

SNMP MIB extension for Multiprotocol Interconnect over X.25

Status of this Memo

This RFC specifies an IAB standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "IAB Official Protocol Standards" for the standardization state and status of this protocol. Distribution of this memo is unlimited.

Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP-based internets. In particular, it defines objects for managing Multiprotocol Interconnect (including IP) traffic carried over X.25. The objects defined here, along with the objects in the "SNMP MIB extension for the Packet Layer of X.25"[8], "SNMP MIB extension for LAPB"[7], and the "Definitions of Managed Objects for RS-232-like Hardware Devices"[6], combine to allow management of the traffic over an X.25 protocol stack.

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1. The Network Management Framework

The Internet-standard Network Management Framework consists of three components. These components give the rules for defining objects, the definitions of objects, and the protocol for manipulating objects.

The network management framework structures objects in an abstract information tree. The branches of the tree name objects and the leaves of the tree contain the values manipulated to effect management. This tree is called the Management Information Base or MIB. The concepts of this tree are given in STD 16, RFC 1155, "The Structure of Management Information" or SMI [1]. The SMI defines the trunk of the tree and the types of objects used when defining the leaves. STD 16, RFC 1212, "Towards Concise MIB Definitions" [3], defines a more concise description mechanism that preserves all the principals of the SMI.

The core MIB definitions for the Internet suite of protocols can be found in STD 17, RFC 1213 [4], "Management Information Base for Network Management of TCP/IP-based internets".

STD 15, RFC 1157 [2] defines the SNMP protocol itself. The protocol defines how to manipulate the objects in a remote MIB.

The tree structure of the MIB allows new objects to be defined for the purpose of experimentation and evaluation.

2. Objects

The definition of an object in the MIB requires an object name and type. Object names and types are defined using the subset of Abstract Syntax Notation One (ASN.1) [5] defined in the SMI [1]. Objects are named using ASN.1 object identifiers, administratively assigned names, to specify object types. The object name, together with an optional object instance, uniquely identifies a specific instance of an object. For human convenience, we often use a textual string, termed the descriptor, to refer to objects.

Objects also have a syntax that defines the abstract data structure corresponding to that object type. The ASN.1 language [5] provides the primitives used for this purpose. The SMI [1] purposely restricts the ASN.1 constructs which may be used for simplicity and ease of implementation.

2.1. Format of Definitions

Section 4 contains the specification of all object types contained in this MIB module. The object types are defined using the conventions defined in the SMI, as amended by the extensions specified in "Towards Concise MIB Definitions" [3].

3. Overview

3.1. Scope

Instances of the objects defined below provide management information for Multiprotocol Interconnect traffic on X.25 as defined in RFC 1356 [9]. That RFC describes how X.25 can be used to exchange IP or network level protocols. The multiprotocol packets (IP, CLNP, ES-IS, or SNAP) are encapsulated in X.25 frames for transmission between nodes. All nodes that implement RFC 1356 must implement this MIB.

The objects in this MIB apply to the software in the node that manages X.25 connections and performs the protocol encapsulation. A node in this usage maybe the end node source or destination host for the packet, or it may be a router or bridge responsible for forwarding the packet. Since RFC 1356 requires X.25, nodes that implement RFC 1356 must also implement the X.25 MIB, RFC 1382.

This MIB only applies to Multiprotocol Interconnect over X.25 service. It does not apply to other software that may also use X.25 (for example PAD). Thus the presence, absence, or operation of such software will not directly affect any of these objects. (However connections in use by that software will appear in the X.25 MIB).

3.2. Structure of MIB objects

The objects of this MIB are organized into three tables: the `mioxPleTable`, the `mioxPeerTable`, and the `mioxPeerEncTable`. All objects in all tables are mandatory for conformance with this MIB.

The `mioxPleTable` defines information relative to an interface used to carry Multiprotocol Interconnect traffic over X.25. Such interfaces are identified by an `ifType` object in the Internet-standard MIB [4] of `ddn-x25` or `rfc877-x25`. Interfaces of type `ddn-x25` have a self contained algorithm for translating between IP addresses and X.121 addresses. Interfaces of type `rfc877-x25` do not have such an algorithm. Note that not all X.25 Interfaces will be used to carry Multiprotocol Interconnect traffic. Those interfaces not carrying such traffic will not have entries in the `mioxPleTable`. The entries in the `mioxPleTable` are only for interfaces that do carry Multiprotocol Interconnect traffic over X.25. Entries in the `mioxPleTable` are indexed by `ifIndex` to make it easy to find the `mioxPleTable` entry for an interface.

The `mioxPeerTable` contains information needed to contact an X.25 Peer to exchange packets. This includes information such as the X.121 address of the peer and a pointer to the X.25 call parameters needed to place the call. The instance identifiers used for the objects in

this table are independent of any interface or other tables defined outside this MIB. This table contains the ifIndex value of the X.25 interface to use to call a peer.

The mioxPeerEncTable contains information about the encapsulation type used to communicate with a peer. This table is an extension of the mioxPeerTable in its instance identification. Each entry in the mioxPeerTable may have zero or more entries in this table. This table will not have any entries that do not have correspondent entries in mioxPeerTable.

4. Definitions

```
MIOX25-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
    Counter,
    TimeTicks
        FROM RFC1155-SMI
    OBJECT-TYPE
        FROM RFC-1212
    DisplayString, transmission,
    ifIndex
        FROM RFC1213-MIB
    InstancePointer
        FROM RFC1316-MIB
    X121Address
        FROM RFC1382-MIB
    PositiveInteger
        FROM RFC1381-MIB;
```

```
-- IP over X.25 MIB
```

```
miox      OBJECT IDENTIFIER ::= { transmission 38 }
```

```
mioxPle      OBJECT IDENTIFIER ::= { miox 1 }
```

```
mioxPeer     OBJECT IDENTIFIER ::= { miox 2 }
```

```
-- #####
--                               Ple Table
-- #####
```

```
-- Systems that implement RFC 1356 must also implement
-- all objects in this group.
```

```
mioxPleTable  OBJECT-TYPE
                SYNTAX  SEQUENCE OF MioxPleEntry
```

```

ACCESS    not-accessible
STATUS    mandatory
DESCRIPTION
    "This table contains information relative to
    an interface to an X.25 Packet Level Entity
    (PLE)."
 ::= { mioxPle 1 }

mioxPleEntry    OBJECT-TYPE
SYNTAX    MioxPleEntry
ACCESS    not-accessible
STATUS    mandatory
DESCRIPTION
    "These objects manage the encapsulation of
    other protocols within X.25."
INDEX { ifIndex }
 ::= { mioxPleTable 1 }

MioxPleEntry ::= SEQUENCE {
    mioxPleMaxCircuits
        INTEGER,
    mioxPleRefusedConnections
        Counter,
    mioxPleEnAddrToX121LkupFlrs
        Counter,
    mioxPleLastFailedEnAddr
        OCTET STRING,
    mioxPleEnAddrToX121LkupFlrTime
        TimeTicks,
    mioxPleX121ToEnAddrLkupFlrs
        Counter,
    mioxPleLastFailedX121Address
        X121Address,
    mioxPleX121ToEnAddrLkupFlrTime
        TimeTicks,
    mioxPleQbitFailures
        Counter,
    mioxPleQbitFailureRemoteAddress
        X121Address,
    mioxPleQbitFailureTime
        TimeTicks,
    mioxPleMinimumOpenTimer
        PositiveInteger,
    mioxPleInactivityTimer
        PositiveInteger,
    mioxPleHoldDownTimer
        PositiveInteger,
    mioxPleCollisionRetryTimer

```

```

        PositiveInteger,
mioxPleDefaultPeerId
        InstancePointer
    }

mioxPleMaxCircuits OBJECT-TYPE
    SYNTAX  INTEGER (0..2147483647)
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "The maximum number of X.25 circuits that
        can be open at one time for this interface.
        A value of zero indicates the interface will
        not allow any additional circuits (as it may
        soon be shutdown).  A value of 2147483647
        allows an unlimited number of circuits."
    ::= { mioxPleEntry 1 }

mioxPleRefusedConnections OBJECT-TYPE
    SYNTAX  Counter
    ACCESS  read-only
    STATUS  mandatory
    DESCRIPTION
        "The number of X.25 calls from a remote
        systems to this system that were cleared by
        this system.  The interface instance should
        identify the X.25 interface the call came in
        on."
    ::= { mioxPleEntry 2 }

mioxPleEnAddrToX121LkupFlrs OBJECT-TYPE
    SYNTAX  Counter
    ACCESS  read-only
    STATUS  mandatory
    DESCRIPTION
        "The number of times a translation from an
        Encapsulated Address to an X.121 address
        failed to find a corresponding X.121
        address.  Encapsulated addresses can be
        looked up in the mioxPeerTable or translated
        via an algorithm as for the DDN.  Addresses
        that are successfully recognized do not
        increment this counter.  Addresses that are
        not recognized (reflecting an abnormal
        packet delivery condition) increment this
        counter.

        If an address translation fails, it may be

```

difficult to determine which PLE entry should count the failure. In such cases the first likely entry in this table should be selected. Agents should record the failure even if they are unsure which PLE should be associated with the failure."

::= { mioxPleEntry 3 }

mioxPleLastFailedEnAddr OBJECT-TYPE

SYNTAX OCTET STRING (SIZE(2..128))

ACCESS read-only

STATUS mandatory

DESCRIPTION

"The last Encapsulated address that failed to find a corresponding X.121 address and caused mioxPleEnAddrToX121LkupFlrs to be incremented. The first octet of this object contains the encapsulation type, the remaining octets contain the address of that type that failed. Thus for an IP address, the length will be five octets, the first octet will contain 204 (hex CC), and the last four octets will contain the IP address. For a snap encapsulation, the first byte would be 128 (hex 80) and the rest of the octet string would have the snap header."

::= { mioxPleEntry 4 }

mioxPleEnAddrToX121LkupFlrTime OBJECT-TYPE

SYNTAX TimeTicks

ACCESS read-only

STATUS mandatory

DESCRIPTION

"The most recent value of sysUpTime when the translation from an Encapsulated Address to X.121 address failed to find a corresponding X.121 address."

::= { mioxPleEntry 5 }

mioxPleX121ToEnAddrLkupFlrs OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

DESCRIPTION

"The number of times the translation from an X.121 address to an Encapsulated Address

```
failed to find a corresponding Encapsulated
Address.  Addresses successfully recognized
by an algorithm do not increment this
counter.  This counter reflects the number
of times call acceptance encountered the
abnormal condition of not recognizing the
peer."
 ::= { mioxPleEntry 6 }

mioxPleLastFailedX121Address OBJECT-TYPE
    SYNTAX  X121Address
    ACCESS  read-only
    STATUS  mandatory
    DESCRIPTION
        "The last X.121 address that caused
        mioxPleX121ToEnAddrLkupFlrs to increase."
    ::= { mioxPleEntry 7 }

mioxPleX121ToEnAddrLkupFlrTime OBJECT-TYPE
    SYNTAX  TimeTicks
    ACCESS  read-only
    STATUS  mandatory
    DESCRIPTION
        "The most recent value of sysUpTime when the
        translation from an X.121 address to an
        Encapsulated Address failed to find a
        corresponding Encapsulated Address."
    ::= { mioxPleEntry 8 }

mioxPleQbitFailures OBJECT-TYPE
    SYNTAX  Counter
    ACCESS  read-only
    STATUS  mandatory
    DESCRIPTION
        "The number of times a connection was closed
        because of a Q-bit failure."
    ::= { mioxPleEntry 9 }

mioxPleQbitFailureRemoteAddress OBJECT-TYPE
    SYNTAX  X121Address
    ACCESS  read-only
    STATUS  mandatory
    DESCRIPTION
        "The remote address of the most recent
        (last) connection that was closed because of
        a Q-bit failure."
    ::= { mioxPleEntry 10 }
```



```
mioxPleQbitFailureTime OBJECT-TYPE
    SYNTAX  TimeTicks
    ACCESS  read-only
    STATUS  mandatory
    DESCRIPTION
        "The most recent value of sysUpTime when a
        connection was closed because of a Q-bit
        failure. This will also be the last time
        that mioxPleQbitFailures was incremented."
    ::= { mioxPleEntry 11 }

mioxPleMinimumOpenTimer OBJECT-TYPE
    SYNTAX  PositiveInteger
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "The minimum time in milliseconds this
        interface will keep a connection open before
        allowing it to be closed. A value of zero
        indicates no timer."
    DEFVAL { 0 }
    ::= { mioxPleEntry 12 }

mioxPleInactivityTimer OBJECT-TYPE
    SYNTAX  PositiveInteger
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "The amount of time time in milliseconds
        this interface will keep an idle connection
        open before closing it. A value of
        2147483647 indicates no timer."
    DEFVAL { 10000 }
    ::= { mioxPleEntry 13 }

mioxPleHoldDownTimer    OBJECT-TYPE
    SYNTAX  PositiveInteger
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "The hold down timer in milliseconds. This
        is the minimum amount of time to wait before
        trying another call to a host that was
        previously unsuccessful. A value of
        2147483647 indicates the host will not be
        retried."
    DEFVAL { 0 }
    ::= { mioxPleEntry 14 }
```

mioxPleCollisionRetryTimer OBJECT-TYPE

SYNTAX PositiveInteger

ACCESS read-write

STATUS mandatory

DESCRIPTION

"The Collision Retry Timer in milliseconds.
The time to delay between call attempts when
the maximum number of circuits is exceeded
in a call attempt."

DEFVAL { 0 }

::= { mioxPleEntry 15 }

mioxPleDefaultPeerId OBJECT-TYPE

SYNTAX InstancePointer

ACCESS read-write

STATUS mandatory

DESCRIPTION

"This identifies the instance of the index
in the mioxPeerTable for the default
parameters to use with this interface."

The entry identified by this object may have
a zero length Encapsulation address and a
zero length X.121 address.

These default parameters are used with
connections to hosts that do not have
entries in the mioxPeerTable. Such
connections occur when using ddn-x25 IP-X.25
address mapping or when accepting
connections from other hosts not in the
mioxPeerTable.

The mioxPeerEncTable entry with the same
index as the mioxPeerTable entry specifies
the call encapsulation types this PLE will
accept for peers not in the mioxPeerTable.
If the mioxPeerEncTable doesn't contain any
entries, this PLE will not accept calls from
entries not in the mioxPeerTable."

::= { mioxPleEntry 16 }

```
-- #####
-- Peer Table
-- #####
```

```
-- Systems that implement RFC 1356 must also implement
-- all objects in this group.
```

```
mioxPeerTable OBJECT-TYPE
    SYNTAX  SEQUENCE OF MioxPeerEntry
    ACCESS  not-accessible
    STATUS  mandatory
    DESCRIPTION
        "This table contains information about the
        possible peers this machine may exchange
        packets with."
    ::= { mioxPeer 1 }
```

```
mioxPeerEntry OBJECT-TYPE
    SYNTAX  MioxPeerEntry
    ACCESS  not-accessible
    STATUS  mandatory
    DESCRIPTION
        "Per peer information."
    INDEX { mioxPeerIndex }
    ::= { mioxPeerTable 1 }
```

```
MioxPeerEntry ::= SEQUENCE {
    mioxPeerIndex
        PositiveInteger,
    mioxPeerStatus
        INTEGER,
    mioxPeerMaxCircuits
        PositiveInteger,
    mioxPeerIfIndex
        PositiveInteger,
    mioxPeerConnectSeconds
        Counter,
    mioxPeerX25CallParamId
        InstancePointer,
    mioxPeerEnAddr
        OCTET STRING,
    mioxPeerX121Address
        X121Address,
    mioxPeerX25CircuitId
        InstancePointer,
    mioxPeerDescr
        DisplayString
}
```

```
mioxPeerIndex OBJECT-TYPE
    SYNTAX  PositiveInteger
```

```

ACCESS    read-only
STATUS    mandatory
DESCRIPTION
    "An index value that distinguished one entry
    from another.  This index is independent of
    any other index."
 ::= { mioxPeerEntry 1 }

-- Systems can claim conformance with this MIB without
-- implementing sets to mioxPeerStatus with a value of
-- clearCall or makeCall.
-- All other defined values must be accepted.
-- Implementors should realize that allowing these values
-- provides richer management, and implementations
-- are encouraged to accept these values.
mioxPeerStatus OBJECT-TYPE
    SYNTAX  INTEGER {
        valid (1),
        createRequest (2),
        underCreation (3),
        invalid (4),
        clearCall (5),
        makeCall (6)
    }
ACCESS    read-write
STATUS    mandatory
DESCRIPTION
    "This reports the status of a peer entry.
    A value of valid indicates a normal entry
    that is in use by the agent.  A value of
    underCreation indicates a newly created
    entry which isn't yet in use because the
    creating management station is still setting
    values.

    The value of invalid indicates the entry is
    no longer in use and the agent is free to
    delete the entry at any time.  A management
    station is also free to use an entry in the
    invalid state.

    Entries are created by setting a value of
    createRequest.  Only non-existent or invalid
    entries can be set to createRequest.  Upon
    receiving a valid createRequest, the agent
    will create an entry in the underCreation
    state.  This object can not be set to a
    value of underCreation directly, entries can

```

only be created by setting a value of createRequest. Entries that exist in other than the invalid state can not be set to createRequest.

Entries with a value of underCreation are not used by the system and the management station can change the values of other objects in the table entry. Management stations should also remember to configure values in the mioxPeerEncTable with the same peer index value as this peer entry.

An entry in the underCreation state can be set to valid or invalid. Entries in the underCreation state will stay in that state until 1) the agent times them out, 2) they are set to valid, 3) they are set to invalid. If an agent notices an entry has been in the underCreation state for an abnormally long time, it may decide the management station has failed and invalidate the entry. A prudent agent will understand that the management station may need to wait for human input and will allow for that possibility in its determination of this abnormally long period.

Once a management station has completed all fields of an entry, it will set a value of valid. This causes the entry to be activated.

Entries in the valid state may also be set to makeCall or clearCall to make or clear X.25 calls to the peer. After such a set request the entry will still be in the valid state. Setting a value of makeCall causes the agent to initiate an X.25 call request to the peer specified by the entry. Setting a value of clearCall causes the agent to initiate clearing one X.25 call present to the peer. Each set request will initiate another call or clear request (up to the maximum allowed); this means that management stations that fail to get a response to a set request should query to see if a call was in fact placed or cleared before

retrying the request. Entries not in the valid state can not be set to makeCall or clearCall.

The values of makeCall and clearCall provide for circuit control on devices which perform Ethernet Bridging using static circuit assignment without address recognition; other devices which dynamically place calls based on destination addresses may reject such requests.

An agent that (re)creates a new entry because of a set with createRequest, should also (re)create a mioxPeerEncTable entry with a mioxPeerEncIndex of 1, and a mioxPeerEncType of 204 (hex CC)."

```
::= { mioxPeerEntry 2 }
```

mioxPeerMaxCircuits OBJECT-TYPE

SYNTAX PositiveInteger

ACCESS read-write

STATUS mandatory

DESCRIPTION

"The maximum number of X.25 circuits allowed to this peer."

DEFVAL { 1 }

```
::= { mioxPeerEntry 3 }
```

mioxPeerIfIndex OBJECT-TYPE

SYNTAX PositiveInteger

ACCESS read-write

STATUS mandatory

DESCRIPTION

"The value of the ifIndex object for the interface to X.25 to use to call the peer."

DEFVAL { 1 }

```
::= { mioxPeerEntry 4 }
```

mioxPeerConnectSeconds OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

DESCRIPTION

"The number of seconds a call to this peer was active. This counter will be incremented by one for every second a connection to a peer was open. If two calls

are open at the same time, one second of elapsed real time will results in two seconds of connect time."

```
 ::= { mioxPeerEntry 5 }
```

mioxPeerX25CallParamId OBJECT-TYPE

```
SYNTAX  InstancePointer
ACCESS  read-write
STATUS  mandatory
DESCRIPTION
    "The instance of the index object in the
    x25CallParmTable from RFC 1382 for the X.25
    call parameters used to communicate with the
    remote host. The well known value {0 0}
    indicates no call parameters specified."
DEFVAL { {0 0} }
 ::= { mioxPeerEntry 6 }
```

mioxPeerEnAddr OBJECT-TYPE

```
SYNTAX  OCTET STRING (SIZE (0..128))
ACCESS  read-write
STATUS  mandatory
DESCRIPTION
    "The Encapsulation address of the remote
    host mapped by this table entry. A length
    of zero indicates the remote IP address is
    unknown or unspecified for use as a PLE
    default."

    The first octet of this object contains the
    encapsulation type, the remaining octets
    contain an address of that type. Thus for
    an IP address, the length will be five
    octets, the first octet will contain 204
    (hex CC), and the last four octets will
    contain the IP address. For a snap
    encapsulation, the first byte would be 128
    (hex 80) and the rest of the octet string
    would have the snap header."
DEFVAL { ''h }
 ::= { mioxPeerEntry 7 }
```

mioxPeerX121Address OBJECT-TYPE

```
SYNTAX  X121Address
ACCESS  read-write
STATUS  mandatory
DESCRIPTION
    "The X.25 address of the remote host mapped
```

```

        by this table entry.  A zero length string
        indicates the X.25 address is unspecified
        for use as the PLE default."
    DEFVAL { ''h }
    ::= { mioxPeerEntry 8 }

-- Systems can claim conformance to this MIB without
-- implementing sets to mioxPeerX25CircuitId.
-- However systems that use PVCs with RFC1356
-- are encouraged to implement sets.
mioxPeerX25CircuitId OBJECT-TYPE
    SYNTAX  InstancePointer
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "This object identifies the instance of the
        index for the X.25 circuit open to the peer
        mapped by this table entry.  The well known
        value {0 0} indicates no connection
        currently active.  For multiple connections,
        this identifies the index of a multiplexing
        table entry for the connections.  This can
        only be written to configure use of PVCs
        which means the identified circuit table
        entry for a write must be a PVC."
    DEFVAL { {0 0} }
    ::= { mioxPeerEntry 9 }

mioxPeerDescr  OBJECT-TYPE
    SYNTAX  DisplayString (SIZE (0..255))
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "This object returns any identification
        information about the peer.  An agent may
        supply the comment information found in the
        configuration file entry for this peer.  A
        zero length string indicates no information
        available."
    DEFVAL { ''h }
    ::= { mioxPeerEntry 10 }

-- #####
-- Peer Encapsulation Table
-- #####

```


mioxPeerEncTable OBJECT-TYPE

SYNTAX SEQUENCE OF MioxPeerEncEntry

ACCESS not-accessible

STATUS mandatory

DESCRIPTION

"This table contains the list of encapsulations used to communicate with a peer. This table has two indexes, the first identifies the peer, the second distinguishes encapsulation types.

The first index identifies the corresponding entry in the mioxPeerTable. The second index gives the priority of the different encapsulations.

The encapsulation types are ordered in priority order. For calling a peer, the first entry (mioxPeerEncIndex of 1) is tried first. If the call doesn't succeed because the remote host clears the call due to incompatible call user data, the next entry in the list is tried. Each entry is tried until the list is exhausted.

For answering a call, the encapsulation type requested by the peer must be found the list or the call will be refused. If there are no entries in this table for a peer, all call requests from the peer will be refused.

Objects in this table can only be set when the mioxPeerStatus object with the same index has a value of underCreation. When that status object is set to invalid and deleted, the entry in this table with that peer index must also be deleted."

```
::= { mioxPeer 2 }
```

mioxPeerEncEntry OBJECT-TYPE

SYNTAX MioxPeerEncEntry

ACCESS not-accessible

STATUS mandatory

DESCRIPTION

"Per connection information."

INDEX { mioxPeerIndex, mioxPeerEncIndex}

```
::= { mioxPeerEncTable 1 }
```

```

MioxPeerEncEntry ::= SEQUENCE {
    mioxPeerEncIndex
        PositiveInteger,
    mioxPeerEncType
        INTEGER
    }

mioxPeerEncIndex      OBJECT-TYPE
    SYNTAX  PositiveInteger
    ACCESS  read-only
    STATUS  mandatory
    DESCRIPTION
        "The second index in the table which
        distinguishes different encapsulation
        types."
    ::= { mioxPeerEncEntry 1 }

mioxPeerEncType OBJECT-TYPE
    SYNTAX  INTEGER (0..256)
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "The value of the encapsulation type.  For
        IP encapsulation this will have a value of
        204 (hex CC).  For SNAP encapsulated
        packets, this will have a value of 128 (hex
        80).  For CLNP, ISO 8473, this will have a
        value of 129 (hex 81).  For ES-ES, ISO 9542,
        this will have a value of 130 (hex 82).  A
        value of 197 (hex C5) identifies the Blacker
        X.25 encapsulation.  A value of 0,
        identifies the Null encapsulation.

        This value can only be written when the
        mioxPeerStatus object with the same
        mioxPeerIndex has a value of underCreation.
        Setting this object to a value of 256
        deletes the entry.  When deleting an entry,
        all other entries in the mioxPeerEncTable
        with the same mioxPeerIndex and with an
        mioxPeerEncIndex higher than the deleted
        entry, will all have their mioxPeerEncIndex
        values decremented by one."
    ::= { mioxPeerEncEntry 2 }

-- #####

END

```

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6. References

- [1] Rose M., and K. McCloghrie, "Structure and Identification of Management Information for TCP/IP-based internets", STD 16, RFC 1155, Performance Systems International, Hughes LAN Systems, May 1990.
- [2] Case, J., Fedor, M., Schoffstall, M., and J. Davin, "Simple Network Management Protocol", STD 15, RFC 1157, SNMP Research, Performance Systems International, Performance Systems International, MIT Laboratory for Computer Science, May 1990.
- [3] Rose, M. and K. McCloghrie, Editors, "Towards Concise MIB Definitions", STD 16, RFC 1212, Performance Systems International, Hughes LAN Systems, March 1991.
- [4] Rose M., Editor, "Management Information Base for Network Management of TCP/IP-based internets", STD 17, RFC 1213. Performance Systems International, March 1991.
- [5] "Information processing systems - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1)", International Organization for Standardization. International Standard 8824, December, 1987.
- [6] Stewart, B., Editor, "Definitions of Managed Objects for RS-232-like Hardware Devices", RFC 1317, Xyplex, Inc., April 1992.
- [7] Throop, D., and F. Baker, "SNMP MIB extension for X.25 LAPB", RFC 1381, Data General Corporation, Advanced Computer Communications, November 1992.
- [8] Throop, D., Editor, "SNMP MIB extension for the X.25 Packet Layer", RFC 1382, Data General Corporation, November 1991.
- [9] Malis, A., Robinson, D., and R. Ullmann "Multiprotocol Interconnect on X.25 and ISDN in the Packet Mode", RFC 1356, BBN Communications, Computervision Systems Integration, Process Software Corporation, August 1992.

7. Security Considerations

Security issues are not discussed in this memo.

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