

**Definitions of Managed Objects  
for IEEE 802.3 Repeater Devices**

<[draft-ietf-hubmib-repeater-dev-00.txt](#)>

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## Abstract

This memo defines an experimental portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it defines objects for managing IEEE 802.3 10 and 100 Mb/second baseband repeaters based on IEEE Std 802.3 [Section 30](#), "10 & [100 Mb/s Management](#)," **October 26, 1995**.

This memo does not specify a standard for the Internet community.

## **[1](#). The SNMPv2 Network Management Framework**

The SNMPv2 Network Management Framework consists of four major components. They are:

- o [RFC 1442](#) which defines the SMI, the mechanisms used for describing and naming objects for the purpose of management.
- o STD 17, [RFC 1213](#) defines MIB-II, the core set of managed objects for the Internet suite of protocols.
- o [RFC 1445](#) which defines the administrative and other architectural aspects of the framework.
- o [RFC 1448](#) which defines the protocol used for network access to managed objects.

The Framework permits new objects to be defined for the purpose of experimentation and evaluation.

### **[1.1](#). Object Definitions**

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the subset of Abstract Syntax Notation One (ASN.1) defined in the SMI. In particular, each object

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type is named by an OBJECT IDENTIFIER, an administratively assigned name. The object type together with an object instance serves to uniquely identify a specific instantiation of the object. For human convenience, we often use a textual string, termed the descriptor, to refer to the object type.

## **2. Overview**

Instances of the object types defined in this memo represent attributes of an IEEE 802.3 (Ethernet-like) repeater, as defined by [Section 9](#), "Repeater Unit for 10 Mb/s Baseband Networks" in the IEEE 802.3/ISO 8802-3 CSMA/CD standard [[1](#)], and [Section 27](#), "Repeater for 100 Mb/s Baseband Networks" in the IEEE Standard 802.3u-1995 [[2](#)].

These Repeater MIB objects may be used to manage non-standard repeater-like devices, but defining objects to describe implementation-specific properties of non-standard repeater-like devices is outside the scope of this memo.

The definitions presented here are based on [Section 30.4](#), "Layer Management for 10 and 100 Mb/s Baseband Repeaters" and Annex 30A, "GDMO Specificataions for 802.3 managed objects" of [[3](#)].

Implementors of these MIB objects should note that [[3](#)] explicitly describes when, where, and how various repeater attributes are measured. The IEEE document also describes the effects of repeater actions that may be invoked by manipulating instances of the MIB objects defined here.

The counters in this document are defined to be the same as those counters in [[3](#)], with the intention that the same instrumentation can be used to implement both the IEEE and IETF management standards.

### **2.1. Structure of the MIB**

Objects in this MIB are arranged into MIB groups. Each MIB group is organized as a set of related objects.

#### **2.1.1. The Basic Group Definitions**

This group contains the objects which are applicable to all repeaters. It contains status, parameter and control objects for each repeater within the managed system, for the port groups within the system, and for the individual ports

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themselves.

#### **2.1.2. The Monitor Group Definitions**

This group contains monitoring statistics for each repeater within the system and for individual ports.

#### **2.1.3. The Address Tracking Group Definitions**

This group contains objects for tracking the MAC addresses of the DTEs attached to the ports within the system.

#### **2.1.4. The Top N Group Definitions**

This group contains objects for tracking the ports with the most activity within the system or within particular repeaters.

### **2.2. Relationship to Other MIBs**

#### **2.2.1. Relationship to [RFC 1516](#)**

This MIB is intended as a superset of that defined by RFC 1516, which will go to historic status. This MIB includes all of the objects contained in that MIB, plus some additional ones, mainly for support for multiple repeaters and for 100BASE-T management. Certain objects have been deprecated; in particular, those scalar objects used for managing a single repeater are now of minimal use since they are duplicated in the `rpTrInfoTable` and `rpTrMonitorTable` definitions.

**2.2.2. Relationship to MIB-II** It is assumed that a repeater implementing this MIB will also implement (at least) the 'system' group defined in MIB-II [[5](#)].

##### **2.2.2.1. Relationship to the 'system' group**

In MIB-II, the 'system' group is defined as being mandatory for all systems such that each managed entity contains one instance of each object in the 'system' group. Thus, those objects apply to the entity even if the entity's sole

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functionality is management of repeaters.

#### **2.2.2.2. Relationship to the 'interfaces' group**

In MIB-II, the 'interfaces' group is defined as being mandatory for all systems and contains information on an entity's interfaces, where each interface is thought of as being attached to a 'subnetwork'. (Note that this term is not to be confused with 'subnet' which refers to an addressing partitioning scheme used in the Internet suite of protocols.)

This Repeater MIB uses the notion of ports on a repeater. The concept of a MIB-II interface has NO specific relationship to a repeater's port. Therefore, the 'interfaces' group applies only to the one (or more) network interfaces on which the entity managing the repeater sends and receives management protocol operations, and does not apply to the repeater's ports.

This is consistent with the physical-layer nature of a repeater. A repeater is a bitwise store-and-forward device. It recognizes activity and bits, but does not process incoming data based on any packet-related information (such as checksum or addresses). A repeater has no MAC address, no MAC implementation, and does not pass packets up to higher-level protocol entities for processing.

(When a network management entity is observing a repeater, it may appear as though the repeater is passing packets to a higher-level protocol entity. However, this is only a means of implementing management, and this passing of management information is not part of the repeater functionality.)

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### **3. Definitions**

SNMP-REPEATER-MIB DEFINITIONS ::= BEGIN

IMPORTS

experimental, Counter32, Integer32, Gauge32, OBJECT-TYPE,  
MODULE-IDENTITY, NOTIFICATION-TYPE  
FROM SNMPv2-SMI  
TimeStamp, DisplayString, MacAddress, TEXTUAL-CONVENTION,  
RowStatus  
FROM SNMPv2-TC  
OBJECT-GROUP, MODULE-COMPLIANCE, NOTIFICATION-GROUP,  
FROM SNMPv2-CONF  
OwnerString  
FROM RMON-MIB  
mib-2  
FROM [RFC1213](#)-MIB;

snmpRptrMod MODULE-IDENTITY

LAST-UPDATED "9511270000Z"  
ORGANIZATION "IETF HUB MIB Working Group"  
CONTACT-INFO  
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DESCRIPTION

"Management information for 802.3 repeaters.

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The following references are used throughout this MIB module:

[IEEE 802.3 Std]

refers to IEEE 802.3/ISO 8802-3 Information processing systems - Local area networks - Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications (1993).

[IEEE 802.3 Mgt]

refers to IEEE 802.3u-1995, '10 Mb/s & 100 Mb/s Management, [Section 30](#), ' Supplement to ANSI/IEEE 802.3.

The following terms are used throughout this MIB module:

System -

Chassis -

Repeater-unit -

Trivial repeater-unit - an isolated port that can gather statistics.

Group -

System interconnect segment -

Stack -

Unit -

Module -

"

REVISION "9309010000Z"

DESCRIPTION

"Published as [RFC 1516](#)"

REVISION "9210010000Z"

DESCRIPTION

"Published as [RFC 1368](#)"

::= { snmpDot3RptrMgt x }

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snmpDot3RptrMgt OBJECT IDENTIFIER ::= { experimental x }

OptMacAddr ::= TEXTUAL-CONVENTION

DISPLAY-HINT "1x:"

STATUS current

DESCRIPTION

"Either a 6 octet address in the `canonical' order defined by IEEE 802.1a, i.e., as if it were transmitted least significant bit first if a value is available or a zero length string."

REFERENCE

"See MacAddress in SNMPv2-TC. The only difference is that a zero length string is allowed as a value for OptMacAddr and not for MacAddress."

SYNTAX OCTET STRING (SIZE (0 | 6))

-- Basic information at the repeater, group, and port level.

rpPtrBasicPackage

OBJECT IDENTIFIER ::= { snmpDot3RptrMgt 1 }

rpPtrRptrInfo

OBJECT IDENTIFIER ::= { rpPtrBasicPackage 1 }

rpPtrGroupInfo

OBJECT IDENTIFIER ::= { rpPtrBasicPackage 2 }

rpPtrPortInfo

OBJECT IDENTIFIER ::= { rpPtrBasicPackage 3 }

rpPtrAllRptrInfo

OBJECT IDENTIFIER ::= { rpPtrBasicPackage 4 }

-- Monitoring information at the repeater, group, and port level.

rpPtrMonitorPackage

OBJECT IDENTIFIER ::= { snmpDot3RptrMgt 2 }

rpPtrMonitorRptrInfo

OBJECT IDENTIFIER ::= { rpPtrMonitorPackage 1 }

rpPtrMonitorGroupInfo

OBJECT IDENTIFIER ::= { rpPtrMonitorPackage 2 }

rpPtrMonitorPortInfo

OBJECT IDENTIFIER ::= { rpPtrMonitorPackage 3 }

rpPtrMonitorAllRptrInfo

OBJECT IDENTIFIER ::= { rpPtrMonitorPackage 4 }

-- Address tracking information at the repeater, group,

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```
-- and port level.
rptrAddrTrackPackage
    OBJECT IDENTIFIER ::= { snmpDot3RptrMgt 3 }
rptrAddrTrackRptrInfo
    -- this subtree is currently unused
    OBJECT IDENTIFIER ::= { rptrAddrTrackPackage 1 }
rptrAddrTrackGroupInfo
    -- this subtree is currently unused
    OBJECT IDENTIFIER ::= { rptrAddrTrackPackage 2 }
rptrAddrTrackPortInfo
    OBJECT IDENTIFIER ::= { rptrAddrTrackPackage 3 }

-- TopN information.
rptrTopNPackage
    OBJECT IDENTIFIER ::= { snmpDot3RptrMgt 4 }
rptrTopNRptrInfo
    -- this subtree is currently unused
    OBJECT IDENTIFIER ::= { rptrTopNPackage 1 }
rptrTopNGroupInfo
    -- this subtree is currently unused
    OBJECT IDENTIFIER ::= { rptrTopNPackage 2 }
rptrTopNPortInfo
    OBJECT IDENTIFIER ::= { rptrTopNPackage 3 }

-- Old version of basic information at the repeater level.
--
-- In a system containing a single managed repeater,
-- configuration, status, and control objects for the overall
-- repeater.
--
-- The objects contained under the rptrRptrInfo subtree are
-- intended for backwards compatibility with implementations of
-- RFC 1516. In newer implementations (both single- and
-- multiple-repeater implementations) the rptrInfoTable should
-- be implemented. It is the preferred source of this information,
-- as it contains the values for all repeaters managed by the
-- agent. In all cases, the objects in the rptrRptrInfo subtree
-- are duplicates of the corresponding objects in the first entry
-- of the rptrInfoTable.

rptrGroupCapacity OBJECT-TYPE
    SYNTAX      Integer32 (1..2147483647)
    MAX-ACCESS  read-only
    STATUS      deprecated
```

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## DESCRIPTION

"The rptrGroupCapacity is the number of groups that can be contained within the repeater. Within each managed repeater, the groups are uniquely numbered in the range from 1 to rptrGroupCapacity.

Some groups may not be present in the repeater, in which case the actual number of groups present will be less than rptrGroupCapacity. The number of groups present will never be greater than rptrGroupCapacity.

Note: In practice, this will generally be the number of field-replaceable units (i.e., modules, cards, or boards) that can fit in the physical repeater enclosure, and the group numbers will correspond to numbers marked on the physical enclosure."

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.1.3,  
aRepeaterGroupCapacity."

::= { rptrRptrInfo 1 }

## rptrOperStatus OBJECT-TYPE

```
SYNTAX      INTEGER {
                other(1),          -- undefined or unknown
                ok(2),             -- no known failures
                rptrFailure(3),    -- repeater-related failure
                groupFailure(4),   -- group-related failure
                portFailure(5),    -- port-related failure
                generalFailure(6)  -- failure, unspecified type
            }
```

MAX-ACCESS read-only

STATUS deprecated

## DESCRIPTION

"The rptrOperStatus object indicates the operational state of the repeater. The rptrHealthText object may be consulted for more specific information about the state of the repeater's health.

In the case of multiple kinds of failures (e.g., repeater failure and port failure), the value of this attribute shall reflect the highest priority failure in the following order, listed highest

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priority first:

rpPtrFailure(3)  
groupFailure(4)  
portFailure(5)  
generalFailure(6)."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.1.5, aRepeaterHealthState."  
 ::= { rpPtrRPtrInfo 2 }

rpPtrHealthText OBJECT-TYPE

SYNTAX DisplayString (SIZE (0..255))

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The health text object is a text string that provides information relevant to the operational state of the repeater. Agents may use this string to provide detailed information on current failures, including how they were detected, and/or instructions for problem resolution. The contents are agent-specific."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.1.6, aRepeaterHealthText."  
 ::= { rpPtrRPtrInfo 3 }

rpPtrReset OBJECT-TYPE

SYNTAX INTEGER {  
noReset(1),  
reset(2)  
}

MAX-ACCESS read-write

STATUS deprecated

DESCRIPTION

"Setting this object to reset(2) causes a transition to the START state of Fig 9-2 in [section 9](#) [IEEE 802.3 Std] for a 10Mb/s repeater, and the START state of Fig 27-2 in [section 27](#) of that standard for a 100Mb/s repeater.

Setting this object to noReset(1) has no effect. The agent will always return the value noReset(1) when this object is read.

After receiving a request to set this variable to

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reset(2), the agent is allowed to delay the reset for a short period. For example, the implementor may choose to delay the reset long enough to allow the SNMP response to be transmitted. In any event, the SNMP response must be transmitted.

This action does not reset the management counters defined in this document nor does it affect the portAdminStatus parameters. Included in this action is the execution of a disruptive Self-Test with the following characteristics: a) The nature of the tests is not specified. b) The test resets the repeater but without affecting management information about the repeater. c) The test does not inject packets onto any segment. d) Packets received during the test may or may not be transferred. e) The test does not interfere with management functions.

After performing this self-test, the agent will update the repeater health information (including rptrOperStatus and rptrHealthText), and send a rptrHealth trap."

#### REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.2.1, acResetRepeater."  
::= { rptrRptrInfo 4 }

#### rptrNonDisruptTest OBJECT-TYPE

SYNTAX INTEGER {  
noSelfTest(1),  
selfTest(2)  
}

MAX-ACCESS read-write

STATUS deprecated

#### DESCRIPTION

"Setting this object to selfTest(2) causes the repeater to perform a agent-specific, non-disruptive self-test that has the following characteristics: a) The nature of the tests is not specified. b) The test does not change the state of the repeater or management information about the repeater. c) The test does not inject packets onto any segment. d) The test does not prevent the relay of any packets. e) The test does not interfere with management functions.

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After performing this test, the agent will update the repeater health information (including rptrOperStatus and rptrHealthText) and send a rptrHealth trap.

Note that this definition allows returning an 'okay' result after doing a trivial test.

Setting this object to noSelfTest(1) has no effect. The agent will always return the value noSelfTest(1) when this object is read."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.2.2,  
acExecuteNonDisruptiveSelfTest."

::= { rptrRptrInfo 5 }

rptrTotalPartitionedPorts OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"This object returns the total number of ports in the repeater whose current state meets all three of the following criteria: rptrPortOperStatus does not have the value notPresent(3), rptrPortAdminStatus is enabled(1), and rptrPortAutoPartitionState is autoPartitioned(2)."

::= { rptrRptrInfo 6 }

-- Basic information at the group level.

--

-- Configuration and status objects for each  
-- managed group in the system, independent  
-- of whether there is one or more managed  
-- repeater-units in the system.

rptrGroupTable OBJECT-TYPE

SYNTAX SEQUENCE OF RptrGroupEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table of descriptive and status information about the groups of ports."

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```
::= { rptrGroupInfo 1 }
```

rpPtrGroupEntry OBJECT-TYPE

SYNTAX RptrGroupEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the table, containing information  
about a single group of ports."

INDEX { rpPtrGroupIndex }

```
::= { rpPtrGroupTable 1 }
```

RptrGroupEntry ::=

SEQUENCE {

rpPtrGroupIndex

Integer32,

rpPtrGroupDescr

DisplayString,

rpPtrGroupObjectID

OBJECT IDENTIFIER,

rpPtrGroupOperStatus

INTEGER,

rpPtrGroupLastOperStatusChange

TimeTicks,

rpPtrGroupPortCapacity

Integer32

}

rpPtrGroupIndex OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object identifies the group within the  
system for which this entry contains  
information."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.2.1.1, aGroupID."

```
::= { rpPtrGroupEntry 1 }
```

rpPtrGroupDescr OBJECT-TYPE

SYNTAX DisplayString (SIZE (0..255))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

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"A textual description of the group. This value should include the full name and version identification of the group's hardware type and indicate how the group is differentiated from other types of groups in the repeater. Plug-in Module, Rev A' or 'Barney Rubble 10BASE-T 4-port SIMM socket Version 2.1' are examples of valid group descriptions.

It is mandatory that this only contain printable ASCII characters."

::= { rpPtrGroupEntry 2 }

rpPtrGroupObjectID OBJECT-TYPE

SYNTAX OBJECT IDENTIFIER

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The vendor's authoritative identification of the group. This value may be allocated within the SMI enterprises subtree (1.3.6.1.4.1) and provides a straight-forward and unambiguous means for determining what kind of group is being managed.

For example, this object could take the value 1.3.6.1.4.1.4242.1.2.14 if vendor 'Flintstones, Inc.' was assigned the subtree 1.3.6.1.4.1.4242, and had assigned the identifier 1.3.6.1.4.1.4242.1.2.14 to its 'Wilma Flintstone 6-Port FOIRL Plug-in Module.'"

::= { rpPtrGroupEntry 3 }

rpPtrGroupOperStatus OBJECT-TYPE

SYNTAX INTEGER {  
    other(1),  
    operational(2),  
    malfunctioning(3),  
    notPresent(4),  
    underTest(5),  
    resetInProgress(6)  
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"An object that indicates the operational status

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of the group.

A status of notPresent(4) indicates that the group is temporarily or permanently physically and/or logically not a part of the repeater. It is an implementation-specific matter as to whether the agent effectively removes notPresent entries from the table.

A status of operational(2) indicates that the group is functioning, and a status of malfunctioning(3) indicates that the group is malfunctioning in some way."

::= { rptrGroupEntry 4 }

#### rptrGroupLastOperStatusChange OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

##### DESCRIPTION

"An object that contains the value of sysUpTime at the time when the last of the following occurred:

- 1) the agent cold- or warm-started;
- 2) the row for the group was created (such as when the group was added to the system); or
- 3) the value of rptrGroupOperStatus for the group changed.

A value of zero indicates that the group's operational status has not changed since the agent last restarted."

::= { rptrGroupEntry 5 }

#### rptrGroupPortCapacity OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)

MAX-ACCESS read-only

STATUS current

##### DESCRIPTION

"The rptrGroupPortCapacity is the number of ports that can be contained within the group. Valid range is 1-2147483647. Within each group, the ports are uniquely numbered in the range from 1 to rptrGroupPortCapacity.

Some ports may not be present in the system, in

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which case the actual number of ports present will be less than the value of `rpPtrGroupPortCapacity`. The number of ports present in the group will never be greater than the value of `rpPtrGroupPortCapacity`.

Note: In practice, this will generally be the number of ports on a module, card, or board, and the port numbers will correspond to numbers marked on the physical embodiment."

#### REFERENCE

"IEEE 802.3 Mgt, 30.4.2.1.2, `aGroupPortCapacity`."  
 ::= { `rpPtrGroupEntry` 6 }

-- Basic information at the port level.  
--  
-- Configuration and status objects for  
-- each managed repeater port in the system,  
-- independent of whether there is one or more  
-- managed repeater-units in the system.

#### `rpPtrPortTable` OBJECT-TYPE

SYNTAX SEQUENCE OF `RpPtrPortEntry`  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION

"Table of descriptive and status information about the repeater ports in the system. The number of entries is independent of the number of repeaters in the managed system."

::= { `rpPtrPortInfo` 1 }

#### `rpPtrPortEntry` OBJECT-TYPE

SYNTAX `RpPtrPortEntry`  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION

"An entry in the table, containing information about a single port."

INDEX { `rpPtrPortGroupIndex`, `rpPtrPortIndex` }  
 ::= { `rpPtrPortTable` 1 }

`RpPtrPortEntry` ::=

SEQUENCE {  
 `rpPtrPortGroupIndex`

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```
        Integer32,
    rptrPortIndex
        Integer32,
    rptrPortAdminStatus
        INTEGER,
    rptrPortAutoPartitionState
        INTEGER,
    rptrPortOperStatus
        INTEGER,
    rptrPortRptrId
        Integer32
}
```

rptrPortGroupIndex OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object identifies the group containing the port for which this entry contains information."

::= { rptrPortEntry 1 }

rptrPortIndex OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object identifies the port within the group for which this entry contains information. This identifies the port independently from the repeater it may be attached to. The numbering scheme for ports is implementation specific; however, this value can never be greater than rptrGroupPortCapacity for the associated group."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.1, aPortID."

::= { rptrPortEntry 2 }

rptrPortAdminStatus OBJECT-TYPE

SYNTAX INTEGER {  
 enabled(1),  
 disabled(2)  
}

MAX-ACCESS read-write

STATUS current

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## DESCRIPTION

"Setting this object to disabled(2) disables the port. A disabled port neither transmits nor receives. Once disabled, a port must be explicitly enabled to restore operation. A port which is disabled when power is lost or when a reset is exerted shall remain disabled when normal operation resumes.

The admin status takes precedence over auto-partition and functionally operates between the auto-partition mechanism and the AUI/PMA.

Setting this object to enabled(1) enables the port and exerts a BEGIN on the port's auto-partition state machine.

(In effect, when a port is disabled, the value of rpPtrPortAutoPartitionState for that port is frozen until the port is next enabled. When the port becomes enabled, the rpPtrPortAutoPartitionState becomes notAutoPartitioned(1), regardless of its pre-disabling state.)"

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.2, aPortAdminState and 30.4.3.2.1, acPortAdminControl."

::= { rpPtrPortEntry 3 }

## rpPtrPortAutoPartitionState OBJECT-TYPE

SYNTAX INTEGER {  
notAutoPartitioned(1),  
autoPartitioned(2)  
}

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The autoPartitionState flag indicates whether the port is currently partitioned by the repeater's auto-partition protection.

The conditions that cause port partitioning are specified in partition state machine in Sections 9 and 27 of [IEEE 802.3 Std]. They are not differentiated here."

## REFERENCE

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```
"[IEEE 802.3 Mgt], 30.4.3.1.3, aAutoPartitionState."
 ::= { rptrPortEntry 4 }
```

rptrPortOperStatus OBJECT-TYPE

```
SYNTAX      INTEGER {
                operational(1),
                notOperational(2),
                notPresent(3)
            }
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object indicates the port's operational status. The notPresent(3) status indicates the port is physically removed (note this may or may not be possible depending on the type of port.) The operational(1) status indicates that the port is enabled (see rptrPortAdminStatus) and working, even though it might be auto-partitioned (see rptrPortAutoPartitionState).

If this object has the value operational(1) and rptrPortAdminStatus is set to disabled(2), it is expected that this object's value will soon change to notOperational(2)."

```
 ::= { rptrPortEntry 5 }
```

rptrPortRptrId OBJECT-TYPE

```
SYNTAX      Integer32 (0..2147483647)
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object identifies the repeater to which this port belongs. The repeater identified by a particular value of this object is the same as that identified by the same value of rptrInfoId. A value of zero indicates that this port currently is not a member of any repeater."

```
 ::= { rptrPortEntry 6 }
```

-- New version of basic information at the repeater level.

--

-- Configuration, status, and control objects for

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-- each managed repeater in the system.

rpPtrInfoTable OBJECT-TYPE

SYNTAX SEQUENCE OF RpPtrInfoEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table of information about each possible non-trivial repeater. The number of entries depends on the physical configuration of the managed system."

::= { rpPtrAllRpPtrInfo 1 }

rpPtrInfoEntry OBJECT-TYPE

SYNTAX RpPtrInfoEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the table, containing information about a single non-trivial repeater."

INDEX { rpPtrInfoId }

::= { rpPtrInfoTable 1 }

RpPtrInfoEntry ::=

SEQUENCE {

rpPtrInfoId

Integer32,

rpPtrInfoRpPtrType

INTEGER,

rpPtrInfoOperStatus

INTEGER,

rpPtrInfoHealthText

DisplayString,

rpPtrInfoReset

INTEGER,

rpPtrInfoNonDisruptTest

INTEGER,

rpPtrInfoPorts

Gauge32,

rpPtrInfoPartitionedPorts

Gauge32,

rpPtrInfoLastChange

TimeStamp

}

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## rpPtrInfoId OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"This object identifies the repeater for which  
this entry contains information."

::= { rpPtrInfoEntry 1 }

## rpPtrInfoRPtrType OBJECT-TYPE

SYNTAX INTEGER {  
    other(1), -- undefined or unknown  
    10MbBaseband(2),  
    100MbBasebandClassI(3),  
    100MbBasebandClassII(4)  
}

MAX-ACCESS read-only

STATUS mandatory

## DESCRIPTION

"The rpPtrInfoRPtrType returns a value that identifies  
the CSMA/CD repeater type."

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.1.2, aRepeaterType."

::= { rpPtrInfoEntry 2 }

## rpPtrInfoOperStatus OBJECT-TYPE

SYNTAX INTEGER {  
    other(1), -- undefined or unknown  
    ok(2), -- no known failures  
    rpPtrFailure(3), -- repeater-related failure  
    groupFailure(4), -- group-related failure  
    portFailure(5), -- port-related failure  
    generalFailure(6) -- failure, unspecified type  
}

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The rpPtrInfoOperStatus object indicates the  
operational state of the repeater. The  
rpPtrInfoHealthText object may be consulted  
for more specific information about the state  
of the repeater's health."

In the case of multiple kinds of failures (e.g.,  
repeater failure and port failure), the value of

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this attribute shall reflect the highest priority failure in the following order, listed highest priority first:

rpPtrFailure(3)  
groupFailure(4)  
portFailure(5)  
generalFailure(6)."

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.1.5, aRepeaterHealthState."  
::= { rpPtrInfoEntry 3 }

## rpPtrInfoHealthText OBJECT-TYPE

SYNTAX DisplayString (SIZE (0..255))

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The health text object is a text string that provides information relevant to the operational state of the repeater. Agents may use this string to provide detailed information on current failures, including how they were detected, and/or instructions for problem resolution. The contents are agent-specific."

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.1.6, aRepeaterHealthText."  
::= { rpPtrInfoEntry 4 }

## rpPtrInfoReset OBJECT-TYPE

SYNTAX INTEGER {  
noReset(1),  
reset(2)  
}

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"Setting this object to reset(2) causes a transition to the START state of Fig 9-2 in [section 9](#) [IEEE 802.3 Std] for a 10Mb/s repeater, and to the START state of Fig 27-2 in [section 27](#) of that standard for a 100Mb/s repeater.

Setting this object to noReset(1) has no effect. The agent will always return the value noReset(1) when this object is read.

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After receiving a request to set this variable to reset(2), the agent is allowed to delay the reset for a short period. For example, the implementor may choose to delay the reset long enough to allow the SNMP response to be transmitted. In any event, the SNMP response must be transmitted.

This action does not reset the management counters defined in this document nor does it affect the portAdminStatus parameters. Included in this action is the execution of a disruptive Self-Test with the following characteristics: a) The nature of the tests is not specified. b) The test resets the repeater but without affecting management information about the repeater. c) The test does not inject packets onto any segment. d) Packets received during the test may or may not be transferred. e) The test does not interfere with management functions.

After performing this self-test, the agent will update the repeater health information (including rpPtrInfoOperStatus and rpPtrInfoHealthText), and send a rpPtrInfoHealth trap."

#### REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.2.1, acResetRepeater."

::= { rpPtrInfoEntry 5 }

#### rpPtrInfoNonDisruptTest OBJECT-TYPE

SYNTAX INTEGER {  
noSelfTest(1),  
selfTest(2)  
}

MAX-ACCESS read-write

STATUS current

#### DESCRIPTION

"Setting this object to selfTest(2) causes the repeater to perform a agent-specific, non-disruptive self-test that has the following characteristics: a) The nature of the tests is not specified. b) The test does not change the state of the repeater or management information about the repeater. c) The test does not inject packets onto any segment. d) The test does not prevent the relay of any packets. e) The test

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does not interfere with management functions.

After performing this test, the agent will update the repeater health information (including rpPtrInfoOperStatus and rpPtrInfoHealthText) and send a rpPtrInfoHealth trap.

Note that this definition allows returning an 'okay' result after doing a trivial test.

Setting this object to noSelfTest(1) has no effect. The agent will always return the value noSelfTest(1) when this object is read."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.2.2,  
acExecuteNonDisruptiveSelfTest."

::= { rpPtrInfoEntry 6 }

rpPtrInfoPorts OBJECT-TYPE

SYNTAX Gauge32  
MAX-ACCESS read-only  
STATUS current

DESCRIPTION

"The number of ports that are configured to be a member of the repeater-unit."

::= { rpPtrInfoEntry 7 }

rpPtrInfoPartitionedPorts OBJECT-TYPE

SYNTAX Gauge32  
MAX-ACCESS read-only  
STATUS current

DESCRIPTION

"This object returns the total number of ports in the repeater whose current state meets all three of the following criteria: rpPtrPortOperStatus does not have the value notPresent(3), rpPtrPortAdminStatus is enabled(1), and rpPtrPortAutoPartitionState is autoPartitioned(2)."

::= { rpPtrInfoEntry 8 }

rpPtrInfoLastChange OBJECT-TYPE

SYNTAX TimeStamp  
MAX-ACCESS read-only  
STATUS current

DESCRIPTION

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"The value of sysUpTime when any of the following conditions occurred:

- 1) agent cold- or warm-started;
- 2) this instance of repeater was created (such as when a device or module was added to the system);
- 3) a change in the value of rptrInfoOperStatus;
- 4) ports were added or removed as members of the repeater; or
- 5) any of the counters associated with this repeater had a discontinuity."

::= { rptrInfoEntry 9 }

--

-- Old version of statistics at the repeater level.

--

-- Performance monitoring statistics for the repeater

--

-- In a system containing a single managed repeater-unit,  
-- the statistics object for the repeater-unit.

-- The objects contained under the rptrMonitorRptrInfo subtree are  
-- intended for backwards compatibility with implementations of  
-- [RFC 1516](#). In newer implementations (both single- and  
-- multiple-repeater implementations), the rptrMonitorTable will  
-- be implemented. It is the preferred source of this information,  
-- as it contains the values for all repeaters managed by the  
-- agent. In all cases, the objects in the rptrMonitorRptrInfo  
-- subtree are duplicates of the corresponding objects in the  
-- first entry of the rptrMonitorTable.

#### rptrMonitorTransmitCollisions OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS deprecated

##### DESCRIPTION

"For a clause 9 (10Mb/s) repeater, this counter is incremented every time the repeater state machine enters the TRANSMIT COLLISION state from any state other than ONE PORT LEFT (Ref: Fig 9-2 [IEEE 802.3 Std]).



For a clause 27 repeater, this counter is incremented every time the repeater core state diagram enters the Jam state as a result of Activity(ALL) > 1 (fig 27-2 [IEEE 802.3 Std]).

The approximate minimum time for rollover of this counter is 16 hours in a 10Mb/s repeater and 1.6 hours in a 100Mb/s repeater."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.1.8, aTransmitCollisions."  
::= { rpPtrMonitorRpPtrInfo 1 }

-- Statistics at the group level.

--

-- In a system containing a single managed repeater-unit,  
-- the statistics objects for each group.

rpPtrMonitorGroupTable OBJECT-TYPE

SYNTAX SEQUENCE OF RpPtrMonitorGroupEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"Table of performance and error statistics for the groups within the repeater. The number of entries is the same as that in the rpPtrGroupTable."

::= { rpPtrMonitorGroupInfo 1 }

rpPtrMonitorGroupEntry OBJECT-TYPE

SYNTAX RpPtrMonitorGroupEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"An entry in the table, containing total performance and error statistics for a single group. Regular retrieval of the information in this table provides a means of tracking the performance and health of the networked devices attached to this group's ports.

The counters in this table are redundant in the sense that they are the summations of information already available through other objects. However, these sums provide a considerable optimization of network management traffic over the otherwise



necessary retrieval of the individual counters included in each sum.

Note: Group-level counters are deprecated in this MIB. It is recommended that management applications instead use the repeater-level counters contained in the rptrMonTable."

```
INDEX      { rptrMonitorGroupIndex }
 ::= { rptrMonitorGroupTable 1 }
```

```
RptrMonitorGroupEntry ::=
  SEQUENCE {
    rptrMonitorGroupIndex
      Integer32,
    rptrMonitorGroupTotalFrames
      Counter32,
    rptrMonitorGroupTotalOctets
      Counter32,
    rptrMonitorGroupTotalErrors
      Counter32
  }
```

```
rptrMonitorGroupIndex OBJECT-TYPE
  SYNTAX      Integer32 (1..2147483647)
  MAX-ACCESS  read-only
  STATUS      deprecated
  DESCRIPTION
    "This object identifies the group within the
    repeater for which this entry contains
    information."
  ::= { rptrMonitorGroupEntry 1 }
```

```
rptrMonitorGroupTotalFrames OBJECT-TYPE
  SYNTAX      Counter32
  MAX-ACCESS  read-only
  STATUS      deprecated
  DESCRIPTION
    "The total number of frames of valid frame length
    that have been received on the ports in this group
    and for which the FCSError and CollisionEvent
    signals were not asserted. This counter is the
    summation of the values of the
    rptrMonitorPortReadableFrames counters for all of
    the ports in the group."
```





This statistic provides one of the parameters necessary for obtaining the packet error rate. The approximate minimum time for rollover of this counter is 80 hours in a 10Mb/s repeater."

::= { rpPtrMonitorGroupEntry 2 }

rpPtrMonitorGroupTotalOctets OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The total number of octets contained in the valid frames that have been received on the ports in this group. This counter is the summation of the values of the rpPtrMonitorPortReadableOctets counters for all of the ports in the group.

This statistic provides an indicator of the total data transferred. The approximate minimum time for rollover of this counter is 58 minutes in a 10Mb/s repeater."

::= { rpPtrMonitorGroupEntry 3 }

rpPtrMonitorGroupTotalErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The total number of errors which have occurred on all of the ports in this group. This counter is the summation of the values of the rpPtrMonitorPortTotalErrors counters for all of the ports in the group."

::= { rpPtrMonitorGroupEntry 4 }

-- Statistics at the port level.

--

rpPtrMonitorPortTable OBJECT-TYPE

SYNTAX SEQUENCE OF RpPtrMonitorPortEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table of performance and error statistics for the

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ports. The number of entries is the same as that in the rptrPortTable.

The columnar object rptrMonitorPortLastChange is used to indicate possible discontinuities of counter type columnar objects in the table."

::= { rptrMonitorPortInfo 1 }

rptrMonitorPortEntry OBJECT-TYPE

SYNTAX RptrMonitorPortEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the table, containing performance and error statistics for a single port."

INDEX { rptrMonitorPortGroupIndex, rptrMonitorPortIndex }

::= { rptrMonitorPortTable 1 }

RptrMonitorPortEntry ::=

SEQUENCE {

rptrMonitorPortGroupIndex

Integer32,

rptrMonitorPortIndex

Integer32,

rptrMonitorPortReadableFrames

Counter32,

rptrMonitorPortReadableOctets

Counter32,

rptrMonitorPortFCSErrors

Counter32,

rptrMonitorPortAlignmentErrors

Counter32,

rptrMonitorPortFrameTooLongs

Counter32,

rptrMonitorPortShortEvents

Counter32,

rptrMonitorPortRunts

Counter32,

rptrMonitorPortCollisions

Counter32,

rptrMonitorPortLateEvents

Counter32,

rptrMonitorPortVeryLongEvents

Counter32,

rptrMonitorPortDataRateMismatches

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```
        Counter32,
    rptrMonitorPortAutoPartitions
        Counter32,
    rptrMonitorPortTotalErrors
        Counter32,
    rptrMonitorPortIsolates
        Counter32,
    rptrMonitorPortSymbolErrors
        Counter32,
    rptrMonitorPortUpper32Octets
        Counter32,
    rptrMonitorPortLCReadableOctets
        Counter64,
    rptrMonitorPortLastChange
        TimeStamp
}
```

rptrMonitorPortGroupIndex OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object identifies the group containing the  
port for which this entry contains information."

::= { rptrMonitorPortEntry 1 }

rptrMonitorPortIndex OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object identifies the port within the group  
for which this entry contains information."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.1, aPortID."

::= { rptrMonitorPortEntry 2 }

rptrMonitorPortReadableFrames OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object is the number of frames of valid  
frame length that have been received on this port.  
This counter is incremented by one for each frame

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received on this port whose OctetCount is greater than or equal to minFrameSize and less than or equal to maxFrameSize (Ref: IEEE 802.3 Std, 4.4.2.1) and for which the FCSError and CollisionEvent signals are not asserted.

A discontinuity may occur in the value when the value of object rptrMonitorPortLastChange changes.

This statistic provides one of the parameters necessary for obtaining the packet error rate. The approximate minimum time for rollover of this counter is 80 hours at 10Mb/s."

#### REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.4, aReadableFrames."  
::= { rptrMonitorPortEntry 3 }

#### rptrMonitorPortReadableOctets OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

#### DESCRIPTION

"This object is the number of octets contained in valid frames that have been received on this port. This counter is incremented by OctetCount for each frame received on this port which has been determined to be a readable frame (i.e., including FCS octets but excluding framing bits and dribble bits).

A discontinuity may occur in the value when the value of object rptrMonitorPortLastChange changes.

This statistic provides an indicator of the total data transferred. The approximate minimum time for rollover of this counter in a 10Mb/s repeater is 58 minutes.

For ports receiving traffic at a maximum rate in a 100Mb/s repeater, this counter can roll over in less than 6 minutes. Since that amount of time could be less than a management station's poll cycle time, in order to avoid a loss of information a





management station is advised to also poll the  
rpPtrMonitorPortUpper32Octets object, or to use the  
64-bit counter defined by  
rpPtrMonitorPortLCReadableOctets instead of the  
two 32-bit counters."

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.5, aReadableOctets."

::= { rpPtrMonitorPortEntry 4 }

## rpPtrMonitorPortFCSErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"This counter is incremented by one for each frame  
received on this port with the FCSError signal  
asserted and the FramingError and CollisionEvent  
signals deasserted and whose OctetCount is greater  
than or equal to minFrameSize and less than or  
equal to maxFrameSize (Ref: 4.4.2.1, IEEE 802.3  
Std).

A discontinuity may occur in the value  
when the value of object  
rpPtrMonitorPortLastChange changes.

The approximate minimum time for rollover of this  
counter is 80 hours at 10Mb/s."

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.6,  
aFrameCheckSequenceErrors."

::= { rpPtrMonitorPortEntry 5 }

## rpPtrMonitorPortAlignmentErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"This counter is incremented by one for each frame  
received on this port with the FCSError and  
FramingError signals asserted and CollisionEvent  
signal deasserted and whose OctetCount is greater  
than or equal to minFrameSize and less than or  
equal to maxFrameSize (Ref: IEEE 802.3 Std,  
4.4.2.1). If rpPtrMonitorPortAlignmentErrors is

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incremented then the rptrMonitorPortFCSErrors Counter shall not be incremented for the same frame.

A discontinuity may occur in the value when the value of object rptrMonitorPortLastChange changes.

The approximate minimum time for rollover of this counter is 80 hours at 10Mb/s."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.7, aAlignmentErrors."  
::= { rptrMonitorPortEntry 6 }

rptrMonitorPortFrameTooLongs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This counter is incremented by one for each frame received on this port whose OctetCount is greater than maxFrameSize (Ref: 4.4.2.1, IEEE 802.3 Std). If rptrMonitorPortFrameTooLongs is incremented then neither the rptrMonitorPortAlignmentErrors nor the rptrMonitorPortFCSErrors counter shall be incremented for the frame.

A discontinuity may occur in the value when the value of object rptrMonitorPortLastChange changes.

The approximate minimum time for rollover of this counter is 61 days in a 10Mb/s repeater."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.8, aFramesTooLong."  
::= { rptrMonitorPortEntry 7 }

rptrMonitorPortShortEvents OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This counter is incremented by one for each CarrierEvent on this port with ActivityDuration less than ShortEventMaxTime. ShortEventMaxTime is

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greater than 74 bit times and less than 82 bit times. ShortEventMaxTime has tolerances included to provide for circuit losses between a conformance test point at the AUI and the measurement point within the state machine.

Notes:

ShortEvents may indicate externally generated noise hits which will cause the repeater to transmit Runt to its other ports, or propagate a collision (which may be late) back to the transmitting DTE and damaged frames to the rest of the network.

Implementors may wish to consider selecting the ShortEventMaxTime towards the lower end of the allowed tolerance range to accommodate bit losses suffered through physical channel devices not budgeted for within this standard.

The significance of this attribute is different in 10 and 100 Mb/s collision domains. Clause 9 repeaters perform fragment extension of short events which would be counted as runts on the interconnect ports of other repeaters. Clause 27 repeaters do not perform fragment extension.

A discontinuity may occur in the value when the value of object rpPtrMonitorPortLastChange changes.

The approximate minimum time for rollover of this counter is 16 hours in a 10Mb/s repeater."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.9, aShortEvents."

::= { rpPtrMonitorPortEntry 8 }

rpPtrMonitorPortRunts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This counter is incremented by one for each CarrierEvent on this port that meets one of the

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following two conditions. Only one test need be made. a) The ActivityDuration is greater than ShortEventMaxTime and less than ValidPacketMinTime and the CollisionEvent signal is deasserted. b) The OctetCount is less than 64, the ActivityDuration is greater than ShortEventMaxTime and the CollisionEvent signal is deasserted. ValidPacketMinTime is greater than or equal to 552 bit times and less than 565 bit times.

An event whose length is greater than 74 bit times but less than 82 bit times shall increment either the shortEvents counter or the runts counter but not both. A CarrierEvent greater than or equal to 552 bit times but less than 565 bit times may or may not be counted as a runt.

ValidPacketMinTime has tolerances included to provide for circuit losses between a conformance test point at the AUI and the measurement point within the state machine.

Runts usually indicate collision fragments, a normal network event. In certain situations associated with large diameter networks a percentage of collision fragments may exceed ValidPacketMinTime.

A discontinuity may occur in the value when the value of object rptrMonitorPortLastChange changes.

The approximate minimum time for rollover of this counter is 16 hours in a 10Mb/s repeater."

#### REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.10, aRunts."

::= { rptrMonitorPortEntry 9 }

#### rptrMonitorPortCollisions OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

#### DESCRIPTION

"For a clause 9 repeater, this counter is incremented by one for any CarrierEvent signal





on any port for which the CollisionEvent signal on this port is asserted. For a clause 27 repeater port the counter increments on entering the Collision Count Increment state of the partition state diagram (fig 27-8 of [IEEE 802.3 Std]).

A discontinuity may occur in the value when the value of object  
rpPtrMonitorPortLastChange changes.

The approximate minimum time for rollover of this counter is 16 hours in a 10Mb/s repeater."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.11, aCollisions."

::= { rpPtrMonitorPortEntry 10 }

rpPtrMonitorPortLateEvents OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"For a clause 9 repeater port, this counter is incremented by one for each CarrierEvent on this port in which the CollIn(X) variable transitions to the value SQE (Ref: 9.6.6.2, IEEE 802.3 Std) while the ActivityDuration is greater than the LateEventThreshold. For a clause 27 repeater port, this counter is incremented by one on entering the Collision Count Increment state of the partition state diagram (fig 27-8) while the ActivityDuration is greater than the LateEvent- Threshold. Such a CarrierEvent is counted twice, as both a collision and as a lateEvent.

The LateEventThreshold is greater than 480 bit times and less than 565 bit times. LateEventThreshold has tolerances included to permit an implementation to build a single threshold to serve as both the LateEventThreshold and ValidPacketMinTime threshold.

A discontinuity may occur in the value

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when the value of object  
rpPtrMonitorPortLastChange changes.

The approximate minimum time for rollover of this  
counter is 81 hours in a 10Mb/s repeater."

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.12, aLateEvents."

::= { rpPtrMonitorPortEntry 11 }

## rpPtrMonitorPortVeryLongEvents OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"For a clause 9 repeater port, this counter  
is incremented by one for each CarrierEvent  
whose ActivityDuration is greater than the  
MAU Jabber Lockup Protection timer TW3  
(Ref: 9.6.1 & 9.6.5, IEEE 802.3 Std).

For a clause 27 repeater port, this counter  
is incremented by one on entry to the  
Rx Jabber state of the receiver timer state  
diagram (fig 27-7). Other counters may  
be incremented as appropriate.

A discontinuity may occur in the value  
when the value of object  
rpPtrMonitorPortLastChange changes."

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.13, aVeryLongEvents."

::= { rpPtrMonitorPortEntry 12 }

## rpPtrMonitorPortDataRateMismatches OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"This counter is incremented by one for each  
frame received by this port that meets all  
of the conditions required by only one of the  
following two measurement methods:

Measurement method A: 1) The CollisionEvent  
signal is not asserted (10Mb/s operation) or



the Collision Count Increment state of the partition state diagram (fig 27-8 of [IEEE 802.3 Std]) has not been entered (100Mb/s operation). 2) The ActivityDuration is greater than ValidPacketMinTime. 3) The frequency (data rate) is detectably mismatched from the local transmit frequency.

Measurement method B: 1) The CollisionEvent signal is not asserted (10Mb/s operation) or the Collision Count Increment state of the partition state diagram (fig 27-8 of [IEEE 802.3 Std]) has not been entered (100Mb/s operation). 2) The OctetCount is greater than 63. 3) The frequency (data rate) is detectably mismatched from the local transmit frequency. The exact degree of mismatch is vendor specific and is to be defined by the vendor for conformance testing.

When this event occurs, other counters whose increment conditions were satisfied may or may not also be incremented, at the implementor's discretion. Whether or not the repeater was able to maintain data integrity is beyond the scope of this standard.

A discontinuity may occur in the value when the value of object  
rpPtrMonitorPortLastChange changes."

#### REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.14, aDataRateMismatches."

::= { rpPtrMonitorPortEntry 13 }

#### rpPtrMonitorPortAutoPartitions OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

#### DESCRIPTION

"This counter is incremented by one for each time the repeater has automatically partitioned this port.

The conditions that cause a clause 9 repeater port to partition are specified in



the partition state diagram in clause 9 of [IEEE 802.3 Std]. They are not differentiated here. A clause 27 repeater port partitions on entry to the Partition Wait state of the partition state diagram (fig 27-8 in [IEEE 802.3 Std]).

A discontinuity may occur in the value when the value of object  
rpPtrMonitorPortLastChange changes."

#### REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.15, aAutoPartitions."  
 ::= { rpPtrMonitorPortEntry 14 }

#### rpPtrMonitorPortTotalErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

#### DESCRIPTION

"The total number of errors which have occurred on this port. This counter is the summation of the values of other error counters (for the same port), namely:

rpPtrMonitorPortFCSErrors,  
rpPtrMonitorPortAlignmentErrors,  
rpPtrMonitorPortFrameTooLongs,  
rpPtrMonitorPortShortEvents,  
rpPtrMonitorPortLateEvents,  
rpPtrMonitorPortVeryLongEvents, and  
rpPtrMonitorPortDataRateMismatches.

This counter is redundant in the sense that it is the summation of information already available through other objects. However, it is included specifically because the regular retrieval of this object as a means of tracking the health of a port provides a considerable optimization of network management traffic over the otherwise necessary retrieval of the summed counters.

Note that rpPtrMonitorPortRunts is not included in this total; this is because runts usually indicate collision fragments, a normal network event.

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[Editor's note: This sum does not include the value of the rptrMonitorPortSymbolErrors object. Perhaps we should deprecate it and define a new PortTotalErrors object which does. However, we may need to address the rollover issue in that case.]

This object is a delta value, providing the count of total errors on the port between the current time and the time which is the value of object rptrMonitorPortLastChange.

A discontinuity may occur in the value when the value of object rptrMonitorPortLastChange changes."

::= { rptrMonitorPortEntry 15 }

#### rptrMonitorPortIsolates OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS mandatory

##### DESCRIPTION

"This counter is incremented by one each time that the repeater port automatically isolates as a consequence of false carrier events. The conditions which cause a port to automatically isolate are defined by the transition from the False Carrier state to the Link Unstable state of the carrier integrity state diagram (figure 27-9) [IEEE 802.3 Standard].

Note: Isolates do not affect the value of the PortOperStatus object.

A discontinuity may occur in the value when the value of object rptrMonitorPortLastChange changes."

##### REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.16, aIsolates."

::= { rptrMonitorPortEntry 16 }

#### rptrMonitorPortSymbolErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

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STATUS        mandatory

DESCRIPTION

"This counter is incremented by one each time when valid length packet was received at the port and there was at least one occurrence of an invalid data symbol. This can increment only once per valid carrier event. A collision presence at any port of the repeater containing port N, will not cause this attribute to increment.

A discontinuity may occur in the value when the value of object  
rpPtrMonitorPortLastChange changes.

The approximate minimum time for rollover of this counter is 7.4 hours at 100Mb/s."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.17,  
aSymbolErrorDuringPacket."

::= { rpPtrMonitorPortEntry 17 }

rpPtrMonitorPortUpper32Octets OBJECT-TYPE

SYNTAX        Counter32

MAX-ACCESS   read-only

STATUS        mandatory

DESCRIPTION

"This object is the number of octets contained in valid frames that have been received on this port, modulo 2\*\*32. That is, it contains the upper 32 bits of a 64-bit octets counter, of which the lower 32 bits are contained in the  
rpPtrMonitorPortReadableOctets object.

This two-counter mechanism is provided for those network management protocols that do not support 64-bit counters (e.g. SNMP V1) and are used to manage a repeater type of 100Mb/s.

A discontinuity may occur in the value when the value of object  
rpPtrMonitorPortLastChange changes."

::= { rpPtrMonitorPortEntry 18 }

rpPtrMonitorPortLCReadableOctets OBJECT-TYPE

SYNTAX        Counter64



MAX-ACCESS read-only

STATUS mandatory

DESCRIPTION

"This object is the number of octets contained in valid frames that have been received on this port. This counter is incremented by OctetCount for each frame received on this port which has been determined to be a readable frame (i.e., including FCS octets but excluding framing bits and dribble bits).

This statistic provides an indicator of the total data transferred.

This counter is a 64-bit version of rptrMonitorPortReadableOctets. It should be used by network management protocols which support 64-bit counters (e.g. SNMPv2).

A discontinuity may occur in the value when the value of object rptrMonitorPortLastChange changes."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.5, aReadableOctets."

::= { rptrMonitorPortEntry 19 }

rptrMonitorPortLastChange OBJECT-TYPE

SYNTAX TimeStamp

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The value of sysUpTime when the last of the following occurred:  
1) the agent cold- or warm-started;  
2) the row for the port was created (such as when a device or module was added to the system); or  
3) any condition that would cause one of the counters for the row to experience a discontinuity."

::= { rptrMonitorPortEntry 20 }

-- New version of statistics at the repeater level.

--

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-- Statistics objects for each managed repeater  
-- in the system.

rpPtrMonTable OBJECT-TYPE

SYNTAX SEQUENCE OF rpPtrMonEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table of information about each possible non-trivial repeater. The number of entries in this table is the same as the number of entries in the rpPtrInfoTable.

The columnar object rpPtrInfoLastChange is used to indicate possible discontinuities of counter type columnar objects in this table."

::= { rpPtrMonitorAllRpPtrInfo 1 }

rpPtrMonEntry OBJECT-TYPE

SYNTAX rpPtrMonEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in the table, containing information about a single non-trivial repeater."

AUGMENTS { rpPtrInfoEntry }

::= { rpPtrMonTable 1 }

rpPtrMonEntry ::=

SEQUENCE {

rpPtrMonTxCollisions

Counter32,

rpPtrMonTotalFrames

Counter32,

rpPtrMonTotalErrors

Counter32,

rpPtrMonUpper32TotalOctets

Counter32,

rpPtrMonLower32TotalOctets

Counter32,

rpPtrMonLCTotalOctets

Counter64

}

rpPtrMonTxCollisions OBJECT-TYPE





SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION

"For a clause 9 (10Mb/s) repeater, this counter is incremented every time the repeater state machine enters the TRANSMIT COLLISION state from any state other than ONE PORT LEFT (Ref: Fig 9-2 [IEEE 802.3 Std]).

For a clause 27 repeater, this counter is incremented every time the repeater core state diagram enters the Jam state as a result of Activity(ALL) > 1 (fig 27-2 [IEEE 802.3 Std]).

This object is a delta value, providing the count of transmit collisions between the current time and the time which is the value of object rptrInfoLastChange.

The approximate minimum time for rollover of this counter is 16 hours in a 10Mb/s repeater and 1.6 hours in a 100Mb/s repeater."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.1.8, aTransmitCollisions"  
::= { rptrMonEntry 1 }

rptrMonTotalFrames OBJECT-TYPE

SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION

"The number of frames of valid frame length that have been received on the ports in this repeater and for which the FCSError and CollisionEvent signals were not asserted. If an implementation can not obtain a count of frames as seen by the repeater itself, this counter may be implemented as the summation of the values of the rptrMonitorPortReadableFrames counters for all of the ports in the repeater.

This object is a delta value, providing the count of total frames between the current time and the time which is the

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value of object rptrInfoLastChange.

This statistic provides one of the parameters necessary for obtaining the packet error rate. The approximate minimum time for rollover of this counter is 80 hours in a 10Mb/s repeater."

::= { rptrMonEntry 3 }

rptrMonTotalErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of errors which have occurred on all of the ports in this repeater. The errors included in this count are the same as those listed for the rptrMonitorPortTotalErrors counter. If an implementation can not obtain a count of these errors as seen by the repeater itself, this counter may be implemented as the summation of the values of the rptrMonitorPortTotalErrors counters for all of the ports in the repeater.

This object is a delta value, providing the count of total errors between the current time and the time which is the value of object rptrInfoLastChange."

::= { rptrMonEntry 4 }

rptrMonUpper32TotalOctets OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS mandatory

DESCRIPTION

"The total number of octets contained in the valid frames that have been received on the ports in this repeater, modulo  $2^{32}$ . That is, it contains the upper 32 bits of a 64-bit counter, of which the lower 32 bits are contained in the rptrMonLower32TotalOctets object. If an implementation can not obtain a count of octets as seen by the repeater itself, the 64-bit value may be the summation of the values of the rptrMonitorPortReadableOctets counters combined with the corresponding rptrMonitorPortUpper32Octets



counters for all of the ports in the repeater.

This object is a delta value, providing the count of octets received between the current time and the time which is the value of object `rpPtrInfoLastChange`.

This statistic provides an indicator of the total data transferred within the repeater.

This two-counter mechanism is provided for those network management protocols that do not support 64-bit counters (e.g. SNMP V1) and are used to manage a repeater type of 100Mb/s."

::= { rpPtrMonEntry 5 }

`rpPtrMonLower32TotalOctets` OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS mandatory

DESCRIPTION

"The total number of octets contained in the valid frames that have been received on the ports in this group. If an implementation can not obtain a count of octets as seen by the repeater itself, this counter may be the summation of the values of the `rpPtrMonitorPortReadableOctets` counters for all of the ports in the group.

This object is a delta value, providing the count of octets between the current time and the time which is the value of object `rpPtrInfoLastChange`.

This statistic provides an indicator of the total data transferred. The approximate minimum time for rollover of this counter in a 10Mb/s repeater is 58 minutes divided by the number of ports in the repeater.

For 100Mb/s repeaters processing traffic at a maximum rate, this counter can roll over in less than 6 minutes divided by the number of ports in the repeater. Since that amount of time could be less than a management station's poll cycle



time, in order to avoid a loss of information a management station is advised to also poll the rptrMonUpper32TotalOctets object, or to use the 64-bit counter defined by rptrMonLCTotalOctets instead of the two 32-bit counters."

::= { rptrMonEntry 6 }

rptrMonLCTotalOctets OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS mandatory

DESCRIPTION

"The total number of octets contained in the valid frames that have been received on the ports in this group. If a implementation can not obtain a count of octets as seen by the repeater itself, this counter may be the summation of the values of the rptrMonitorPortReadableOctets counters for all of the ports in the group.

This object is a delta value, providing the count of octets between the current time and the time which is the value of object rptrInfoLastChange.

This statistic provides an indicator of the total data transferred.

This counter is a 64-bit version of rptrMonUpper32TotalOctets and rptrMonLower32TotalOctets. It should be used by network management protocols which support 64-bit counters (e.g. SNMPv2). "

::= { rptrMonEntry 7 }

--

-- The Port Address Tracking Table

--

rptrAddrTrackTable OBJECT-TYPE

SYNTAX SEQUENCE OF RptrAddrTrackEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table of address mapping information about the

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```
        ports."
 ::= { rptrAddrTrackPortInfo 1 }

rptrAddrTrackEntry OBJECT-TYPE
    SYNTAX      RptrAddrTrackEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry in the table, containing address mapping
        information about a single port."
    INDEX       { rptrAddrTrackGroupIndex, rptrAddrTrackPortIndex }
    ::= { rptrAddrTrackTable 1 }

RptrAddrTrackEntry ::=
    SEQUENCE {
        rptrAddrTrackGroupIndex
            INTEGER,
        rptrAddrTrackPortIndex
            INTEGER,
        rptrAddrTrackLastSourceAddress    -- DEPRECATED OBJECT
            MacAddress,
        rptrAddrTrackSourceAddrChanges
            Counter32,
        rptrAddrTrackNewLastSrcAddress
            OptMcAddr,
        rptrAddrTrackCapacity
            Integer32
    }

rptrAddrTrackGroupIndex OBJECT-TYPE
    SYNTAX      INTEGER (1..2147483647)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object identifies the group containing the
        port for which this entry contains information."
    ::= { rptrAddrTrackEntry 1 }

rptrAddrTrackPortIndex OBJECT-TYPE
    SYNTAX      INTEGER (1..2147483647)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object identifies the port within the group
        for which this entry contains information."
```



## REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.1, aPortID."  
 ::= { rptrAddrTrackEntry 2 }

## rptrAddrTrackLastSourceAddress OBJECT-TYPE

SYNTAX        MacAddress

MAX-ACCESS   read-only

STATUS        deprecated

## DESCRIPTION

"This object is the SourceAddress of the last readable frame (i.e., counted by rptrMonitorPortReadableFrames) received by this port.

This object has been deprecated because its value is undefined when no frames have been observed on this port. The replacement object is rptrAddrTrackNewLastSrcAddress."

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.18, aLastSourceAddress."  
 ::= { rptrAddrTrackEntry 3 }

## rptrAddrTrackSourceAddrChanges OBJECT-TYPE

SYNTAX        Counter32

MAX-ACCESS   read-only

STATUS        current

## DESCRIPTION

"This counter is incremented by one for each time that the rptrAddrTrackLastSourceAddress attribute for this port has changed.

This may indicate whether a link is connected to a single DTE or another multi-user segment.

A discontinuity may occur in the value when the value of object rptrMonitorPortLastChange changes.

The approximate minimum time for rollover of this counter is 81 hours in a 10Mb/s repeater."

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.19, aSourceAddressChanges."  
 ::= { rptrAddrTrackEntry 4 }

## rptrAddrTrackNewLastSrcAddress OBJECT-TYPE

SYNTAX        OptMacAddr



MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object is the SourceAddress of the last readable frame (i.e., counted by rpPtrMonitorPortReadableFrames) received by this port. If no frames have been received by this port since the agent began monitoring the port activity, the agent shall return a string of length zero."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.18, aLastSourceAddress."

::= { rpPtrAddrTrackEntry 5 }

rpPtrAddrTrackCapacity OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The maximum number of addresses that can be detected on this port. This value indicates to the maximum number of entries in the rpPtrExtAddrTrackTable relative to this port."

If this object has the value of 1, the agent implements only the LastSourceAddress mechanism described by [RFC 1368](#) or [RFC 1516](#)."

::= { rpPtrAddrTrackEntry 6 }

-- Table for multiple addresses per port

rpPtrExtAddrTrackTable OBJECT-TYPE

SYNTAX SEQUENCE OF RpPtrExtAddrTrackEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table to extend the address tracking table (i.e., rpPtrAddrTrackTable) with a list of source MAC addresses that were recently received on each port. The number of ports is the same as the number of entries in table rpPtrPortTable. The number of entries in this table depends on the agent/repeater implementation and the number of different addresses received on each port."



The first entry for each port contains the same MAC address that is given by the `rpPtrAddrTrackNewLastSrcAddress` for that port.

Entries in this table for a particular port are retained when that port is switched from one repeater to another.

The ordering of MAC addresses listed for a particular port is implementation dependent."

::= { `rpPtrAddrTrackPortInfo` 2 }

`rpPtrExtAddrTrackEntry` OBJECT-TYPE

SYNTAX `RpPtrExtAddrTrackEntry`

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A row in the table of extended address tracking information for ports. Entries can not be directly created or deleted via SNMP operations."

INDEX { `rpPtrAddrTrackGroupIndex`,  
          `rpPtrAddrTrackPortIndex`,  
          `rpPtrExtAddrTrackMacIndex` }

::= { `rpPtrExtAddrTrackTable` 1 }

`RpPtrExtAddrTrackEntry` ::= SEQUENCE {

`rpPtrExtAddrTrackMacIndex` Integer32,

`rpPtrExtAddrTrackSourceAddress` MacAddress

}

`rpPtrExtAddrTrackMacIndex` OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The index of a source MAC address seen on the port."

::= { `rpPtrExtAddrTrackEntry` 1 }

`rpPtrExtAddrTrackSourceAddress` OBJECT-TYPE

SYNTAX MacAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The source MAC address from a readable frame





(i.e., counted by rpPtrMonitorPortReadableFrames)  
recently received by the port."

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.3.1.18, aLastSourceAddress."

::= { rpPtrExtAddrTrackEntry 2 }

## rpPtrAddrTrackReset OBJECT-TYPE

SYNTAX INTEGER {  
noReset(1),  
reset(2)  
}

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"Setting this object to reset(2) causes  
the agent to empty the contents of the  
rpPtrExtAddrTrackTable. The contents of  
the rpPtrAddrTrackTable are not affected.

Setting this object to noReset(1) has no effect.  
The agent will always return the value noReset(1)  
when this object is read."

::= { rpPtrAddrTrackPortInfo 3 }

-- The Repeater Top "N" Port Group

-- The Repeater Top N Port group is used to prepare reports that  
-- describe a list of ports ordered by one of the statistics in the  
-- Repeater Monitor Port Table. The statistic chosen by the  
-- management station is sampled over a management  
-- station-specified time interval, making the report rate based.  
-- The management station also specifies the number of ports that  
-- are reported.

--

-- The rpPtrTopNPortControlTable is used to initiate the generation  
-- of a report. The management station may select the parameters  
-- of such a report, such as which repeater, which statistic, how  
-- many ports, and the start & stop times of the sampling. When  
-- the report is prepared, entries are created in the  
-- rpPtrTopNPortTable associated with the relevant  
-- rpPtrTopNControlEntry. These entries are static for each report  
-- after it has been prepared.

## rpPtrTopNPortControlTable OBJECT-TYPE

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SYNTAX       SEQUENCE OF RptrTopNPortControlEntry

MAX-ACCESS   not-accessible

STATUS       current

DESCRIPTION

"A table of control records for reports on the top `N` ports for the rate of a selected counter. The number of entries depends on the configuration of the agent. The maximum number of entries is implementation dependent."

::= { rptrTopNPortInfo 1 }

rptrTopNPortControlEntry OBJECT-TYPE

SYNTAX       RptrTopNPortControlEntry

MAX-ACCESS   not-accessible

STATUS       current

DESCRIPTION

"A set of parameters that control the creation of a report of the top N ports according to several metrics."

INDEX       { rptrTopNPortControlIndex }

::= { rptrTopNPortControlTable 1 }

RptrTopNPortControlEntry ::= SEQUENCE {

  rptrTopNPortControlIndex

    Integer32,

  rptrTopNPortRepeaterId

    Integer32,

  rptrTopNPortRateBase

    INTEGER,

  rptrTopNPortTimeRemaining

    Integer32,

  rptrTopNPortDuration

    Integer32,

  rptrTopNPortRequestedSize

    Integer32,

  rptrTopNPortGrantedSize

    Integer32,

  rptrTopNPortStartTime

    TimeStamp,

  rptrTopNPortOwner

    OwnerString,

  rptrTopNPortRowStatus

    RowStatus

}

rptrTopNPortControlIndex OBJECT-TYPE



SYNTAX Integer32 (1 .. 65535)  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "An index that uniquely identifies an entry in the  
    rptrTopNPortControl table. Each such entry defines  
    one top N report prepared for a repeater or system."  
 ::= { rptrTopNPortControlEntry 1 }

rptrTopNPortRepeaterId OBJECT-TYPE

SYNTAX INTEGER (0..2147483647)  
MAX-ACCESS read-create  
STATUS current  
DESCRIPTION  
    "Identifies the repeater for which a top N report will  
    be prepared (see rptrInfoId). If the value of this  
    object is positive, only ports assigned to this repeater  
    will be used to form the list in which to order the  
    Top N table. If this value is zero, all ports will be  
    eligible for inclusion on the list.  
  
    The value of this object may not be modified if the  
    associated rptrTopNPortRowStatus object is equal to  
    active(1)."  
 ::= { rptrTopNPortControlEntry 2 }

rptrTopNPortRateBase OBJECT-TYPE

SYNTAX INTEGER {  
    rptrMonitorPortReadableFrames(1),  
    rptrMonitorPortReadableOctets(2),  
    rptrMonitorPortFCSErrors(3),  
    rptrMonitorPortAlignmentErrors(4),  
    rptrMonitorPortFrameTooLongs(5),  
    rptrMonitorPortShortEvents(6),  
    rptrMonitorPortRunts(7),  
    rptrMonitorPortCollisions(8),  
    rptrMonitorPortLateEvents(9),  
    rptrMonitorPortVeryLongEvents(10),  
    rptrMonitorPortDataRateMismatches(11),  
    rptrMonitorPortAutoPartitions(12),  
    rptrMonitorPortTotalErrors(13),  
    rptrMonitorPortIsolates(14),  
    rptrMonitorPortSymbolErrors(15)  
}  
MAX-ACCESS read-create

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STATUS current

DESCRIPTION

"The monitored variable, which the rpTrTopNPortRate variable is based upon.

The value of this object may not be modified if the associated rpTrTopNPortRowStatus object has a value of active(1)."

::= { rpTrTopNPortControlEntry 3 }

rpTrTopNPortTimeRemaining OBJECT-TYPE

SYNTAX Integer32 (0..2147483647)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The number of seconds left in the report currently being collected. When this object is modified by the management station, a new collection is started, possibly aborting a currently running report. The new value is used as the requested duration of this report, which is loaded into the associated rpTrTopNPortDuration object.

When this object is set to a non-zero value, any associated rpTrTopNPortEntries shall be made inaccessible by the agent. While the value of this object is non-zero, it decrements by one per second until it reaches zero. During this time, all associated rpTrTopNPortEntries shall remain inaccessible. At the time that this object decrements to zero, the report is made accessible in the rpTrTopNPortTable. Thus, the rpTrTopNPort table needs to be created only at the end of the collection interval."

DEFVAL { 0 }

::= { rpTrTopNPortControlEntry 4 }

rpTrTopNPortDuration OBJECT-TYPE

SYNTAX Integer32 (0..2147483647)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of seconds that this report has collected during the last sampling interval,

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or if this report is currently being collected, the number of seconds that this report is being collected during this sampling interval.

When the associated `rpPtrTopNPortTimeRemaining` object is set, this object shall be set by the agent to the same value and shall not be modified until the next time the `rpPtrTopNPortTimeRemaining` is set.

This value shall be zero if no reports have been requested for this `rpPtrTopNPortControlEntry`."

::= { `rpPtrTopNPortControlEntry` 5 }

`rpPtrTopNPortRequestSize` OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The maximum number of repeater ports requested for the Top N Table.

When this object is created or modified, the agent should set `rpPtrTopNPortGrantedSize` as close to this object as is possible for the particular implementation and available resources."

DEFVAL { 10 }

::= { `rpPtrTopNPortControlEntry` 6 }

`rpPtrTopNPortGrantedSize` OBJECT-TYPE

SYNTAX Integer32 (0..65535)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The maximum number of repeater ports in the top N table.

When the associated `rpPtrTopNPortRequestedSize` object is created or modified, the agent should set this object as closely to the requested value as is possible for the particular implementation and available resources. The agent must not lower this value except as a result of a set to the associated `rpPtrTopNPortRequestedSize` object."

::= { `rpPtrTopNPortControlEntry` 7 }



**rpPtrTopNPortStartTime OBJECT-TYPE**

SYNTAX       TimeStamp

MAX-ACCESS   read-only

STATUS       current

## DESCRIPTION

"The value of sysUpTime when this top N report was last started. In other words, this is the time that the associated rpPtrTopNPortTimeRemaining object was modified to start the requested report."

::= { rpPtrTopNPortControlEntry 8 }

**rpPtrTopNPortOwner OBJECT-TYPE**

SYNTAX       OwnerString

MAX-ACCESS   read-create

STATUS       current

## DESCRIPTION

"The entity that configured this entry and is using the resources assigned to it."

::= { rpPtrPortTopControlEntry 9 }

**rpPtrTopNPortRowStatus OBJECT-TYPE**

SYNTAX       RowStatus

MAX-ACCESS   read-create

STATUS       current

## DESCRIPTION

"The status of this row."

::= { rpPtrTopNPortControlEntry 10 }

-- Top "N" reports

**rpPtrTopNPortTable OBJECT-TYPE**

SYNTAX       SEQUENCE OF RpPtrTopNPortEntry

MAX-ACCESS   not-accessible

STATUS       current

## DESCRIPTION

"A table of reports for the top 'N' ports based on setting of associated control table entries. The maximum number of entries depends on the number of entries in table rpPtrTopNPortControlTable and the value of object rpPtrTopNPortGrantedSize for each entry.

For each entry in the rpPtrTopNPortControlTable, repeater ports with the highest value of



rpPtrTopNPortRate shall be placed in this table  
in decreasing order of that rate until there is  
no more room or until there are no more ports."  
 ::= { rpPtrTopNPortInfo 2 }

rpPtrTopNPortEntry OBJECT-TYPE

SYNTAX RptrTopNPortEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A set of statistics for a repeater port that is  
part of a top N report."

INDEX { rpPtrTopNPortControlIndex,  
rpPtrTopNPortIndex }

::= { rpPtrTopNPortTable 1 }

RptrTopNPortEntry ::= SEQUENCE {

rpPtrTopNPortIndex

Integer32,

rpPtrTopNPortGroupIndex

Integer32,

rpPtrTopNPortPortIndex

Integer32,

rpPtrTopNPortRate

Gauge32

}

rpPtrTopNPortIndex OBJECT-TYPE

SYNTAX Integer32 (1..65535)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"An index that uniquely identifies an entry in  
the rpPtrTopNPort table among those in the same  
report. This index is between 1 and N, where N  
is the number of entries in this report. Increasing  
values of rpPtrTopNPortIndex shall be assigned to  
entries with decreasing values of rpPtrTopNPortRate  
until index N is assigned to the entry with the  
lowest value of rpPtrTopNPortRate or there are no  
more rpPtrTopNPortEntries.

No ports are included in a report where their  
value of rpPtrTopNPortRate would be zero."

::= { rpPtrTopNPortEntry 1 }

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**rpPtrTopNPortGroupIndex OBJECT-TYPE**

SYNTAX Integer32 (1..2147483647)

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"This object identifies the group containing the port for this entry. (See also object type rpPtrGroupIndex.)"

::= { rpPtrTopNPortEntry 2 }

**rpPtrTopNPortPortIndex OBJECT-TYPE**

SYNTAX Integer32 (1..2147483647)

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The index of the repeater port.  
(See object type rpPtrPortIndex.)"

::= { rpPtrTopNPortEntry 3 }

**rpPtrTopNPortRate OBJECT-TYPE**

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The amount of change in the selected variable during this sampling interval for the identified port. The selected variable is that port's instance of the object selected by rpPtrTopNPortRateBase."

::= { rpPtrTopNPortEntry 4 }

**-- Notifications for use by Repeaters****rpPtrHealth NOTIFICATION-TYPE**

OBJECTS { rpPtrOperStatus }

STATUS deprecated

## DESCRIPTION

"In a system containing a single managed repeater, the rpPtrHealth notification conveys information related to the operational status of the repeater. It is sent either when the value of rpPtrOperStatus changes, or upon completion of a non-disruptive test."





The rptrHealth notification must contain the rptrOperStatus object. The agent may optionally include the rptrHealthText object in the varBind list. See the rptrOperStatus and rptrHealthText objects for descriptions of the information that is sent.

The agent must throttle the generation of consecutive rptrHealth traps so that there is at least a five-second gap between traps of this type. When traps are throttled, they are dropped, not queued for sending at a future time. (Note that 'generating' a trap means sending to all configured recipients.)"

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.3.1, nRepeaterHealth notification."

::= { snmpDot3RptrMgt 0 1 }

## rptrGroupChange NOTIFICATION-TYPE

OBJECTS { rptrGroupIndex }

STATUS deprecated

## DESCRIPTION

"In a system containing a single managed repeater, this notification is sent when a change occurs in the group structure of the repeater. This occurs only when a group is logically or physically removed from or added to a repeater. The varBind list contains the identifier of the group that was removed or added.

The agent must throttle the generation of consecutive rptrGroupChange traps for the same group so that there is at least a five-second gap between traps of this type. When traps are throttled, they are dropped, not queued for sending at a future time. (Note that 'generating' a trap means sending to all configured recipients.)"

## REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.3.3, nGroupMapChange notification."

::= { snmpDot3RptrMgt 0 2 }

## rptrResetEvent NOTIFICATION-TYPE

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OBJECTS { rptrOperStatus }

STATUS deprecated

DESCRIPTION

"In a system containing a single managed repeater-unit, the rptrResetEvent notification conveys information related to the operational status of the repeater. This trap is sent on completion of a repeater reset action. A repeater reset action is defined as an a transition to the START state of Fig 9-2 in [section 9](#) [IEEE 802.3 Std], when triggered by a management command (e.g., an SNMP Set on the rptrReset object).

The agent must throttle the generation of consecutive rptrResetEvent traps so that there is at least a five-second gap between traps of this type. When traps are throttled, they are dropped, not queued for sending at a future time. (Note that 'generating' a trap means sending to all configured recipients.)

The rptrResetEvent trap is not sent when the agent restarts and sends an SNMP coldStart or warmStart trap. However, it is recommended that a repeater agent send the rptrOperStatus object as an optional object with its coldStart and warmStart trap PDUs.

The rptrOperStatus object must be included in the varbind list sent with this trap. The agent may optionally include the rptrHealthText object as well."

REFERENCE

"[IEEE 802.3 Mgt], 30.4.1.3.2, nRepeaterReset notification."

::= { snmpDot3RptrMgt 0 3 }

-- Conformance information

snmpRptrModConf

OBJECT IDENTIFIER ::= { snmpRptrMod 1 }

snmpRptrModCompls

OBJECT IDENTIFIER ::= { snmpRptrModConf 1 }

snmpRptrModObjGrps

OBJECT IDENTIFIER ::= { snmpRptrModConf 2 }



snmpRptrModNotGrps

OBJECT IDENTIFIER ::= { snmpRptrModConf 3 }

-- Object groups

snmpRptrGrpBasic OBJECT-GROUP

OBJECTS { rptrGroupCapacity,  
          rptrOperStatus,  
          rptrHealthText,  
          rptrReset,  
          rptrNonDisruptTest,  
          rptrTotalPartitionedPorts,  
  
          rptrGroupIndex,  
          rptrGroupDescr,  
          rptrGroupObjectID,  
          rptrGroupOperStatus,  
          rptrGroupLastOperStatusChange,  
          rptrGroupPortCapacity,  
  
          rptrPortGroupIndex,  
          rptrPortIndex,  
          rptrPortAdminStatus,  
          rptrPortAutoPartitionState,  
          rptrPortOperStatus }

STATUS obsolete

DESCRIPTION

"Basic group from [RFC 1368](#).

NOTE: this object group is OBSOLETE and replaced  
with snmpRptrGrpBasicRS1."

::= { snmpRptrModObjGrps 1 }

snmpRptrGrpMonitor OBJECT-GROUP

OBJECTS { rptrMonitorTransmitCollisions,  
  
          rptrMonitorGroupIndex,  
          rptrMonitorGroupTotalFrames,  
          rptrMonitorGroupTotalOctets,  
          rptrMonitorGroupTotalErrors,  
  
          rptrMonitorPortGroupIndex,  
          rptrMonitorPortIndex,  
          rptrMonitorPortReadableFrames,

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```
rpPtrMonitorPortReadableOctets,  
rpPtrMonitorPortFCSErrors,  
rpPtrMonitorPortAlignmentErrors,  
rpPtrMonitorPortFrameTooLongs,  
rpPtrMonitorPortShortEvents,  
rpPtrMonitorPortRunts,  
rpPtrMonitorPortCollisions,  
rpPtrMonitorPortLateEvents,  
rpPtrMonitorPortVeryLongEvents,  
rpPtrMonitorPortDataRateMismatches,  
rpPtrMonitorPortAutoPartitions,  
rpPtrMonitorPortTotalErrors }
```

STATUS        obsolete

DESCRIPTION

"Monitor group from [RFC 1368](#)."

NOTE: this object group is OBSOLETE and replaced  
with snmpRptrGrpBasicRS1."

::= { snmpRptrModObjGrps 2 }

snmpRptrGrpAddrTrack OBJECT-GROUP

```
OBJECTS       { rpPtrAddrTrackGroupIndex,  
                rpPtrAddrTrackPortIndex,  
                rpPtrAddrTrackLastSourceAddress,  
                rpPtrAddrTrackSourceAddrChanges,  
                rpPtrAddrTrackNewLastSrcAddress }
```

STATUS        obsolete

DESCRIPTION

"Address tracking group from [RFC 1368](#)."

NOTE: this object group is OBSOLETE and replaced  
with snmpRptrGrpAddrTrackNewSrcAddr."

::= { snmpRptrModObjGrps 3 }

snmpRptrGrpAddrTrackNewSrcAddr OBJECT-GROUP

```
OBJECTS       { rpPtrAddrTrackGroupIndex,  
                rpPtrAddrTrackPortIndex,  
                rpPtrAddrTrackSourceAddrChanges,  
                rpPtrAddrTrackNewLastSrcAddress }
```

STATUS        deprecated

DESCRIPTION

"Address tracking group from [RFC 1516](#)."

NOTE: this object group is DEPRECATED and replaced  
with snmpRptrGrpAddrTrackRSN."

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```
::= { snmpRptrModObjGrps 4 }
```

snmpRptrGrpBasicRS1 OBJECT-GROUP

```
OBJECTS      { rptrOperStatus,
                rptrReset,
                rptrTotalPartitionedPorts,

                rptrGroupIndex,
                rptrGroupObjectID,
                rptrGroupOperStatus,
                rptrGroupLastOperStatusChange,

                rptrPortGroupIndex,
                rptrPortIndex,
                rptrPortAdminStatus,
                rptrPortAutoPartitionState,
                rptrPortOperStatus }
```

STATUS deprecated

DESCRIPTION

"Basic group for a system with exactly-one  
repeater-unit in restart version of the MIB  
module.

NOTE: this object group is DEPRECATED and replaced  
with snmpRptrGrpBasicRSN."

```
::= { snmpRptrModObjGrps 5 }
```

snmpRptrGrpBasicRSN OBJECT-GROUP

```
OBJECTS      { rptrInfoOperStatus,
                rptrInfoLastChange,
                rptrInfoReset,
                rptrInfoPorts,
                rptrInfoOperPorts,
                rptrInfoPartPorts,

                rptrGroupObjectID,
                rptrGroupOperStatus,
                rptrGroupLastOperStatusChange,

                rptrPortAdminStatus,
                rptrPortAutoPartitionState,
                rptrPortOperStatus,
                rptrPortOperRptrId }
```

STATUS current

DESCRIPTION

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"Basic group for a system with one or more  
repeater-units in restart version of the MIB  
module."

::= { snmpRptrModObjGrps 6 }

snmpRptrGrpMonitorRS1 OBJECT-GROUP

OBJECTS { rptrMonitorTransmitCollisions,  
  
rptrMonitorPortReadableFrames,  
rptrMonitorPortReadableOctets,  
rptrMonitorPortFCSErrors,  
rptrMonitorPortAlignmentErrors,  
rptrMonitorPortFrameTooLongs,  
rptrMonitorPortShortEvents,  
rptrMonitorPortRunts,  
rptrMonitorPortCollisions,  
rptrMonitorPortLateEvents,  
rptrMonitorPortVeryLongEvents,  
rptrMonitorPortDataRateMismatches,  
rptrMonitorPortAutoPartitions,  
rptrMonitorPortTotalErrors }

STATUS deprecated

DESCRIPTION

"Monitor group for a system with exactly-one  
repeater-unit in restart version of the MIB  
module."

NOTE: this object group is DEPRECATED and replaced  
with snmpRptrGrpMonitorRSN."

::= { snmpRptrModObjGrps 7 }

snmpRptrGrpMonitorRSN OBJECT-GROUP

OBJECTS { rptrMonTxColls,  
rptrMonTotalFrames,  
rptrMonTotalOctets,  
rptrMonTotalErrors,  
  
rptrMonitorPortReadableFrames,  
rptrMonitorPortReadableOctets,  
rptrMonitorPortFCSErrors,  
rptrMonitorPortAlignmentErrors,  
rptrMonitorPortFrameTooLongs,  
rptrMonitorPortShortEvents,  
rptrMonitorPortRunts,

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```
    rptrMonitorPortCollisions,  
    rptrMonitorPortLateEvents,  
    rptrMonitorPortVeryLongEvents,  
    rptrMonitorPortDataRateMismatches,  
    rptrMonitorPortAutoPartitions,  
    rptrMonitorPortTotalErrors,  
    rptrMonitorPortLastChange }
```

STATUS current

DESCRIPTION

"Basic group for a system with one or more  
repeater-units in restart version of the MIB  
module."

::= { snmpRptrModObjGrps 8 }

snmpRptrGrpAddrTrackRSN OBJECT-GROUP

OBJECTS { rptrAddrTrackSourceAddrChanges,  
 rptrAddrTrackNewLastSrcAddress }

STATUS current

DESCRIPTION

"Address tracking group for a system with one  
or more repeater-units in restart version of  
the MIB module."

::= { snmpRptrModObjGrps 9 }

snmpRptrGrpExtAddrTrackRSN OBJECT-GROUP

OBJECTS { rptrExtAddrTrackSourceAddress }

STATUS current

DESCRIPTION

"Extended address tracking group for a system  
with one or more repeater-units in restart  
version of the MIB module."

::= { snmpRptrModObjGrps 10 }

snmpRptrGrpTopNPort OBJECT-GROUP

OBJECTS { rptrTopNPortRepeaterId,  
 rptrTopNPortRateBase,  
 rptrTopNPortTimeRemaining,  
 rptrTopNPortDuration,  
 rptrTopNPortRequestedSize,  
 rptrTopNPortGrantedSize,  
 rptrTopNPortStartTime,  
 rptrTopNPortOwner,  
 rptrTopNPortRowStatus,  
 rptrTopNPortGroupIndex,

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```

        rptrTopNPortPortIndex,
        rptrTopNPortRate }
STATUS      current
DESCRIPTION
    "Top `N' group for repeater ports."
 ::= { snmpRptrModObjGrps 11 }


-- Notification groups

-- ?? later


-- Compliances

snmpRptrModCompl MODULE-COMPLIANCE
STATUS      obsolete
DESCRIPTION
    "Compliance for RFC 1368.

    NOTE: this module compliance is OBSOLETE and
          replaced by snmpRptrModComplRSN."
MODULE -- this module
MANDATORY-GROUPS { snmpRptrGrpBasic }
-- optional groups
GROUP snmpRptrGrpMonitor
DESCRIPTION
    "..."
GROUP snmpRptrGrpAddrTrack
DESCRIPTION
    "..."
 ::= { snmpRptrModCompls 1 }

snmpRptrModComplNewSrcAddr MODULE-COMPLIANCE
STATUS      obsolete
DESCRIPTION
    "Compliance for RFC 1516.

    NOTE: this module compliance is OBSOLETE and
          replaced by snmpRptrModComplRSN."
MODULE -- this module
MANDATORY-GROUPS { snmpRptrGrpBasic }
-- optional groups
GROUP snmpRptrGrpMonitor
```





```
        DESCRIPTION
        "..."/>
GROUP snmpRptrGrpAddrTrack
        DESCRIPTION
        "..."/>
 ::= { snmpRptrModCompls 2 }

snmpRptrModComplRS1 MODULE-COMPLIANCE
    STATUS      deprecated
    DESCRIPTION
        "Compliance for the `restart version' of the
        MIB module for a system with exactly-one
        repeater-unit.

        NOTE: this module compliance is DEPRECATED and
              replaced by snmpRptrModComplRSN."
    MODULE -- this module
        MANDATORY-GROUPS { snmpRptrGrpBasicRS1 }
        -- Optional groups
        GROUP snmpRptrGrpMonitorRS1
            DESCRIPTION
            "..."/>
        GROUP snmpRptrGrpAddrTrackRSN
            DESCRIPTION
            "..."/>
 ::= { snmpRptrModCompls 3 }

snmpRptrModComplRSN MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "Compliance for the `restart version' of the
        MIB module for a system with one or more
        repeater-units."
    MODULE -- this module
        MANDATORY-GROUPS { snmpRptrGrpBasicRSN }
        -- Optional groups
        GROUP snmpRptrGrpMonitorRSN
            DESCRIPTION
            "..."/>
        GROUP snmpRptrGrpAddrTrackRSN
            DESCRIPTION
            "..."/>
        GROUP snmpRptrGrpExtAddrTrackRSN
            DESCRIPTION
            "..."/>
```

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```
::= { snmpRptrModCompls 4 }
```

END

#### **4. References**

- [1] IEEE 802.3/ISO 8802-3 Information processing systems - Local area networks - Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications, 1993.
- [2] IEEE 802.3u-1995, "MAC Parameters, Physical Layer, Medium Attachment Units and Repeater for 100 Mb/s Operation, Type 100BASE-T," Sections [21](#) through [29](#), Supplement to IEEE Std 802.3, October 26, 1995.
- [3] IEEE 802.3u-1995, "10 & 100 Mb/s Management," [Section 30](#), Supplement to IEEE Std 802.3, October 26, 1995.
- [4] Romascanu, D., and K. de Graaf, "Definitions of Managed Objects for IEEE 802.3 Medium Attachment Units (MAUs)", November 1995.
- [5] McCloghrie, K., and M. Rose, Editors, "Management Information Base for Network Management of TCP/IP-based internets: MIB-II", STD 17, [RFC 1213](#), Hughes LAN Systems, Performance Systems International, March 1991.

