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**Management Information Base
for version 2 of the
Simple Network Management Protocol (SNMPv2)**

Status of this Memo

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

Table of Contents

1	Introduction
2	1.1 A Note on Terminology
2	2 Definitions
3	3.1 The SNMPv2 Statistics Group
4	3.2 The SNMPv1 Statistics Group
9	3.3 The Object Resource Group
11	3.4 The Traps Group
13	3.4.1 Well-known Traps
16	3.5 The Set Group
18	

<u>19</u>	3.6 Conformance Information
<u>19</u>	3.6.1 Compliance Statements
<u>20</u>	3.6.2 Units of Conformance
<u>22</u>	3 Acknowledgements
<u>26</u>	4 References
<u>27</u>	5 Security Considerations
<u>27</u>	6 Authors' Addresses

1993

1. Introduction

A network management system contains: several (potentially many) nodes, each with a processing entity, termed an agent, which has access to management instrumentation; at least one management station; and, a management protocol, used to

convey

management information between the agents and management stations. Operations of the protocol are carried out under

an

administrative framework which defines both authentication

and

authorization policies.

Network management stations execute management applications which monitor and control network elements. Network elements are devices such as hosts, routers, terminal servers, etc., which are monitored and controlled through access to their management information.

Management information is viewed as a collection of managed objects, residing in a virtual information store, termed the Management Information Base (MIB). Collections of related objects are defined in MIB modules. These modules are

written

using a subset of OSI's Abstract Syntax Notation One (ASN.1) [1], termed the Structure of Management Information (SMI)

[2].

The management protocol, SNMPv2 [3], provides for the

exchange

of messages which convey management information between the agents and the management stations. It is the purpose of

this

document to define managed objects which describe the

behavior

of a SNMPv2 entity.

1.1. A Note on Terminology

For the purpose of exposition, the original Internet-standard Network Management Framework, as described in RFCs 1155,

1157,

and 1212, is termed the SNMP version 1 framework (SNMPv1).

The current framework is termed the SNMP version 2 framework (SNMPv2).

2. Definitions

```
SNMPv2-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
    ObjectName, Integer32, Counter32, snmpModules
        FROM SNMPv2-SMI
    TruthValue, DisplayString, TestAndIncr, TimeStamp
        FROM SNMPv2-TC
    MODULE-COMPLIANCE, OBJECT-GROUP
        FROM SNMPv2-CONF
    system, ifIndex, egpNeighAddr
        FROM RFC1213-MIB
    partyEntry
        FROM SNMPv2-PARTY-MIB;

snmpMIB MODULE-IDENTITY
    LAST-UPDATED "9304010000Z"
    ORGANIZATION "IETF SNMPv2 Working Group"
    CONTACT-INFO
        "
            Marshall T. Rose

            Postal: Dover Beach Consulting, Inc.
                420 Whisman Court
                Mountain View, CA 94043-2186
                US

            Tel: +1 415 968 1052
            Fax: +1 415 968 2510

            E-mail: mrose@dbc.mtview.ca.us"
    DESCRIPTION
        "The MIB module for SNMPv2 entities."
    ::= { snmpModules 1 }

snmpMIBObjects OBJECT IDENTIFIER ::= { snmpMIB 1 }
```

```

-- the SNMPv2 statistics group
--
-- a collection of objects providing basic instrumentation of
-- the SNMPv2 entity.

-- A Case diagram[4] relating these objects is:
--
-- \v/   transport service
-- |
-- ==+== snmpStatsPackets
-- |
-- +==> snmpStats30Something
-- |
-- +==> snmpStatsEncodingErrors
-- |
-- +==> snmpStatsUnknownDstParties
-- |
-- +==> snmpStatsDstPartyMismatches
-- |
-- +==> snmpStatsUnknownSrcParties
-- |
-- +==> snmpStatsBadAuths
-- |
-- +==> snmpStatsNotInLifetimes
-- |
-- +==> snmpStatsWrongDigestValues
-- |
-- +==> snmpStatsUnknownContexts
-- |
-- +==> snmpStatsBadOperations
-- |
-- +==> snmpStatsSilentDrops
-- |
-- ===== sink

snmpStats      OBJECT IDENTIFIER ::= { snmpMIBObjects 1 }

```

1993

snmpStatsPackets OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of packets received by the
SNMPv2 entity from the transport service."

REFERENCE

"Derived from [RFC1213](#)-MIB.snmpInPkts."

::= { snmpStats 1 }

snmpStats30Something OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of packets which had an initial
octet with a value of 30 hexadecimal received by

a

SNMPv2 entity which does not support SNMPv1.
(Such packets are possibly misdirected SNMPv1
Messages.)"

REFERENCE

"Derived from [RFC1213](#)-MIB.snmpInASNParseErrs."

::= { snmpStats 2 }

snmpStatsEncodingErrors OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of packets received by the
SNMPv2 entity which were improperly encoded or

had

invalid syntax."

REFERENCE

"Derived from [RFC1213](#)-MIB.snmpInASNParseErrs."

::= { snmpStats 3 }

1993

snmpStatsUnknownDstParties OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of SnmpPrivMsgs delivered to

the

SNMPv2 entity for which the privDst field was not
a known local party."

::= { snmpStats 4 }

snmpStatsDstPartyMismatches OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of SnmpPrivMsgs delivered to

the

SNMPv2 entity which contained a SnmpAuthMsg for
which the authData.dstParty field did not match
the privDst field in the SnmpPrivMsg."

::= { snmpStats 5 }

snmpStatsUnknownSrcParties OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of SnmpAuthMsgs delivered to

the

SNMPv2 entity for which the authData.srcParty
field was not a known remote party."

::= { snmpStats 6 }

snmpStatsBadAuths OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of SnmpAuthMsgs delivered to

the

SNMPv2 entity which contained an authInfo field
which was inconsistent with the authentication
protocol associated with the source party."

::= { snmpStats 7 }

1993

snmpStatsNotInLifetimes OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

the
to
their authInfo.authSrcTimestamp field being less than the source party's clock plus lifetime."
 ::= { snmpStats 8 }

snmpStatsWrongDigestValues OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

the
to
their authInfo.authDigest field being unequal to the expected digest value."
 ::= { snmpStats 9 }

snmpStatsUnknownContexts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

the
SNMPv2 entity for which the context field was not a known SNMPv2 context."
 ::= { snmpStats 10 }

snmpStatsBadOperations OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of messages delivered to the SNMPv2 entity which were silently dropped because the PDU type referred to an operation not allowed in the aclTable[5]."
 ::= { snmpStats 11 }


```
snmpStatsSilentDrops OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The total number of GetRequest-PDUs,
        GetNextRequest-PDUs, GetBulkRequest-PDUs,
        SetRequest-PDUs, and InformRequest-PDUs delivered
        to the SNMPv2 entity which were silently dropped
        because the size of an reply containing an
        alternate Response-PDU with an empty variable-
        bindings field was greater than either a local
        constraint or the maximum message size of the
        request's source party."
    ::= { snmpStats 12 }
```

```

-- the SNMPv1 statistics group
--
-- a collection of objects providing basic instrumentation of
-- a SNMPv2 entity which also implements SNMPv1.

-- A Case diagram[4] relating these objects
-- (and those applicable objects in the snmpStats group)
-- is:
--
-- \v/   transport service
-- |
-- ==+== snmpStatsPackets
-- |
-- +==> snmpStatsEncodingErrors
-- |
-- +==> snmpV1BadCommunityNames
-- |
-- +==> snmpV1BadCommunityUses
-- |
-- ===== sink

snmpV1          OBJECT IDENTIFIER ::= { snmpMIBObjects 2 }

snmpV1BadCommunityNames OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The total number of SNMPv1 Messages delivered to
        the SNMPv2 entity which used a community name not
        known to the SNMPv2 entity."
    REFERENCE
        "Derived from RFC1213-
        MIB.snmpInBadCommunityNames."
    ::= { snmpV1 1 }

```

snmpV1BadCommunityUses OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of SNMPv1 Messages delivered to
SNMPv2 entity containing an operation which was
not allowed for the community named in the
Message."

REFERENCE

"Derived from [RFC1213](#)-

MIB.snmpInBadCommunityUses."

::= { snmpV1 2 }

1993

```
-- the object resource group
--
-- a collection of objects allowing a SNMPv2 entity acting in
-- an agent role to describe its dynamically-configurable
-- object resources.

snmpOR          OBJECT IDENTIFIER ::= { snmpMIBObjects 3 }

snmpORLastChange 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
        snmpORID."
    ::= { snmpOR 1 }

snmpORTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SnmpOREntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The (conceptual) table listing the dynamically-
        configurable object resources in a SNMPv2 entity
do
        acting in an agent role.  SNMPv2 entities which

        not support dynamically-configurable object
        resources will never have any instances of the
        columnar objects in this table."
    ::= { snmpOR 2 }

snmpOREntry OBJECT-TYPE
    SYNTAX      SnmpOREntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the snmpORTable."
    INDEX      { snmpORIndex }
    ::= { snmpORTable 1 }
```



```

SnmPOREntry ::= SEQUENCE {
    snmpORIndex          Integer32,
    snmpORID             OBJECT IDENTIFIER,
    snmpORDescr          DisplayString
}

snmpORIndex OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The auxiliary variable used for identifying
        instances of the columnar objects in the
        snmpORTable."
    ::= { snmpOREntry 1 }

snmpORID OBJECT-TYPE
    SYNTAX      OBJECT IDENTIFIER
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "An authoritative identification of one of the
        dynamically-configurable object resources in a
        SNMPv2 entity acting in an agent role. This is
        analogous to the sysObjectID object in MIB-II."
    ::= { snmpOREntry 2 }

snmpORDescr OBJECT-TYPE
    SYNTAX      DisplayString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A textual description of one of the dynamically-
        configurable object resources in a SNMPv2 entity
        acting in an agent role. This is analogous to
        the
        sysDescr object in MIB-II."
    ::= { snmpOREntry 3 }

```


1993

```

-- the traps group
--
-- a collection of objects which allow the SNMPv2 entity,
when
-- acting in an agent role, to be configured to generate
-- SNMPv2-Trap-PDUs.

snmpTrap      OBJECT IDENTIFIER ::= { snmpMIBObjects 4 }

snmpTrapOID OBJECT-TYPE
    SYNTAX      OBJECT IDENTIFIER
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The authoritative identification of the trap
        currently being sent.  This variable occurs as
        the
            second varbind of a SNMPv2-Trap-PDU."
    ::= { snmpTrap 1 }

snmpTrapTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SnmpTrapEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table which keeps track of how many traps have
        been sent to each SNMPv2 entity."
    ::= { snmpTrap 2 }

snmpTrapEntry OBJECT-TYPE
    SYNTAX      SnmpTrapEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry which keeps track of how many traps
        have
            been sent to a particular SNMPv2 entity."
    AUGMENTS   { partyEntry }
    ::= { snmpTrapTable 1 }

SnmpTrapEntry ::= SEQUENCE {
    snmpTrapNumbers          Counter32
}

```


1993

snmpTrapNumbers OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of traps which have been sent to a particular SNMPv2 party, since the last initialization of the SNMPv2 entity, or the creation of the SNMPv2 party, whichever occurred most recently."

::= { snmpTrapEntry 1 }

snmpTrapEnterprise OBJECT-TYPE

SYNTAX OBJECT IDENTIFIER

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The authoritative identification of the enterprise associated with the trap currently being sent. When a SNMPv2 proxy agent is mapping an [RFC1157](#) Trap-PDU into a SNMPv2-Trap-PDU, this variable occurs as the last varbind."

::= { snmpTrap 3 }

1993

snmpV2EnableAuthenTraps OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Indicates whether the SNMPv2 entity, when acting in an agent role, 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 between re-initializations of

the

network management system."

REFERENCE

"Derived from [RFC1213](#)-MIB.snmpEnableAuthenTraps."

::= { snmpTrap 4 }

1993

```
-- well-known traps
```

```
snmpTraps      OBJECT IDENTIFIER ::= { snmpMIBObjects 5 }
```

```
coldStart NOTIFICATION-TYPE
```

```
STATUS current
```

```
DESCRIPTION
```

```
"A coldStart trap signifies that the SNMPv2  
entity, acting in an agent role, is
```

```
reinitializing
```

```
itself such that its configuration may be  
altered."
```

```
::= { snmpTraps 1 }
```

```
warmStart NOTIFICATION-TYPE
```

```
STATUS current
```

```
DESCRIPTION
```

```
"A warmStart trap signifies that the SNMPv2  
entity, acting in an agent role, is
```

```
reinitializing
```

```
itself such that its configuration is unaltered."
```

```
::= { snmpTraps 2 }
```

```
linkDown NOTIFICATION-TYPE
```

```
OBJECTS { ifIndex }
```

```
STATUS current
```

```
DESCRIPTION
```

```
"A linkDown trap signifies that the SNMPv2
```

```
entity,
```

```
acting in an agent role, recognizes a failure in  
one of the communication links represented in its  
configuration."
```

```
::= { snmpTraps 3 }
```

```
linkUp NOTIFICATION-TYPE
```

```
OBJECTS { ifIndex }
```

```
STATUS current
```

```
DESCRIPTION
```

```
"A linkUp trap signifies that the SNMPv2 entity,  
acting in an agent role, recognizes that one of  
the communication links represented in its  
configuration has come up."
```

```
::= { snmpTraps 4 }
```


authenticationFailure NOTIFICATION-TYPE

STATUS current

DESCRIPTION

"An authenticationFailure trap signifies that the SNMPv2 entity, acting in an agent role, has received a protocol message that is not properly authenticated. While all implementations of the SNMPv2 must be capable of generating this trap, the snmpV2EnableAuthenTraps object indicates whether this trap will be generated."

::= { snmpTraps 5 }

egpNeighborLoss NOTIFICATION-TYPE

OBJECTS { egpNeighAddr }

STATUS current

DESCRIPTION

"An egpNeighborLoss trap signifies that an EGP neighbor has been marked down and the EGP peer relationship no longer obtains."

::= { snmpTraps 6 }

```
-- the set group
--
-- a collection of objects which allow several cooperating
-- SNMPv2 entities, all acting in a manager role, to
-- coordinate their use of the SNMPv2 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 SNMPv2 entities, all acting in a
manager role, to coordinate their use of the
SNMPv2 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

snmpMIBCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMPv2 entities
        which implement the SNMPv2 MIB."
    MODULE RFC1213-MIB
        MANDATORY-GROUPS { system }

    MODULE -- this module
        MANDATORY-GROUPS { snmpStatsGroup, snmpORGroup,
            snmpTrapGroup, snmpSetGroup }

    GROUP snmpV1Group
    DESCRIPTION
        "The snmpV1 group is mandatory only for those
        SNMPv2 entities which also implement SNMPv1."
    ::= { snmpMIBCompliances 1 }
```

-- units of conformance

snmpStatsGroup OBJECT-GROUP

```
OBJECTS { snmpStatsPackets, snmpStats30Something,
          snmpStatsEncodingErrors,
          snmpStatsUnknownDstParties,
          snmpStatsDstPartyMismatches,
          snmpStatsUnknownSrcParties, snmpStatsBadAuths,
          snmpStatsNotInLifetimes,
          snmpStatsWrongDigestValues,
          snmpStatsUnknownContexts,
          snmpStatsBadOperations,
          snmpStatsSilentDrops }
```

STATUS current

DESCRIPTION

"A collection of objects providing basic instrumentation of the SNMPv2 entity."

::= { snmpMIBGroups 1 }

snmpV1Group OBJECT-GROUP

```
OBJECTS { snmpV1BadCommunityNames,
snmpV1BadCommunityUses }
```

STATUS current

DESCRIPTION

"A collection of objects providing basic instrumentation of a SNMPv2 entity which also implements SNMPv1."

::= { snmpMIBGroups 2 }

snmpORGroup OBJECT-GROUP

```
OBJECTS { snmpORLastChange, snmpORID, snmpORDescr }
```

STATUS current

DESCRIPTION

"A collection of objects allowing a SNMPv2 entity acting in an agent role to describe its dynamically-configurable object resources."

::= { snmpMIBGroups 3 }


```
snmpTrapGroup OBJECT-GROUP
  OBJECTS { snmpTrapNumbers, snmpV2EnableAuthenTraps }
  STATUS current
  DESCRIPTION
    "A collection of objects which allow the SNMPv2
    entity, when acting in an agent role, to be
    configured to generate SNMPv2-Trap-PDUs."
  ::= { snmpMIBGroups 4 }

snmpSetGroup OBJECT-GROUP
  OBJECTS { snmpSetSerialNo }
  STATUS current
  DESCRIPTION
    "A collection of objects which allow several
    cooperating SNMPv2 entities, all acting in a
    manager role, to coordinate their use of the
    SNMPv2 set operation."
  ::= { snmpMIBGroups 5 }
```

END

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The objects in the snmpStats and snmpV1 groups are based, in part, on [RFC 1213](#).

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1993

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5. Security Considerations

Security issues are not discussed in this memo.

6. Authors' Addresses

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