESS  read-only
          STATUS      current
          DESCRIPTION
              "This variable uniquely identifies the group
               containing the port 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 "
          ::= { pethPsePortEntry 1 }

        pethPsePortIndex OBJECT-TYPE
          SYNTAX      INTEGER(1..2147483647)
          MAX-ACCESS  read-only
          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),
                  detected(3),
                  deliveringPower(4),
                  fault(5),
                  invalidPD(6),
                  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 PD Detection function has
            been disabled.
            A value of searching(2) indicates that the PD Detection function is
            enabled and is searching for a valid PD.
            A value of detected(3)indicates that the PD Detection function has
            detected a valid PD but the PSE is not supplying power.
            A value of deliveringPower(4) indicates that the port
            executed the detection algorithm, found a PD connection
            and is currently delivering power.
            A value of fault(5) indicates that a fault was detected
            on the port , faults detected are vendor-specific.
            A value of invalidPD(6)indicates that the PD Detection function has
            detected a invalid PD.
            A value of test(7)indicates that the PD Detection function has been
            placed in 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 }

        pethPsePortCurrentStatus OBJECT-TYPE
       SYNTAX INTEGER   {
                  ok(1),
                  underCurrent(2),
                  overCurrent(3),
                  both(4)
        }
       MAX-ACCESS read-only
       STATUS current
       DESCRIPTION
           "Describes a current port status related to the power generation
            The value ok(1) indicates neither an undercurrent or an overcurrent
            condition was detected since the attribute was last cleared.
            The value underCurrent(2) indicates that the port current
            is below the minimal value since the attribute was last cleared.
            The value overCurrent(3) indicates that the port current
            exceeds the maximal value since the attribute was last cleared.
            The value both(4) indicates that both underCurrent and overCurrent
            since the attribute was last cleared.
            This attribute is cleared through the pethPsePortCurrentStatusClear
            action.

            An undercurrent condition is detected when the current drawn from
            the PSE at the MDI is less than
            Off-mode current 2 for a duration greater than Under load time
            limit.
            An overcurrent condition is detected when the current drawn from
the
            PSE at the MDI is greater than the overload current limit
            for a duration greater that Overload time limit.
            The values Overload current limit, Overload time
            limit, Off-mode current 2 and Under load time limit are specified
in
            Table 33-5. If a Clause 22 MII or Clause 35 GMII is present, then
            this will map to the Under Current and Over Current bits
```

specified in 33.6.1.2.2 and 33.6.1.2.3.;"

```
      REFERENCE   "[IEEE DRAFT STANDARD FOR DTE POWER VIA MDI P802.3af/D1.2]"
      ::= { pethPsePortEntry 10 }

       pethPsePortCurrentStatusClear OBJECT-TYPE
      SYNTAX INTEGER   {
                clear(1),
                off(2)
   }
      MAX-ACCESS read-write
      STATUS current
      DESCRIPTION
          "Setting the value of this object to clear(1) clears the value
           of the pethPsePortStatus and enable the agent to update the
           pethPsePortStatus.
           Read operation this value will be off(2)."
      ::= { pethPsePortEntry 11 }

       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 12 }

      pethPsePortPowerClassifications OBJECT-TYPE
       SYNTAX INTEGER   {
                class0(1),
                class1(2),
                class2(3),
                class3(4),
                class4(5),
                class5(6)
       }
      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.
           A read-only value that indicates the PD Class of a detected PD as
           specified in IEEE Draft P802.3af/D2.1 Supplement to IEEE Std.802.3
           November 14 2001 cclause 33.2.5 and 33.2.6.

           The value is only valid while a valid PD is being detected as
indicated
           by the attribute pethPsePortDetectionStatus reporting the
enumeration
          (detected) or (deliveringPower).
              "
       ::= { pethPsePortEntry 13 }

   -- 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,
          pethPdPortPowerPairs
              INTEGER,
          pethPdPortDetectionStatus
              INTEGER,
          pethPdPortType
              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 }

        pethPdPortPowerPairs OBJECT-TYPE
       SYNTAX INTEGER   {
                  signal(1),
                  spare(2),
                  both(3)
        }
       MAX-ACCESS read-only
       STATUS current
       DESCRIPTION
           "Describes the pairs in use by the PD to derive power.
            A value of signal(1) indicates that only PD Pinout Mode A is
            supported by the PD.
            A value of spare(2) indicates that only PD Pinout Mode B is
            supported by the PD.
            A value of both(3) means indicates that both PD Pinout Mode A and
PD
            Pinout Mode B are supported by the PD."
       ::= { pethPdPortEntry 2 }

        pethPdPortDetectionStatus OBJECT-TYPE
       SYNTAX INTEGER   {
                  off(1),
                  receivingPower(2)
        }
       MAX-ACCESS read-only
       STATUS current
       DESCRIPTION
           "Describes the operational status of the port detection.
            The value off(1) indicates that the PD is drawing a current less
            than I
            Port as specified in IEEE Draft P802.3af/D2.1 Supplement to IEEE
            Std.802.3 November 14 2001 Table 33-10.
            The value receivingPower(2) indicates that the PD is drawing a
            current greater I Port as specified in
            IEEE Draft P802.3af/D2.1 Supplement to
```

IEEE Std.802.3 November 14 2001 Table 33-10.

```
   "
       ::= { pethPdPortEntry 3 }

        pethPdPortType OBJECT-TYPE
       SYNTAX INTEGER   {
                  other(1),
                  telephone(2),
                  webcam(3),
                  wireless(4)
        }
       MAX-ACCESS read-only
       STATUS current
       DESCRIPTION
           "The type of the device. A management application may read
             the value of this variable and use it for setting the
             corresponding value of pethPsePortType of the port that
             connects the device."
       ::= { pethPdPortEntry 4 }


   -- 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 internet switch midspan device can
              control an Internet 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 (0..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 percens 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 }


   -- Traps  Control  Objects

   pethTrapsControl        OBJECT IDENTIFIER ::= { pethObjects 4 }

   pethTrapsControlTable OBJECT-TYPE
          SYNTAX      SEQUENCE OF PethTrapsControlEntry
          MAX-ACCESS  not-accessible
          STATUS      current
          DESCRIPTION
              "A table of objects that display and control the Traps
               on a PSE  device."
          ::= { pethTrapsControl 1 }

      pethTrapsControlEntry OBJECT-TYPE
          SYNTAX      PethTrapsControlEntry
          MAX-ACCESS  not-accessible
          STATUS      current
          DESCRIPTION
               "A set of objects that control the Trap events."
          INDEX    { pethTrapsControlGroupIndex }
          ::= { pethTrapsControlTable 1 }

      PethTrapsControlEntry ::= SEQUENCE {
          pethTrapsControlGroupIndex
              INTEGER,
          pethTrapsControlEnable
              INTEGER
      }
      pethTrapsControlGroupIndex OBJECT-TYPE
          SYNTAX      INTEGER (0..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 recommended
              that the value 1 MUST be used for non-modular devices "
          ::= { pethTrapsControlEntry 1 }


         pethTrapsControlEnable  OBJECT-TYPE
          SYNTAX             INTEGER
               {
                      enable(1),
```

```
                    disable(2)
                    }
          MAX-ACCESS         read-write
          STATUS             current
          DESCRIPTION
             "Enable Traps from Agent"
         ::= { pethTrapsControlEntry 2 }


   --
   -- Notifications Section
   --
   --

        pethPsePortOnOffTrap NOTIFICATION-TYPE
            OBJECTS
{ pethPsePortGroupIndex,pethPsePortIndex,pethPsePortDetectionStatus }
            STATUS      current
            DESCRIPTION " This trap indicate if Pse Port is  delivering  or not
power to the PD."
             ::= { pethNotifications 1 }



        pethPsePortCurrentStatusTrap NOTIFICATION-TYPE
            OBJECTS
{ pethPsePortGroupIndex,pethPsePortIndex,pethPsePortCurrentStatus }
            STATUS      current
            DESCRIPTION
                    "This trap indicate Port Change Status and it will be
                     sent on every status change."
            ::= { pethNotifications 2 }

        pethMainPseBackUpActivatedTrap NOTIFICATION-TYPE
            OBJECTS     { pethPsePortGroupIndex,pethMainPseBackupActivated }
            STATUS      current
            DESCRIPTION
                    "This trap indicate BackUp is Activated or BackUp
                     is released."
            ::= { pethNotifications 3 }

        pethMainPowerUsageOnTrap NOTIFICATION-TYPE
            OBJECTS     { pethPsePortGroupIndex }
            STATUS      current
            DESCRIPTION
                    "This trap indicate PSE Threshold  usage indication is on ,
                     the useage power is above the treshold."
            ::= { pethNotifications 4 }
```

```
          pethMainPowerUsageOffTrap NOTIFICATION-TYPE
             OBJECTS     { pethPsePortGroupIndex }
```

```
            STATUS      current
            DESCRIPTION
                    "This trap indicate PSE Threshold  usage indication off ,
                     the useage power is below the treshold.."
            ::= { pethNotifications 5 }
      pethPsePortTrapGroup NOTIFICATION-GROUP
             NOTIFICATIONS { pethPsePortOnOffTrap,
pethPsePortCurrentStatusTrap}
             STATUS      current
             DESCRIPTION
                     "Pse trap indications"
           ::= { pethNotifications 6 }

       pethMainPowerTrapGroup NOTIFICATION-GROUP
              NOTIFICATIONS { pethMainPseBackUpActivatedTrap,
pethMainPowerUsageOnTrap,pethMainPowerUsageOffTrap}
              STATUS      current
              DESCRIPTION  "Pse trap indications"
           ::= { pethNotifications 7 }



   --
   -- 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   pethTrapsControlGroup
           DESCRIPTION
```

"The pethTrapsControlGroup 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
MidSpan."
       MODULE  -- this module
       MANDATORY-GROUPS {pethPsePortGroup,
pethMainPseGroup,pethTrapsControlGroup}
        ::= { pethCompliances 2 }

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

   pethPsePortGroup OBJECT-GROUP
       OBJECTS {
          pethPsePortGroupIndex,
          pethPsePortIndex,
          pethPsePortAdminEnable,
          pethPsePortPowerPairsControlAbility,
          pethPsePortPowerPairs,
          pethPsePortDetectionStatus,
          pethPsePortPowerPriority,
          pethPsePortCurrentStatus,
          pethPsePortCurrentStatusClear,
          pethPsePortType,
          pethPsePortPowerClassifications
       }
       STATUS  current
       DESCRIPTION
               "PSE Port Objects."
       ::= { pethGroups 1 }

   pethPdPortGroup OBJECT-GROUP
       OBJECTS {
          pethPdPortPowerPairs,
          pethPdPortDetectionStatus,
          pethPdPortType
       }
       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 }

   pethTrapsControlGroup OBJECT-GROUP
       OBJECTS {
          pethTrapsControlEnable
       }
       STATUS  current
       DESCRIPTION
               "Trap Control  Objects. "
       ::= { pethGroups 4 }
   END
```

8. References

[RFC2571] Harrington, D., Presuhn, R., and B. Wijnen, "An Architecture for Describing SNMP Management Frameworks", RFC 2571, April 1999.

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

[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.

[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.

[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.

[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.

[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 D2.1, November 2001.

[PWR-MIB] Romascanu, D., " Power Ethernet (DTE Power via MDI) MIB", Internet-Draft, draft-romascanu-hubmib-power-ethernet-mib-00.txt, February 2001.

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:

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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