Manager-to-Manager
Management Information Base

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 Overview ............................................... 3
2.1 A SNMPv2 Entity Acting in a Dual Role ............. 3
2.2 Alarms, Events, and Notifications .................. 3
2.3 Access Control ..................................... 4
3 Definitions ........................................... 6
3.1 The Alarm Group .................................... 7
3.1.1 Alarm-Related Notifications .................... 20
3.2 The Event Group .................................... 21
3.3 Conformance Information ............................. 29
3.3.1 Compliance Statements ............................ 29
3.3.2 Units of Conformance ............................ 29
4 Acknowledgements ..................................... 31
5 References ........................................... 35
6 Security Considerations ............................... 36
7 Authors’ Addresses ................................... 36
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, version 2 of the Simple Network Management Protocol [3], provides for the exchange of messages which convey management information between the agents and the management stations, including between management stations. It is the purpose of this document to define managed objects which describe the behavior of a SNMPv2 entity acting in both a manager role and an agent role.

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. Overview

The purpose of this MIB is to provide the means for coordination between multiple management stations. That is, the means by which the controlling and monitoring functions of network management can be distributed amongst multiple management stations. Such distribution facilitates the scaling of network management solutions based on the SNMPv2 to meet the needs of very large networks, or of networks composed of multiple interconnected administrations. Specifically, this MIB provides the means for one management station to request management services from another management station.

2.1. A SNMPv2 Entity Acting in a Dual Role

A management station providing services to other management station(s), is a SNMPv2 entity which acts in the dual role of both manager and agent; the requests for service are received through acting in an agent role (with respect to the managed objects defined in this MIB), and the requested services are performed through acting in a manager role.

2.2. Alarms, Events, and Notifications

In this initial version, this MIB defines the concepts of "alarms", "events", and "notifications". Each alarm is a specific condition detected through the periodic (at a configured sampling interval) monitoring of the value of a specific management information variable. An example of an alarm condition is when the monitored variable falls outside a configured range. Each alarm condition triggers an event, and each event can cause (one or more) notifications to be reported to other management stations using the Inform-Request PDU.

Specifically, this MIB defines three MIB tables and a number of scalar objects. The three tables are: the Alarm Table, the Event Table, and the Notification Table.
2.3. Access Control

The Administrative Model for SNMPv2 document [4] includes an access control model, which must not be subverted by allowing access to management information variables via the Alarm table. That is, access to a monitored variable via the Alarm table must be controlled according to the identity of the management station accessing the particular entry in the Alarm table.

An entry in the Alarm table provides the means to configure the sampling of the value of a MIB variable in the MIB view associated with the specified context (which can refer to object resources that are either local or remote). The sampling is done by (conceptually or actually) issuing a SNMPv2 request to retrieve the variable’s value. This request is authenticated and/or protected from disclosure according to a source party and a destination party pair which has access to the indicated context.

Thus, to provide the required access control, the initial MIB view assigned, by convention, to parties on SNMPv2 entities that implement the snmpAlarmTable, must include the component:

\[
\text{viewSubtree} = \{ \text{snmpAlarm} \} \\
\text{viewStatus} = \{ \text{excluded} \} \\
\text{viewMask} = \{ \text{''H} \}
\]

Then, the MIB view associated with the context, requestContext, accessible by a requesting management station, can be configured to include specific Alarm table entries -- the ones associated with those contexts to which the requesting management station has access.

In particular, to provide a requestContext with access to the sampling context sampleContext, the following family of view subtrees would be included for the requestContext on the SNMPv2 entity acting in a dual role:

\[
\{ \text{snmpAlarmEntry WILDCARD sampleContext} \}
\]

Which would be configured in the party MIB [5] as:

\[
\text{contextIdentity} = \{ \text{requestContext} \} \\
\text{contextViewIndex} = \{ \text{ViewIndex} \}
\]
viewIndex = { ViewIndex }
viewSubtree = { snmpAlarmEntry 0 sampleContext }
viewStatus = { included }
viewMask = { `FFE`FH } -- specifies wildcard for column
3. Definitions

SNMPv2-M2M-MIB DEFINITIONS ::= BEGIN

IMPORTS
   MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
   Integer32, Counter32, snmpModules
   FROM SNMPv2-SMI
   DisplayString, InstancePointer, RowStatus, TimeStamp
   FROM SNMPv2-TC
   MODULE-COMPLIANCE, OBJECT-GROUP
   FROM SNMPv2-CONF
   contextIdentity
   FROM SNMPv2-PARTY-MIB;

snmpM2M MODULE-IDENTITY
   LAST-UPDATED "9304010000Z"
   ORGANIZATION "IETF SNMPv2 Working Group"
   CONTACT-INFO
     "        Steven Waldbusser
     Postal: Carnegie Mellon University
              4910 Forbes Ave
              Pittsburgh, PA  15213
     Tel: +1 412 268 6628
     Fax: +1 412 268 4987
     E-mail: waldbusser@cmu.edu"
   DESCRIPTION
     "The Manager-to-Manager MIB module."
   ::= { snmpModules 2 } 

snmpM2MOBJECTS OBJECT IDENTIFIER ::= { snmpM2M 1 }
-- the alarm group
--
-- a collection of objects allowing the description and
-- configuration of threshold alarms from a SNMPv2 entity
-- acting in a dual role.

snmpAlarm OBJECT IDENTIFIER ::= { snmpM2MObjects 1 }

-- This Alarm mechanism periodically takes statistical samples
-- from variables available via SNMPv2 and compares them to
-- thresholds that have been configured. The alarm table
-- stores configuration entries that each define a variable,
-- polling period, and threshold parameters. If a sample is
-- found to cross the threshold values, an event is generated.
-- Only variables that resolve to an ASN.1 primitive type of
-- INTEGER (Integer32, Counter32, Gauge32, TimeTicks,
-- Counter64, or UInteger32) may be monitored in this way.
--
-- This function has a hysteresis mechanism to limit the
-- generation of events. This mechanism generates one event
-- as a threshold is crossed in the appropriate direction. No
-- more events are generated for that threshold until the
-- opposite threshold is crossed.
--
-- In the case of sampling a deltaValue, an entity may
-- implement this mechanism with more precision if it takes a
-- delta sample twice per period, each time comparing the sum
-- of the latest two samples to the threshold. This allows
-- the detection of threshold crossings that span the sampling
-- boundary. Note that this does not require any special
-- configuration of the threshold value. It is suggested that
-- entities implement this more precise algorithm.
--
snmpAlarmNextIndex OBJECT-TYPE
   SYNTAX     INTEGER (0..65535)
   MAX-ACCESS read-only
   STATUS     current
   DESCRIPTION
      "The index number of the next appropriate unassigned entry in the snmpAlarmTable. The value 0 indicates that no unassigned entries are available.

      A management station should create new entries in the snmpAlarmTable using this algorithm: first, issue a management protocol retrieval operation to determine the value of snmpAlarmNextIndex; and, second, issue a management protocol set operation to create an instance of the snmpAlarmStatus object setting its value to 'createAndGo' or 'createAndWait' (as specified in the description of the RowStatus textual convention)."

::= { snmpAlarm 1 }

snmpAlarmTable OBJECT-TYPE
   SYNTAX     SEQUENCE OF SnmpAlarmEntry
   MAX-ACCESS not-accessible
   STATUS     current
   DESCRIPTION
      "A list of snmpAlarm entries."

::= { snmpAlarmTable 1 }

snmpAlarmEntry OBJECT-TYPE
   SYNTAX     SnmpAlarmEntry
   MAX-ACCESS not-accessible
   STATUS     current
   DESCRIPTION
      "A list of parameters that set up a periodic sampling query to check for alarm conditions. The contextIdentity included in the INDEX clause is the context to which the sampling queries are directed."

INDEX      { contextIdentity, snmpAlarmIndex }
::= { snmpAlarmEntry 1 }
SnmpAlarmEntry ::= SEQUENCE {
    snmpAlarmIndex INTEGER,  
    snmpAlarmVariable InstancePointer,  
    snmpAlarmInterval Integer32,  
    snmpAlarmSampleType INTEGER,  
    snmpAlarmValue Integer32,  
    snmpAlarmStartupAlarm INTEGER,  
    snmpAlarmRisingThreshold Integer32,  
    snmpAlarmFallingThreshold Integer32,  
    snmpAlarmRisingEventIndex INTEGER,  
    snmpAlarmFallingEventIndex INTEGER,  
    snmpAlarmUnavailableEventIndex INTEGER,  
    snmpAlarmStatus RowStatus
}

snmpAlarmIndex OBJECT-TYPE
SYNTAX INTEGER (1..65535)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"An index that uniquely identifies an entry in the
snmpAlarm table for a particular sampling context.
Each such entry defines a diagnostic sample at a
particular interval for a variable in the
particular context’s object resources."
::= { snmpAlarmEntry 1 }
snmpAlarmVariable OBJECT-TYPE
SYNTAX     InstancePointer
MAX-ACCESS read-create
STATUS     current
DESCRIPTION
"The object identifier of the particular variable
to be sampled. Only variables that resolve to an
ASN.1 primitive type of INTEGER (Integer32,
Counter32, Gauge32, TimeTicks, Counter64, or
UInteger32) may be sampled.

If it is detected by an error response of
authorizationError, noSuchObject, or
noSuchInstance that the variable name of an
established snmpAlarmEntry is no longer available
in the sampling context, a single
snmpObjectUnavailableAlarm event is generated and
the status of this snmpAlarmEntry is set to
‘destroy’. Likewise, if the syntax of the
variable retrieved by the query is not Integer32,
Counter32, Gauge32, TimeTicks, Counter64, or
UInteger32, the same actions will be taken.

If the SNMPv2 entity acting in a dual role detects
that the sampled value can not be obtained due to
lack of response to management queries, it should either:

1) Set the status of this snmpAlarmEntry to
‘destroy’, if it is determined that further
communication is not possible;

or,

2) Delete the associated snmpAlarmValue
instance (but not the entire conceptual row),
and continue to attempt to sample the
variable and recreate the associated
snmpAlarmValue instance should communication
be reestablished.

An attempt to modify this object will fail with an
‘inconsistentValue’ error if the associated
snmpAlarmStatus object would be equal to ‘active’
both before and after the modification attempt."
::= { snmpAlarmEntry 2 }

snmpAlarmInterval OBJECT-TYPE
SYNTAX     Integer32
UNITS      "seconds"
MAX-ACCESS read-create
STATUS     current
DESCRIPTION

"The interval in seconds over which the data is sampled and compared with the rising and falling thresholds. When setting this object and the sampling type is ‘deltaValue’, care should be taken to ensure that the change during this interval of the variable being sampled will not exceed the (-2^31...2^31-1) range of the snmpAlarmValue.

An attempt to modify this object will fail with an ‘inconsistentValue’ error if the associated snmpAlarmStatus object would be equal to ‘active’ both before and after the modification attempt."

 ::= { snmpAlarmEntry 3 }
snmpAlarmSampleType OBJECT-TYPE
SYNTAX     INTEGER {
    absoluteValue(1),
    deltaValue(2)
}
MAX-ACCESS read-create
STATUS     current
DESCRIPTION
    "The method of sampling the selected variable and calculating the value to be compared against the thresholds. If the value of this object is 'absoluteValue', the value of the selected variable at the end of the sampling interval will be compared directly with both the snmpAlarmRisingThreshold and the snmpAlarmFallingThreshold values. If the value of this object is 'deltaValue', the value of the selected variable at the end of the sampling interval will be subtracted from its value at the end of the previous sampling interval, and the difference compared with both the snmpAlarmRisingThreshold and the snmpAlarmFallingThreshold values.

    An attempt to modify this object will fail with an 'inconsistentValue' error if the associated snmpAlarmStatus object would be equal to 'active' both before and after the modification attempt."
DEFVAL { deltaValue }
 ::= { snmpAlarmEntry 4 }
snmpAlarmValue OBJECT-TYPE
SYNTAX Integer32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of the statistic during the last sampling period. The value during the current sampling period is not made available until the period is completed. If the value of the statistic does not fit in the signed 32 bit representation of this object, it should be truncated in an implementation specific manner.

Note that if the associated snmpAlarmSampleType is set to 'deltaValue', the value of this object is the difference in the sampled variable since the last sample.

This object will be created by the SNMPv2 entity acting in a dual role when this entry is set to 'active', and the first sampling period has completed. It may be created and deleted at other times by the SNMPv2 entity acting in a dual role when the sampled value can not be obtained, as specified in the snmpAlarmVariable object."

 ::= { snmpAlarmEntry 5 }
snmpAlarmStartupAlarm OBJECT-TYPE
SYNTAX     INTEGER {
    risingAlarm(1),
    fallingAlarm(2),
    risingOrFallingAlarm(3)
}
MAX-ACCESS read-create
STATUS     current
DESCRIPTION
 "The alarm that may be sent when this entry is first set to ‘active’. If the first sample after this entry becomes active is greater than or equal to the risingThreshold and snmpAlarmStartupAlarm is equal to ‘risingAlarm’ or ‘risingOrFallingAlarm’, then a single rising alarm will be generated. If the first sample after this entry becomes active is less than or equal to the fallingThreshold and snmpAlarmStartupAlarm is equal to ‘fallingAlarm’ or ‘risingOrFallingAlarm’, then a single falling alarm will be generated. Note that a snmpObjectUnavailableAlarm is sent upon startup whenever it is applicable, independent of the setting of snmpAlarmStartupAlarm.

An attempt to modify this object will fail with an ‘inconsistentValue’ error if the associated snmpAlarmStatus object would be equal to ‘active’ both before and after the modification attempt."
DEFVAL { risingOrFallingAlarm }
::= { snmpAlarmEntry 6 }
snmpAlarmRisingThreshold OBJECT-TYPE
SYNTAX Integer32
MAX-ACCESS read-create
STATUS current
DESCRIPTION "A threshold for the sampled statistic. When the current sampled value is greater than or equal to this threshold, and the value at the last sampling interval was less than this threshold, a single event will be generated. A single event will also be generated if the first sample after this entry becomes active is greater than or equal to this threshold and the associated snmpAlarmStartupAlarm is equal to 'risingAlarm' or 'risingOrFallingAlarm'.

After a rising event is generated, another such event will not be generated until the sampled value falls below this threshold and reaches the snmpAlarmFallingThreshold.

An attempt to modify this object will fail with an 'inconsistentValue' error if the associated snmpAlarmStatus object would be equal to 'active' both before and after the modification attempt."

 ::= { snmpAlarmEntry 7 }
snmpAlarmFallingThreshold OBJECT-TYPE
   SYNTAX     Integer32
   MAX-ACCESS read-create
   STATUS     current
   DESCRIPTION
   "A threshold for the sampled statistic. When the
current sampled value is less than or equal to
this threshold, and the value at the last sampling
interval was greater than this threshold, a single
event will be generated. A single event will also
be generated if the first sample after this entry
becomes active is less than or equal to this
threshold and the associated snmpAlarmStartupAlarm
is equal to 'fallingAlarm' or
'risingOrFallingAlarm'.

After a falling event is generated, another such
event will not be generated until the sampled
value rises above this threshold and reaches the
snmpAlarmRisingThreshold.

An attempt to modify this object will fail with an
'inconsistentValue' error if the associated
snmpAlarmStatus object would be equal to 'active'
both before and after the modification attempt."
 ::= { snmpAlarmEntry 8 }
snmpAlarmRisingEventIndex OBJECT-TYPE
SYNTAX INTEGER (0..65535)
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The index of the snmpEventEntry that is used when a rising threshold is crossed. The snmpEventEntry identified by a particular value of this index is the same as identified by the same value of the snmpEventIndex object. If there is no corresponding entry in the snmpEventTable, then no association exists. In particular, if this value is zero, no associated event will be generated, as zero is not a valid snmpEventIndex.

An attempt to modify this object will fail with an 'inconsistentValue' error if the associated snmpAlarmStatus object would be equal to 'active' both before and after the modification attempt."

 ::= { snmpAlarmEntry 9 }
snmpAlarmFallingEventIndex OBJECT-TYPE
SYNTAX INTEGER (0..65535)
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The index of the snmpEventEntry that is used when a falling threshold is crossed. The snmpEventEntry identified by a particular value of this index is the same as identified by the same value of the snmpEventIndex object. If there is no corresponding entry in the snmpEventTable, then no association exists. In particular, if this value is zero, no associated event will be generated, as zero is not a valid snmpEventIndex. An attempt to modify this object will fail with an 'inconsistentValue' error if the associated snmpAlarmStatus object would be equal to 'active' both before and after the modification attempt."
 ::= { snmpAlarmEntry 10 }

snmpAlarmUnavailableEventIndex OBJECT-TYPE
SYNTAX INTEGER (0..65535)
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The index of the snmpEventEntry that is used when a variable becomes unavailable. The snmpEventEntry identified by a particular value of this index is the same as identified by the same value of the snmpEventIndex object. If there is no corresponding entry in the snmpEventTable, then no association exists. In particular, if this value is zero, no associated event will be generated, as zero is not a valid snmpEventIndex. An attempt to modify this object will fail with an 'inconsistentValue' error if the associated snmpAlarmStatus object would be equal to 'active' both before and after the modification attempt."
 ::= { snmpAlarmEntry 11 }
snmpAlarmStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The status of this snmpAlarm entry. This object may not be set to 'active' unless the following columnar objects exist in this row:
snmpAlarmVariable, snmpAlarmInterval, snmpAlarmSampleType, snmpAlarmStartupAlarm, snmpAlarmRisingThreshold, snmpAlarmFallingThreshold, snmpAlarmRisingEventIndex, snmpAlarmFallingEventIndex, and snmpAlarmUnavailableEventIndex."
 ::= { snmpAlarmEntry 12 }
-- alarm-related notifications

snmpAlarmNotifications
   OBJECT IDENTIFIER ::= { snmpAlarm 3 }

snmpRisingAlarm NOTIFICATION-TYPE
   OBJECTS { snmpAlarmVariable, snmpAlarmSampleType, 
              snmpAlarmValue, snmpAlarmRisingThreshold }
   STATUS  current
   DESCRIPTION
      "An event that is generated when an alarm entry 
       crosses its rising threshold. The instances of 
       those objects contained within the varbind list 
       are those of the alarm entry which generated this 
       event."
   ::= { snmpAlarmNotifications 1 }

snmpFallingAlarm NOTIFICATION-TYPE
   OBJECTS { snmpAlarmVariable, snmpAlarmSampleType, 
              snmpAlarmValue, snmpAlarmFallingThreshold }
   STATUS  current
   DESCRIPTION
      "An event that is generated when an alarm entry 
       crosses its falling threshold. The instances of 
       those objects contained within the varbind list 
       are those of the alarm entry which generated this 
       event."
   ::= { snmpAlarmNotifications 2 }

snmpObjectUnavailableAlarm NOTIFICATION-TYPE
   OBJECTS { snmpAlarmVariable }
   STATUS  current
   DESCRIPTION
      "An event that is generated when a variable 
       monitored by an alarm entry becomes unavailable. 
       The instance of snmpAlarmVariable contained within 
       the varbind list is the one associated with the 
       alarm entry which generated this event."
   ::= { snmpAlarmNotifications 3 }
snmpEvent OBJECT IDENTIFIER ::= { snmpM2MObjects 2 }

-- The snmpEvent table defines the set of events generated on
-- a SNMPv2 entity acting in a dual role. Each entry in the
-- snmpEventTable associates an event type with the
-- notification method and associated parameters. Some
-- snmpEvent entries are fired by an associated condition in
-- the snmpAlarmTable. Others are fired on behalf of
-- conditions defined in the NOTIFICATION-TYPE macro. The
-- snmpNotificationTable defines notifications that should
-- occur when an associated event is fired.

snmpEventNextIndex OBJECT-TYPE
SYNTAX INTEGER (0..65535)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The index number of the next appropriate
unassigned entry in the snmpEventTable. The value
0 indicates that no unassigned entries are
available.

A management station should create new entries in
the snmpEventTable using this algorithm: first,
issue a management protocol retrieval operation to
determine the value of snmpEventNextIndex; and,
second, issue a management protocol set operation
to create an instance of the snmpEventStatus
object setting its value to 'createAndWait' or
'createAndGo'."

::= { snmpEvent 1 }
snmpEventTable OBJECT-TYPE
   SYNTAX      SEQUENCE OF SnmpEventEntry
   MAX-ACCESS not-accessible
   STATUS      current
   DESCRIPTION
      "A list of events."
   ::= { snmpEvent 2 }

snmpEventEntry OBJECT-TYPE
   SYNTAX      SnmpEventEntry
   MAX-ACCESS not-accessible
   STATUS      current
   DESCRIPTION
      "A set of parameters that describe an event that
       is generated when certain conditions are met."
   INDEX      { snmpEventIndex }
   ::= { snmpEventTable 1 }

SnmpEventEntry ::= SEQUENCE {
   snmpEventIndex          INTEGER,
   snmpEventID             OBJECT IDENTIFIER,
   snmpEventDescription    DisplayString,
   snmpEventEvents         Counter32,
   snmpEventLastTimeSent   TimeStamp,
   snmpEventStatus         RowStatus
}

snmpEventIndex OBJECT-TYPE
   SYNTAX      INTEGER (1..65535)
   MAX-ACCESS not-accessible
   STATUS      current
   DESCRIPTION
      "An index that uniquely identifies an entry in the
       snmpEvent table. Each such entry defines an event
       generated when the appropriate conditions occur."
   ::= { snmpEventEntry 1 }
snmpEventID OBJECT-TYPE
SYNTAX OBJECT IDENTIFIER
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The authoritative identification of the event type generated by this entry. This variable occurs as the second varbind of an InformRequest-PDU. If this OBJECT IDENTIFIER maps to a NOTIFICATION-TYPE the sender will place the objects listed in the NOTIFICATION-TYPE in the varbind list."
::= { snmpEventEntry 2 }

snmpEventDescription OBJECT-TYPE
SYNTAX DisplayString (SIZE (0..127))
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"A comment describing this snmpEvent entry."
::= { snmpEventEntry 3 }

snmpEventEvents OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of events caused by event generators associated with this snmpEvent entry."
::= { snmpEventEntry 4 }
snmpEventLastTimeSent OBJECT-TYPE
   SYNTAX     TimeStamp
   MAX-ACCESS read-only
   STATUS     current
   DESCRIPTION
   "The value of sysUpTime at the time this snmpEvent entry last generated an event. If this entry has not generated any events, this value will be zero."
   DEFVAL { 0 }
   ::= { snmpEventEntry 5 }

snmpEventStatus OBJECT-TYPE
   SYNTAX     RowStatus
   MAX-ACCESS read-create
   STATUS     current
   DESCRIPTION
   "The status of this snmpEvent entry. This object may not be set to 'active' unless the following columnar objects exist in this row: snmpEventID, snmpEventDescription, snmpEventEvents, and snmpEventLastTimeSent.

   Setting an instance of this object to the value 'destroy' has the effect of invalidating any/all entries in the snmpEventTable, and the snmpEventNotifyTable which reference the corresponding snmpEventEntry."
   ::= { snmpEventEntry 6 }
snmpEventNotifyMinInterval OBJECT-TYPE
SYNTAX       Integer32
UNITS        "seconds"
MAX-ACCESS   read-only
STATUS       current
DESCRIPTION   "The minimum interval that the SNMPv2 entity
acting in a dual role will wait before
retransmitting an InformRequest-PDU. This object
specifies the minimal value supported by the
SNMPv2 entity acting in a dual role, based on
resource or implementation constraints.

For a particular entry in the
snmpEventNotifyTable, if the associated
snmpEventNotifyIntervalRequested variable is
greater than this object, the
snmpEventNotifyIntervalRequested value shall be
used as the minimum interval for retransmissions
of InformRequest-PDUs sent on behalf of that
entry."
 ::= { snmpEvent 3 }

snmpEventNotifyMaxRetransmissions OBJECT-TYPE
SYNTAX       Integer32
MAX-ACCESS   read-only
STATUS       current
DESCRIPTION   "The maximum number of time that the SNMPv2 entity
acting in a dual role will retransmit an
InformRequest-PDU. This object specifies the
maximal value supported by the SNMPv2 entity
acting in a dual role, based on resource or
implementation constraints.

For a particular entry in the
snmpEventNotifyTable, if the associated
snmpEventNotifyRetransmissionsRequested variable
is less than this object, the
snmpEventNotifyRetransmissionsRequested value
shall be used as the retransmission count for
InformRequest-PDUs sent on behalf of that entry."
 ::= { snmpEvent 4 }

-- The snmpEventNotifyTable is used to configure the
destination and type of notifications sent by a SNMPv2 entity acting in a manager role when a particular event is triggered.

```
-- destination and type of notifications sent by a SNMPv2 entity acting in a manager role when a particular event is triggered.

snmpEventNotifyTable OBJECT-TYPE
SYNTAX     SEQUENCE OF SnmpEventNotifyEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
   "A list of protocol configuration entries for event notifications from this entity."
::= { snmpEvent 5 }

SnmpEventNotifyEntry OBJECT-TYPE
SYNTAX     SnmpEventNotifyEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
   "A set of parameters that describe the type and destination of InformRequest-PDUs sent for a particular event. The snmpEventIndex in this entry’s INDEX clause identifies the snmpEventEntry which, when triggered, will generate a notification as configured in this entry. The contextIdentity in this entry’s INDEX clause identifies the context to which a notification will be sent."
INDEX      { snmpEventIndex, contextIdentity }
::= { snmpEventNotifyTable 1 }

SnmpEventNotifyEntry ::= SEQUENCE {
   snmpEventNotifyIntervalRequested Integer32,
   snmpEventNotifyRetransmissionsRequested Integer32,
   snmpEventNotifyLifetime Integer32,
   snmpEventNotifyStatus RowStatus
}
```
snmpEventNotifyIntervalRequested OBJECT-TYPE
SYNTAX     Integer32
UNITS      "seconds"
MAX-ACCESS read-create
STATUS     current
DESCRIPTION
 "The requested interval for retransmission of
 Inform PDUs generated on the behalf of this entry.

 This variable will be the actual interval used
 unless the snmpEventNotifyMinInterval is greater
 than this object, in which case the interval shall
 be equal to snmpEventNotifyMinInterval."
DEFVAL { 30 }
 ::= { snmpEventNotifyEntry 1 }

snmpEventNotifyRetransmissionsRequested OBJECT-TYPE
SYNTAX     Integer32
MAX-ACCESS read-create
STATUS     current
DESCRIPTION
 "The requested number of retransmissions of an
 InformRequest-PDU generated on behalf of this
 entry.

 This variable will be the actual number of
 retransmissions used unless the
 snmpEventNotifyMaxRetransmissions is less than
 this object, in which case the retransmission
 count shall be equal to
 snmpEventNotifyMaxRetransmissions."
DEFVAL { 5 }
 ::= { snmpEventNotifyEntry 2 }
snmpEventNotifyLifetime OBJECT-TYPE
   SYNTAX     Integer32
   UNITS      "seconds"
   MAX-ACCESS read-create
   STATUS     current
   DESCRIPTION
               "The number of seconds this entry shall live until
               the corresponding instance of
               snmpEventNotifyStatus is set to 'destroy'. This
               value shall count down to zero, at which time the
               corresponding instance of snmpEventNotifyStatus
               will be set to 'destroy'. Any management station
               that is using this entry must periodically refresh
               this value to ensure the continued delivery of
               events."
   DEFVAL { 86400 }
   ::= { snmpEventNotifyEntry 3 }

snmpEventNotifyStatus OBJECT-TYPE
   SYNTAX     RowStatus
   MAX-ACCESS read-create
   STATUS     current
   DESCRIPTION
               "The state of this snmpEventNotifyEntry. This
               object may not be set to 'active' unless the
               following columnar objects exist in this row:
               snmpEventNotifyIntervalRequested,
               snmpEventNotifyRetransmissionsRequested, and
               snmpEventNotifyLifetime."
   ::= { snmpEventNotifyEntry 4 }
-- conformance information

snmpM2MConformance
   OBJECT IDENTIFIER ::= { snmpM2M 2 }

snmpM2MCompliances
   OBJECT IDENTIFIER ::= { snmpM2MConformance 1 }

snmpM2MGroups  OBJECT IDENTIFIER ::= { snmpM2MConformance 2 }

-- compliance statements

snmpM2MCompliance MODULE-COMPLIANCE
   STATUS  current
   DESCRIPTION
   "The compliance statement for SNMPv2 entities
   which implement the Manager-to-Manager MIB."
   MODULE  -- this module
   MANDATORY-GROUPS { snmpAlarmGroup, snmpEventGroup }
   ::= { snmpM2MCompliances 1 }

-- units of conformance

snmpAlarmGroup OBJECT-GROUP
   OBJECTS { snmpAlarmNextIndex,
             snmpAlarmVariable, snmpAlarmInterval,
             snmpAlarmSampleType, snmpAlarmValue,
             snmpAlarmStartupAlarm, snmpAlarmRisingThreshold,
             snmpAlarmFallingThreshold,
             snmpAlarmRisingEventIndex,
             snmpAlarmFallingEventIndex,
             snmpAlarmUnavailableEventIndex,
             snmpAlarmStatus }
   STATUS  current
   DESCRIPTION
   "A collection of objects allowing the description
   and configuration of threshold alarms from a
   SNMPv2 entity acting in a dual role."
   ::= { snmpM2MGroups 1 }
snmpEventGroup OBJECT-GROUP

OBJECTS { snmpEventNextIndex,
    snmpEventID, snmpEventDescription,
    snmpEventEvents, snmpEventLastTimeSent,
    snmpEventStatus, snmpEventNotifyMinInterval,
    snmpEventNotifyMaxRetransmissions,
    snmpEventNotifyIntervalRequested,
    snmpEventNotifyRetransmissionsRequested,
    snmpEventNotifyLifetime, snmpEventNotifyStatus }  

STATUS  current
DESCRIPTION
    "A collection of objects allowing the description
    and configuration of events from a SNMPv2 entity
    acting in a dual role."
 ::= { snmpM2MGroups 2 }  

END
4. Acknowledgements

The comments of the SNMP version 2 working group are gratefully acknowledged:

Beth Adams, Network Management Forum
Steve Alexander, INTERACTIVE Systems Corporation
David Arneson, Cabletron Systems
Toshiya Asaba
Fred Baker, ACC
Jim Barnes, Xylogics, Inc.
Brian Bataille
Andy Bierman, SynOptics Communications, Inc.
Uri Blumenthal, IBM Corporation
Fred Bohle, Interlink
Jack Brown
Theodore Brunner, Bellcore
Stephen F. Bush, GE Information Services
Jeffrey D. Case, University of Tennessee, Knoxville
John Chang, IBM Corporation
Szusin Chen, Sun Microsystems
Robert Ching
Chris Chiotasso, Ungermann-Bass
Bobby A. Clay, NASA/Boeing
John Cooke, Chipcom
Tracy Cox, Bellcore
Juan Cruz, Datability, Inc.
David Cullerot, Cabletron Systems
Cathy Cunningham, Microcom
James R. (Chuck) Davin, Bellcore
Michael Davis, Clearpoint
Mike Davison, FiberCom
Cynthia DellaTorre, MITRE
Taso N. Devetzis, Bellcore
Manual Diaz, DAVID Systems, Inc.
Jon Dreyer, Sun Microsystems
David Engel, Optical Data Systems
Mike Erlinger, Lexcel
Roger Fajman, NIH
Daniel Fauvarque, Sun Microsystems
Karen Frisa, CMU
Shari Galitzer, MITRE
Shawn Gallagher, Digital Equipment Corporation
Richard Graveman, Bellcore
Maria Greene, Xyplex, Inc.
Patrick Mullaney, Cabletron Systems
Dan Myers, 3Com Corporation
Rina Nathaniel, Rad Network Devices Ltd.
Hien V. Nguyen, Sprint
Mo Nikain
Tom Nisbet
William B. Norton, MERIT
Steve Onishi, Wellfleet Communications, Inc.
David T. Perkins, SynOptics Communications, Inc.
Carl Powell, BBN
Ilan Raab, SynOptics Communications, Inc.
Richard Ramons, AT&T
Venkat D. Rangan, Metric Network Systems, Inc.
Louise Reingold, Sprint
Sam Roberts, Farallon Computing, Inc.
Kary Robertson, Concord Communications, Inc.
Dan Romascanu, Lannet Data Communications Ltd.
Marshall T. Rose, Dover Beach Consulting, Inc.
Shawn A. Routhier, Epilogue Technology Corporation
Chris Rozman
Asaf Rubissa, Fibronics
Jon Saperia, Digital Equipment Corporation
Michael Sapich
Mike Scanlon, Interlan
Sam Schaen, MITRE
John Seligson, Ultra Network Technologies
Paul A. Serice, Corporation for Open Systems
Chris Shaw, Banyan Systems
Timon Sloane
Robert Snyder, Cisco Systems
Joo Young Song
Roy Spitier, Sprint
Einar Stefferud, Network Management Associates
John Stephens, Cayman Systems, Inc.
Robert L. Stewart, Xyplex, Inc. (chair)
Kaj Tesink, Bellcore
Dean Throop, Data General
Ahmet Tuncay, France Telecom-CNET
Maurice Turcotte, Racal Datacom
Warren Vik, INTERACTIVE Systems Corporation
Yannis Viniotis
Steven L. Waldbusser, Carnegie Mellon University
Timothy M. Walden, ACC
Alice Wang, Sun Microsystems
James Watt, Newbridge
Luanne Waul, Timeplex
Donald E. Westlake III, Digital Equipment Corporation
Gerry White
Bert Wijnen, IBM Corporation
Peter Wilson, 3Com Corporation
Steven Wong, Digital Equipment Corporation
Randy Worzella, IBM Corporation
Daniel Woycke, MITRE
Honda Wu
Jeff Yarnell, Protools
Chris Young, Cabletron
Kiho Yum, 3Com Corporation
5. References


6. Security Considerations

Security issues are not discussed in this memo.

7. Authors’ Addresses

Jeffrey D. Case
SNMP Research, Inc.
3001 Kimberlin Heights Rd.
Knoxville, TN 37920-9716
US

Phone: +1 615 573 1434
Email: case@snmp.com

Keith McCloghrie
Hughes LAN Systems
1225 Charleston Road
Mountain View, CA 94043
US

Phone: +1 415 966 7934
Email: kzm@hls.com

Marshall T. Rose
Dover Beach Consulting, Inc.
420 Whisman Court
Mountain View, CA 94043-2186
US

Phone: +1 415 968 1052
Email: mrose@dbc.mtview.ca.us

Steven Waldbusser
Carnegie Mellon University
4910 Forbes Ave
Pittsburgh, PA 15213
US

Phone: +1 412 268 6628
Email: waldbusser@cmu.edu