Internet Draft

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Power Ethernet (DTE Power via MDI) MIB

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Status of this Memo

Copyright Notice

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).

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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].

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. chage reference to new IEEE Draft

16. change pethPdCompliance description.

7. Definitions


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

```
IMPORTS
     MODULE-IDENTITY, OBJECT-TYPE, Integer32 , Gauge32,Counter32 ,NOTIFIC
              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 "200206260000Z"  -- June 26, 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 Powere 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,
        pethPsePortUnderCurrentCounter
              Counter32,
        pethPsePortOverCurrentCounter
              Counter32,
        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 an 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)
         }
        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 has been
             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. "


        REFERENCE   "[IEEE Draft P802.3af/D3.1, June 5, 2002 object 30.9.1.1.8 a
        ::= { pethPsePortEntry 10 }

         pethPsePortUnderCurrentCounter OBJECT-TYPE
        SYNTAX Counter32
        MAX-ACCESS read-only
        STATUS current
        DESCRIPTION
            "Counts the number of times that the pethPsePortCurrentStatus
             attribute changes from any
            enumeration to the enumeration underCurrent ."

        REFERENCE   "[IEEE Draft P802.3af/D3.1, June 5, 2002 object 30.9.1.1.9 a
        ::= { 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
            enumeration to the enumeration overCurrent ."
        REFERENCE   "[IEEE Draft P802.3af/D3.1, June 5, 2002 object 30.9.1.1.10
        ::= { 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 enumeration
                (detected) or (deliveringPower).
               "
        REFERENCE   "[IEEE Draft P802.3af/D3.1, June 5, 2002 object 30.9.1.1.7 a
```



```
      ::= { 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,
          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-802.3af]
         The value receivingPower(2) indicates that the PD is drawing a
         current greater I Port as specified in [IEEE-802.3af]
          "
    REFERENCE   "[IEEE Draft P802.3af/D3.1, June 5, 2002 object 30.9.2.1.2 a
    ::= { 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
             Ethernet 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  read-only
          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 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 (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 recommend
            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,pethPsePortDet
            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,pethPsePortCur
            STATUS      current
            DESCRIPTION
                  " This trap indicate Port Change Status and
                       it will be sent on every status change."
            ::= { pethNotifications 2 }

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

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

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


     pethPsePortTrapGroup NOTIFICATION-GROUP
             NOTIFICATIONS { pethPsePortOnOffTrap, pethPsePortCurrentStatusTrap
             STATUS          current
```



```
             DESCRIPTION  "Pse trap indications"
            ::= { pethNotifications 6 }

        pethMainPowerTrapGroup NOTIFICATION-GROUP
              NOTIFICATIONS { pethMainPseBackUpActivatedTrap, pethMainPowerUsage
```

```
            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 MID-Span."
       MODULE  -- this module
       MANDATORY-GROUPS {pethPsePortGroup, pethMainPseGroup,pethTrapsControlGro
        ::= { 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 {
       pethPsePortGroupIndex,
       pethPsePortIndex,
       pethPsePortAdminEnable,
       pethPsePortPowerPairsControlAbility,
       pethPsePortPowerPairs,
       pethPsePortDetectionStatus,
       pethPsePortPowerPriority,
       pethPsePortCurrentStatus,
       pethPsePortUnderCurrentCounter,
       pethPsePortOverCurrentCounter,
       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
```

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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:

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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