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Editor of this version:
R. Presuhn
BMC Software, Inc.
Authors of previous version:
J. Case
SNMP Research, Inc.
K. McCloghrie
Cisco Systems, Inc.
M. Rose
Dover Beach Consulting, Inc.
S. Waldbusser
International Network Services

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Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)

Status of this Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

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Abstract

This document defines managed objects which describe the behavior of a Simple Network Management Protocol (SNMP) entity. This document obsoletes RFC 1907, Management Information Base for Version 2 of the Simple Network Management Protocol (SNMPv2).

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1. The Internet-Standard Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to section 7 of RFC 3410 [RFC3410].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP).

Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIv2, which is described in STD 58, RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580 [RFC2580].

It is the purpose of this document to define managed objects which describe the behavior of an SNMP entity, as defined in the SNMP architecture STD 62, [RFC3411].

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14, RFC 2119 [RFC2119].

2. Definitions

```
SNMPv2-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
    TimeTicks, Counter32, snmpModules, mib-2
        FROM SNMPv2-SMI
    DisplayString, TestAndIncr, TimeStamp
```

```
        FROM SNMPv2-TC
    MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
        FROM SNMPv2-CONF;

snmpMIB MODULE-IDENTITY
    LAST-UPDATED "200210160000Z"
    ORGANIZATION "IETF SNMPv3 Working Group"
    CONTACT-INFO
            "WG-EMail:   snmpv3@lists.tislabs.com
             Subscribe:  snmpv3-request@lists.tislabs.com

             Co-Chair:   Russ Mundy
                         Network Associates Laboratories
             postal:     15204 Omega Drive, Suite 300
                         Rockville, MD 20850-4601
                         USA
             EMail:      mundy@tislabs.com
             phone:      +1 301 947-7107

             Co-Chair:   David Harrington
                         Enterasys Networks
             postal:     35 Industrial Way
                         P. O. Box 5005
                         Rochester, NH 03866-5005
                         USA
             EMail:      dbh@enterasys.com
             phone:      +1 603 337-2614

             Editor:     Randy Presuhn
                         BMC Software, Inc.
             postal:     2141 North First Street
                         San Jose, CA 95131
                         USA
             EMail:      randy_presuhn@bmc.com
             phone:      +1 408 546-1006"
    DESCRIPTION
            "The MIB module for SNMP entities.

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             version of this MIB module is part of RFC 3418;
             see the RFC itself for full legal notices.
            "
    REVISION      "200210160000Z"
    DESCRIPTION
            "This revision of this MIB module was published as
             RFC 3418."
    REVISION      "199511090000Z"
    DESCRIPTION
```

```
                "This revision of this MIB module was published as
                 RFC 1907."
        REVISION      "199304010000Z"
        DESCRIPTION
                "The initial revision of this MIB module was published
                as RFC 1450."
        ::= { snmpModules 1 }

    snmpMIBObjects OBJECT IDENTIFIER ::= { snmpMIB 1 }

    --  ::= { snmpMIBObjects 1 }        this OID is obsolete
    --  ::= { snmpMIBObjects 2 }        this OID is obsolete
    --  ::= { snmpMIBObjects 3 }        this OID is obsolete

    -- the System group
    --
    -- a collection of objects common to all managed systems.

    system   OBJECT IDENTIFIER ::= { mib-2 1 }

    sysDescr OBJECT-TYPE
        SYNTAX      DisplayString (SIZE (0..255))
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "A textual description of the entity.  This value should
                include the full name and version identification of
                the system's hardware type, software operating-system,
                and networking software."
        ::= { system 1 }

    sysObjectID OBJECT-TYPE
        SYNTAX      OBJECT IDENTIFIER
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The vendor's authoritative identification of the
                network management subsystem contained in the entity.
                This value is allocated within the SMI enterprises
                subtree (1.3.6.1.4.1) and provides an easy and
                unambiguous means for determining `what kind of box' is
                being managed.  For example, if vendor `Flintstones,
                Inc.' was assigned the subtree 1.3.6.1.4.1.424242,
                it could assign the identifier 1.3.6.1.4.1.424242.1.1
                to its `Fred Router'."
        ::= { system 2 }

    sysUpTime OBJECT-TYPE
```

```
        SYNTAX      TimeTicks
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The time (in hundredths of a second) since the
                network management portion of the system was last
                re-initialized."
        ::= { system 3 }

    sysContact OBJECT-TYPE
        SYNTAX      DisplayString (SIZE (0..255))
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "The textual identification of the contact person for
                this managed node, together with information on how
                to contact this person.  If no contact information is
                known, the value is the zero-length string."
        ::= { system 4 }

    sysName OBJECT-TYPE
        SYNTAX      DisplayString (SIZE (0..255))
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "An administratively-assigned name for this managed
                node.  By convention, this is the node's fully-qualified
                domain name.  If the name is unknown, the value is
                the zero-length string."
        ::= { system 5 }

    sysLocation OBJECT-TYPE
        SYNTAX      DisplayString (SIZE (0..255))
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "The physical location of this node (e.g., 'telephone
                closet, 3rd floor').  If the location is unknown, the
                value is the zero-length string."
        ::= { system 6 }

    sysServices OBJECT-TYPE
        SYNTAX      INTEGER (0..127)
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "A value which indicates the set of services that this
                entity may potentially offer.  The value is a sum.
```

```
                This sum initially takes the value zero. Then, for
                each layer, L, in the range 1 through 7, that this node
                performs transactions for, 2 raised to (L - 1) is added
                to the sum.  For example, a node which performs only
                routing functions would have a value of 4 (2^(3-1)).
                In contrast, a node which is a host offering application
                services would have a value of 72 (2^(4-1) + 2^(7-1)).
                Note that in the context of the Internet suite of
                protocols, values should be calculated accordingly:

                     layer      functionality
                       1        physical (e.g., repeaters)
                       2        datalink/subnetwork (e.g., bridges)
                       3        internet (e.g., supports the IP)
                       4        end-to-end  (e.g., supports the TCP)
                       7        applications (e.g., supports the SMTP)

                For systems including OSI protocols, layers 5 and 6
                may also be counted."
        ::= { system 7 }

    -- object resource information
    --
    -- a collection of objects which describe the SNMP entity's
    -- (statically and dynamically configurable) support of
    -- various MIB modules.

    sysORLastChange OBJECT-TYPE
        SYNTAX     TimeStamp
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
                "The value of sysUpTime at the time of the most recent
                change in state or value of any instance of sysORID."
        ::= { system 8 }

    sysORTable OBJECT-TYPE
        SYNTAX     SEQUENCE OF SysOREntry
        MAX-ACCESS not-accessible
        STATUS     current
        DESCRIPTION
                "The (conceptual) table listing the capabilities of
                the local SNMP application acting as a command
                responder with respect to various MIB modules.
                SNMP entities having dynamically-configurable support
                of MIB modules will have a dynamically-varying number
                of conceptual rows."
        ::= { system 9 }
```

```
   sysOREntry OBJECT-TYPE
       SYNTAX     SysOREntry
       MAX-ACCESS not-accessible
       STATUS     current
       DESCRIPTION
               "An entry (conceptual row) in the sysORTable."
       INDEX      { sysORIndex }
       ::= { sysORTable 1 }

   SysOREntry ::= SEQUENCE {
       sysORIndex     INTEGER,
       sysORID        OBJECT IDENTIFIER,
       sysORDescr     DisplayString,
       sysORUpTime    TimeStamp
   }

   sysORIndex OBJECT-TYPE
       SYNTAX     INTEGER (1..2147483647)
       MAX-ACCESS not-accessible
       STATUS     current
       DESCRIPTION
               "The auxiliary variable used for identifying instances
               of the columnar objects in the sysORTable."
       ::= { sysOREntry 1 }

   sysORID OBJECT-TYPE
       SYNTAX     OBJECT IDENTIFIER
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
               "An authoritative identification of a capabilities
               statement with respect to various MIB modules supported
               by the local SNMP application acting as a command
               responder."
       ::= { sysOREntry 2 }

   sysORDescr OBJECT-TYPE
       SYNTAX     DisplayString
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
               "A textual description of the capabilities identified
               by the corresponding instance of sysORID."
       ::= { sysOREntry 3 }

   sysORUpTime OBJECT-TYPE
       SYNTAX     TimeStamp
       MAX-ACCESS read-only
```

```
        STATUS     current
        DESCRIPTION
                "The value of sysUpTime at the time this conceptual
                row was last instantiated."
        ::= { sysOREntry 4 }


    -- the SNMP group
    --
    -- a collection of objects providing basic instrumentation and
    -- control of an SNMP entity.

    snmp     OBJECT IDENTIFIER ::= { mib-2 11 }

    snmpInPkts OBJECT-TYPE
        SYNTAX     Counter32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
                "The total number of messages delivered to the SNMP
                entity from the transport service."
        ::= { snmp 1 }

    snmpInBadVersions OBJECT-TYPE
        SYNTAX     Counter32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
                "The total number of SNMP messages which were delivered
                to the SNMP entity and were for an unsupported SNMP
                version."
        ::= { snmp 3 }

    snmpInBadCommunityNames OBJECT-TYPE
        SYNTAX     Counter32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
               "The total number of community-based SNMP messages (for
               example,  SNMPv1) delivered to the SNMP entity which
               used an SNMP community name not known to said entity.
               Also, implementations which authenticate community-based
               SNMP messages using check(s) in addition to matching
               the community name (for example, by also checking
               whether the message originated from a transport address
               allowed to use a specified community name) MAY include
               in this value the number of messages which failed the
               additional check(s).  It is strongly RECOMMENDED that
```

```
                the documentation for any security model which is used
                to authenticate community-based SNMP messages specify
                the precise conditions that contribute to this value."
        ::= { snmp 4 }

    snmpInBadCommunityUses OBJECT-TYPE
        SYNTAX     Counter32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
                "The total number of community-based SNMP messages (for
                example, SNMPv1) delivered to the SNMP entity which
                represented an SNMP operation that was not allowed for
                the SNMP community named in the message.  The precise
                conditions under which this counter is incremented
                (if at all) depend on how the SNMP entity implements
                its access control mechanism and how its applications
                interact with that access control mechanism.  It is
                strongly RECOMMENDED that the documentation for any
                access control mechanism which is used to control access
                to and visibility of MIB instrumentation specify the
                precise conditions that contribute to this value."
        ::= { snmp 5 }

    snmpInASNParseErrs OBJECT-TYPE
        SYNTAX     Counter32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
                "The total number of ASN.1 or BER errors encountered by
                the SNMP entity when decoding received SNMP messages."
        ::= { snmp 6 }

    snmpEnableAuthenTraps OBJECT-TYPE
        SYNTAX      INTEGER { enabled(1), disabled(2) }
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "Indicates whether the SNMP entity is permitted to
                generate authenticationFailure traps.  The value of this
                object overrides any configuration information; as such,
                it provides a means whereby all authenticationFailure
                traps may be disabled.

                Note that it is strongly recommended that this object
                be stored in non-volatile memory so that it remains
                constant across re-initializations of the network
                management system."
```

```
        ::= { snmp 30 }

    snmpSilentDrops OBJECT-TYPE
        SYNTAX     Counter32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
                "The total number of Confirmed Class PDUs (such as
                GetRequest-PDUs, GetNextRequest-PDUs,
                GetBulkRequest-PDUs, SetRequest-PDUs, and
                InformRequest-PDUs) delivered to the SNMP entity which
                were silently dropped because the size of a reply
                containing an alternate Response Class PDU (such as a
                Response-PDU) with an empty variable-bindings field
                was greater than either a local constraint or the
                maximum message size associated with the originator of
                the request."
        ::= { snmp 31 }

    snmpProxyDrops OBJECT-TYPE
        SYNTAX     Counter32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
                "The total number of Confirmed Class PDUs
                (such as GetRequest-PDUs, GetNextRequest-PDUs,
                GetBulkRequest-PDUs, SetRequest-PDUs, and
                InformRequest-PDUs) delivered to the SNMP entity which
                were silently dropped because the transmission of
                the (possibly translated) message to a proxy target
                failed in a manner (other than a time-out) such that
                no Response Class PDU (such as a Response-PDU) could
                be returned."
        ::= { snmp 32 }

    -- information for notifications
    --
    -- a collection of objects which allow the SNMP entity, when
    -- supporting a notification originator application,
    -- to be configured to generate SNMPv2-Trap-PDUs.

    snmpTrap       OBJECT IDENTIFIER ::= { snmpMIBObjects 4 }

    snmpTrapOID OBJECT-TYPE
        SYNTAX     OBJECT IDENTIFIER
        MAX-ACCESS accessible-for-notify
        STATUS     current
        DESCRIPTION
```

```
                "The authoritative identification of the notification
                currently being sent.  This variable occurs as
                the second varbind in every SNMPv2-Trap-PDU and
                InformRequest-PDU."
        ::= { snmpTrap 1 }

    --  ::= { snmpTrap 2 }   this OID is obsolete

    snmpTrapEnterprise OBJECT-TYPE
        SYNTAX     OBJECT IDENTIFIER
        MAX-ACCESS accessible-for-notify
        STATUS     current
        DESCRIPTION
                "The authoritative identification of the enterprise
                associated with the trap currently being sent.  When an
                SNMP proxy agent is mapping an RFC1157 Trap-PDU
                into a SNMPv2-Trap-PDU, this variable occurs as the
                last varbind."
        ::= { snmpTrap 3 }

    --  ::= { snmpTrap 4 }   this OID is obsolete


    -- well-known traps

    snmpTraps      OBJECT IDENTIFIER ::= { snmpMIBObjects 5 }

    coldStart NOTIFICATION-TYPE
        STATUS  current
        DESCRIPTION
                "A coldStart trap signifies that the SNMP entity,
                supporting a notification originator application, is
                reinitializing itself and that its configuration may
                have been altered."
        ::= { snmpTraps 1 }

    warmStart NOTIFICATION-TYPE
        STATUS  current
        DESCRIPTION
                "A warmStart trap signifies that the SNMP entity,
                supporting a notification originator application,
                is reinitializing itself such that its configuration
                is unaltered."
        ::= { snmpTraps 2 }

    -- Note the linkDown NOTIFICATION-TYPE ::= { snmpTraps 3 }
    -- and the linkUp NOTIFICATION-TYPE ::= { snmpTraps 4 }
    -- are defined in RFC 2863 [RFC2863]
```

```
   authenticationFailure NOTIFICATION-TYPE
       STATUS  current
       DESCRIPTION
               "An authenticationFailure trap signifies that the SNMP
                entity has received a protocol message that is not
                properly authenticated.  While all implementations
                of SNMP entities MAY be capable of generating this
                trap, the snmpEnableAuthenTraps object indicates
                whether this trap will be generated."
       ::= { snmpTraps 5 }

   -- Note the egpNeighborLoss notification is defined
   -- as { snmpTraps 6 } in RFC 1213

   -- the set group
   --
   -- a collection of objects which allow several cooperating
   -- command generator applications to coordinate their use of the
   -- set operation.

   snmpSet        OBJECT IDENTIFIER ::= { snmpMIBObjects 6 }

   snmpSetSerialNo OBJECT-TYPE
       SYNTAX     TestAndIncr
       MAX-ACCESS read-write
       STATUS     current
       DESCRIPTION
               "An advisory lock used to allow several cooperating
               command generator applications to coordinate their
               use of the SNMP set operation.

               This object is used for coarse-grain coordination.
               To achieve fine-grain coordination, one or more similar
               objects might be defined within each MIB group, as
               appropriate."
       ::= { snmpSet 1 }

   -- conformance information

   snmpMIBConformance
                  OBJECT IDENTIFIER ::= { snmpMIB 2 }

   snmpMIBCompliances
                  OBJECT IDENTIFIER ::= { snmpMIBConformance 1 }
   snmpMIBGroups  OBJECT IDENTIFIER ::= { snmpMIBConformance 2 }

   -- compliance statements
```

```
   --    ::= { snmpMIBCompliances 1 }      this OID is obsolete
   snmpBasicCompliance MODULE-COMPLIANCE
       STATUS  deprecated
       DESCRIPTION
               "The compliance statement for SNMPv2 entities which
               implement the SNMPv2 MIB.

               This compliance statement is replaced by
               snmpBasicComplianceRev2."
       MODULE  -- this module
           MANDATORY-GROUPS { snmpGroup, snmpSetGroup, systemGroup,
                              snmpBasicNotificationsGroup }

           GROUP   snmpCommunityGroup
           DESCRIPTION
               "This group is mandatory for SNMPv2 entities which
               support community-based authentication."

       ::= { snmpMIBCompliances 2 }

   snmpBasicComplianceRev2 MODULE-COMPLIANCE
       STATUS  current
       DESCRIPTION
               "The compliance statement for SNMP entities which
               implement this MIB module."
       MODULE  -- this module
           MANDATORY-GROUPS { snmpGroup, snmpSetGroup, systemGroup,
                              snmpBasicNotificationsGroup }

           GROUP   snmpCommunityGroup
           DESCRIPTION
               "This group is mandatory for SNMP entities which
               support community-based authentication."

           GROUP   snmpWarmStartNotificationGroup
           DESCRIPTION
               "This group is mandatory for an SNMP entity which
               supports command responder applications, and is
               able to reinitialize itself such that its
               configuration is unaltered."

       ::= { snmpMIBCompliances 3 }

   -- units of conformance

   --  ::= { snmpMIBGroups 1 }           this OID is obsolete
   --  ::= { snmpMIBGroups 2 }           this OID is obsolete
   --  ::= { snmpMIBGroups 3 }           this OID is obsolete
```

```
   --  ::= { snmpMIBGroups 4 }           this OID is obsolete

   snmpGroup OBJECT-GROUP
       OBJECTS { snmpInPkts,
                 snmpInBadVersions,
                 snmpInASNParseErrs,
                 snmpSilentDrops,
                 snmpProxyDrops,
                 snmpEnableAuthenTraps }
       STATUS  current
       DESCRIPTION
               "A collection of objects providing basic instrumentation
               and control of an SNMP entity."
       ::= { snmpMIBGroups 8 }

   snmpCommunityGroup OBJECT-GROUP
       OBJECTS { snmpInBadCommunityNames,
                 snmpInBadCommunityUses }
       STATUS  current
       DESCRIPTION
               "A collection of objects providing basic instrumentation
               of a SNMP entity which supports community-based
               authentication."
       ::= { snmpMIBGroups 9 }

   snmpSetGroup OBJECT-GROUP
       OBJECTS { snmpSetSerialNo }
       STATUS  current
       DESCRIPTION
               "A collection of objects which allow several cooperating
               command generator applications to coordinate their
               use of the set operation."
       ::= { snmpMIBGroups 5 }

   systemGroup OBJECT-GROUP
       OBJECTS { sysDescr, sysObjectID, sysUpTime,
                 sysContact, sysName, sysLocation,
                 sysServices,
                 sysORLastChange, sysORID,
                 sysORUpTime, sysORDescr }
       STATUS  current
       DESCRIPTION
               "The system group defines objects which are common to all
               managed systems."
       ::= { snmpMIBGroups 6 }

   snmpBasicNotificationsGroup NOTIFICATION-GROUP
       NOTIFICATIONS { coldStart, authenticationFailure }
```

```
        STATUS        current
        DESCRIPTION
           "The basic notifications implemented by an SNMP entity
            supporting command responder applications."
        ::= { snmpMIBGroups 7 }

    snmpWarmStartNotificationGroup NOTIFICATION-GROUP
       NOTIFICATIONS { warmStart }
       STATUS        current
       DESCRIPTION
         "An additional notification for an SNMP entity supporting
         command responder applications, if it is able to reinitialize
         itself such that its configuration is unaltered."
      ::= { snmpMIBGroups 11 }

    snmpNotificationGroup OBJECT-GROUP
        OBJECTS { snmpTrapOID, snmpTrapEnterprise }
        STATUS  current
        DESCRIPTION
                "These objects are required for entities
                which support notification originator applications."
        ::= { snmpMIBGroups 12 }

    -- definitions in RFC 1213 made obsolete by the inclusion of a
    -- subset of the snmp group in this MIB

    snmpOutPkts OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      obsolete
        DESCRIPTION
                "The total number of SNMP Messages which were
                passed from the SNMP protocol entity to the
                transport service."
        ::= { snmp 2 }

    -- { snmp 7 } is not used

    snmpInTooBigs OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      obsolete
        DESCRIPTION
                "The total number of SNMP PDUs which were
                delivered to the SNMP protocol entity and for
                which the value of the error-status field was
                `tooBig'."
        ::= { snmp 8 }
```

```
   snmpInNoSuchNames OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP PDUs which were
               delivered to the SNMP protocol entity and for
               which the value of the error-status field was
               `noSuchName'."
       ::= { snmp 9 }

   snmpInBadValues OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP PDUs which were
               delivered to the SNMP protocol entity and for
               which the value of the error-status field was
               `badValue'."
       ::= { snmp 10 }

   snmpInReadOnlys OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number valid SNMP PDUs which were delivered
               to the SNMP protocol entity and for which the value
               of the error-status field was `readOnly'.  It should
               be noted that it is a protocol error to generate an
               SNMP PDU which contains the value `readOnly' in the
               error-status field, as such this object is provided
               as a means of detecting incorrect implementations of
               the SNMP."
       ::= { snmp 11 }

   snmpInGenErrs OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP PDUs which were delivered
               to the SNMP protocol entity and for which the value
               of the error-status field was `genErr'."
       ::= { snmp 12 }

   snmpInTotalReqVars OBJECT-TYPE
```

```
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      obsolete
        DESCRIPTION
                "The total number of MIB objects which have been
                retrieved successfully by the SNMP protocol entity
                as the result of receiving valid SNMP Get-Request
                and Get-Next PDUs."
        ::= { snmp 13 }

    snmpInTotalSetVars OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      obsolete
        DESCRIPTION
                "The total number of MIB objects which have been
                altered successfully by the SNMP protocol entity as
                the result of receiving valid SNMP Set-Request PDUs."
        ::= { snmp 14 }

    snmpInGetRequests OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      obsolete
        DESCRIPTION
                "The total number of SNMP Get-Request PDUs which
                have been accepted and processed by the SNMP
                protocol entity."
        ::= { snmp 15 }

    snmpInGetNexts OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      obsolete
        DESCRIPTION
                "The total number of SNMP Get-Next PDUs which have been
                accepted and processed by the SNMP protocol entity."
        ::= { snmp 16 }

    snmpInSetRequests OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      obsolete
        DESCRIPTION
                "The total number of SNMP Set-Request PDUs which
                have been accepted and processed by the SNMP protocol
                entity."
        ::= { snmp 17 }
```

```
   snmpInGetResponses OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP Get-Response PDUs which
               have been accepted and processed by the SNMP protocol
               entity."
       ::= { snmp 18 }

   snmpInTraps OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP Trap PDUs which have been
               accepted and processed by the SNMP protocol entity."
       ::= { snmp 19 }

   snmpOutTooBigs OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP PDUs which were generated
               by the SNMP protocol entity and for which the value
               of the error-status field was `tooBig.'"
       ::= { snmp 20 }

   snmpOutNoSuchNames OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP PDUs which were generated
               by the SNMP protocol entity and for which the value
               of the error-status was `noSuchName'."
       ::= { snmp 21 }

   snmpOutBadValues OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP PDUs which were generated
               by the SNMP protocol entity and for which the value
               of the error-status field was `badValue'."
       ::= { snmp 22 }
```

```
   -- { snmp 23 } is not used

   snmpOutGenErrs OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP PDUs which were generated
               by the SNMP protocol entity and for which the value
               of the error-status field was `genErr'."
       ::= { snmp 24 }

   snmpOutGetRequests OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP Get-Request PDUs which
               have been generated by the SNMP protocol entity."
       ::= { snmp 25 }

   snmpOutGetNexts OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP Get-Next PDUs which have
               been generated by the SNMP protocol entity."
       ::= { snmp 26 }

   snmpOutSetRequests OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP Set-Request PDUs which
               have been generated by the SNMP protocol entity."
       ::= { snmp 27 }

   snmpOutGetResponses OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP Get-Response PDUs which
               have been generated by the SNMP protocol entity."
       ::= { snmp 28 }
```

```
   snmpOutTraps OBJECT-TYPE
       SYNTAX      Counter32
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
               "The total number of SNMP Trap PDUs which have
               been generated by the SNMP protocol entity."
       ::= { snmp 29 }

   snmpObsoleteGroup OBJECT-GROUP
       OBJECTS { snmpOutPkts, snmpInTooBigs, snmpInNoSuchNames,
                 snmpInBadValues, snmpInReadOnlys, snmpInGenErrs,
                 snmpInTotalReqVars, snmpInTotalSetVars,
                 snmpInGetRequests, snmpInGetNexts, snmpInSetRequests,
                 snmpInGetResponses, snmpInTraps, snmpOutTooBigs,
                 snmpOutNoSuchNames, snmpOutBadValues,
                 snmpOutGenErrs, snmpOutGetRequests, snmpOutGetNexts,
                 snmpOutSetRequests, snmpOutGetResponses, snmpOutTraps
                 }
       STATUS  obsolete
       DESCRIPTION
               "A collection of objects from RFC 1213 made obsolete
               by this MIB module."
       ::= { snmpMIBGroups 10 }

   END
```

3. Notice on Intellectual Property

The IETF takes no position regarding the validity or scope of any intellectual property or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; neither does it represent that it has made any effort to identify any such rights. Information on the IETF's procedures with respect to rights in standards-track and standards-related documentation can be found in BCP-11. Copies of claims of rights made available for publication and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementors or users of this specification can be obtained from the IETF Secretariat.

The IETF invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights which may cover technology that may be required to practice this standard. Please address the information to the IETF Executive Director.

4. Acknowledgments

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Russ Mundy
David T. Perkins
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Aleksey Romanov
Juergen Schoenwaelder
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Jeffrey D. Case
Keith McCloghrie
David T. Perkins
Randy Presuhn
Juergen Schoenwaelder

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5. Security Considerations

There are a number of management objects defined in this MIB that have a MAX-ACCESS clause of read-write. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations.

SNMPv1 by itself is not a secure environment. Even if the network itself is secure (for example by using IPSec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change) the objects in this MIB.

It is recommended that the implementors consider the security features as provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model STD 62, RFC 3414 [RFC3414] and the View-based Access Control Model STD 62, RFC 3415 [RFC3415] is recommended.

It is then a customer/user responsibility to ensure that the SNMP entity giving access to an instance of this MIB is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change) them.

6. References

6.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC2578] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M. and S. Waldbusser, "Structure of Management Information Version 2 (SMIv2)", STD 58, RFC 2578, April 1999.

[RFC2579] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M. and S. Waldbusser, "Textual Conventions for SMIv2", STD 58, RFC 2579, April 1999.

[RFC2580] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M. and S. Waldbusser, "Conformance Statements for SMIv2", STD 58, RFC 2580, April 1999.

[RFC3411] Harrington, D., Presuhn, R. and B. Wijnen, "An Architecture for describing Simple Network Management Protocol (SNMP) Management Frameworks", STD 62, RFC 3411, December 2002.

[RFC3414] Blumenthal, U. and B. Wijnen, "The User-Based Security Model (USM) for Version 3 of the Simple Network Management Protocol (SNMPv3)", STD 62, RFC 3414, December 2002.

[RFC3415] Wijnen, B., Presuhn, R. and K. McCloghrie, "View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)", STD 62, RFC 3415, December 2002.

6.1. Informative References

[RFC1157] Case, J., Fedor, M., Schoffstall, M. and J. Davin, "Simple Network Management Protocol", STD 15, RFC 1157, May 1990.

[RFC1213] McCloghrie, K. and M. Rose, "Management Information Base for Network Management of TCP/IP-based internets: MIB-II", STD 16, RFC 1213, March 1991.

[RFC2863] McCloghrie, K. and F. Kastenholz, "The Interfaces Group MIB", RFC 2863, June 2000.

[RFC3410] Case, J., Mundy, R., Partain, D. and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Management Framework", RFC 3410, December 2002.

7. Changes from RFC 1907

These are the changes from RFC 1907:

- Corrected typo in copyright statement;
- Updated copyright date;
- Updated with new editor's name and contact information;
- Cosmetic fixes to layout and typography;
- Changed title;
- Replace introduction with current MIB boilerplate;
- Updated references;
- Fixed typo in sysORUpTime;
- Re-worded description of snmpSilentDrops;
- Updated reference to RFC 1573 to 2863;
- Added IPR boilerplate as required by RFC 2026;
- Weakened authenticationFailure description from MUST to MAY, clarified that it pertains to all SNMP entities;

- Clarified descriptions of snmpInBadCommunityNames and snmpInBadCommunityUses;
- Updated module-identity and contact information;
- Updated the acknowledgments section;
- Replaced references to "manager role", "agent role" and "SNMPv2 entity" with appropriate terms from RFC 2571;
- Updated document headers and footers;
- Added security considerations, based on current recommendations for MIB modules;
- Added NOTIFICATION-GROUP and OBJECT-GROUP constructs for NOTIFICATION-TYPEs and OBJECT-TYPEs that were left unreferenced in RFC 1907;
- Fixed typos in sysServices DESCRIPTION;
- Changed description of snmpProxyDrops to use terms from architecture;
- Changed value used in example for sysObjectID;
- Added an abstract;
- Deprecated the snmpBasicCompliance MODULE-COMPLIANCE, and added the snmpBasicComplianceRev2 MODULE-COMPLIANCE to take its place;
- Updated working group mailing list address;
- Added co-chair's address.

8. Editor's Address

Randy Presuhn
BMC Software, Inc.
2141 North First Street
San Jose, CA 95131
USA

Phone: +1 408 546 1006
EMail: randy_presuhn@bmc.com

9. Full Copyright Statement

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