Definitions of Managed Objects for Mapping SYSLOG Messages to Simple Network Management Protocol (SNMP) Notifications

Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it defines a mapping of SYSLOG messages to Simple Network Management Protocol (SNMP) notifications.

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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1. Introduction

SNMP ([RFC3410], [RFC3411]) and SYSLOG [RFC5424] are two widely used protocols to communicate event notifications. Although co-existence of several management protocols in one operational environment is possible, certain environments require that all event notifications be collected by a single system daemon, such as a SYSLOG collector or an SNMP notification receiver, via a single management protocol. In such environments, it is necessary to translate event notifications between management protocols.

This document defines an SNMP MIB module to represent SYSLOG messages and to send SYSLOG messages as SNMP notifications to SNMP notification receivers.

2. 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].
3. Conventions

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 [RFC2119].

4. Overview

SYSLOG messages are translated to SNMP by a SYSLOG-to-SNMP translator. Such a translator acts as a SYSLOG collector [RFC5424] and implements a MIB module according to the SNMP architecture [RFC3411]. The translator might be tightly coupled to an SNMP agent or it might interface with an SNMP agent via a subagent protocol.

After initialization, the SYSLOG-to-SNMP translator will listen for SYSLOG messages. On receiving a message, the message will be parsed to extract information as described in the MIB module. A conceptual table is populated with information extracted from the SYSLOG message, and finally a notification may be generated.

The MIB module is organized into a group of scalars and two tables. The syslogMsgControl group contains two scalars controlling the maximum size of SYSLOG messages recorded in the tables and also controlling whether SNMP notifications are generated for SYSLOG messages.

```
--syslogMsgObjects(1)
    |    
    +--syslogMsgControl(1)
        |    
        +-- Unsigned32 syslogMsgTableMaxSize(1)
        +-- TruthValue syslogMsgEnableNotifications(2)
```

The syslogMsgTable contains one entry for each recorded SYSLOG message. The basic fields of SYSLOG messages as well as message properties are represented in different columns of the conceptual table.

```
--syslogMsgObjects(1)
    |    
    +--syslogMsgTable(2)
        |    
        +--syslogMsgEntry(1) [syslogMsgIndex]
            |    
            +-- Unsigned32 syslogMsgIndex(1)
            +-- SyslogFacility syslogMsgFacility(2)
            +-- SyslogSeverity syslogMsgSeverity(3)
            +-- Unsigned32 syslogMsgVersion(4)
```
The syslogMsgSDTable contains one entry for each structured data element parameter contained in a SYSLOG message. Since structured data elements are optional, the relationship between the syslogMsgTable and the syslogMsgSDTable ranges from one-to-zero to one-to-many.

5. Relationship to Other MIB Modules

The NOTIFICATION-LOG-MIB [RFC3014] provides a generic mechanism for logging SNMP notifications in order to deal with lost SNMP notifications, e.g., due to transient communication problems. Applications can poll the notification log to verify that they have not missed important SNMP notifications.

The MIB module defined in this memo provides a mechanism for logging SYSLOG notifications. This additional SYSLOG notification log is provided because (a) SYSLOG messages might not lead to SNMP notification (this is configurable) and (b) SNMP notifications might not carry all information associated with a SYSLOG notification.

The MIB module IMPORTS objects from SNMPv2-SMI [RFC2578], SNMPv2-TC [RFC2579], SNMPv2-CONF [RFC2580], SNMP-FRAMEWORK-MIB [RFC3411], and SYSLOG-TC-MIB [RFC5427].
6. Relationship to the SNMP Notification to SYSLOG Mapping

A companion document [RFC5675] defines a mapping of SNMP notifications to SYSLOG messages. This section discusses the possibilities of using both specifications in combination.

A SYSLOG collector implementing the SYSLOG-MSG-MIB module and the mapping of SNMP notifications to SYSLOG messages may be configured to translate received SYSLOG messages containing SNMP notifications back into the original SNMP notification. In this case, the relevant tables of the SYSLOG-MSG-MIB will not be populated for SYSLOG messages carrying SNMP notifications. This configuration allows operators to build a forwarding chain where SNMP notifications are "tunneled" through SYSLOG messages. Due to size restrictions of the SYSLOG transports and the more verbose textual encoding used by SYSLOG, there is a possibility that SNMP notification content will get truncated when tunneled through SYSLOG, and thus the resulting SNMP notification may be incomplete.

An SNMP management application supporting the SYSLOG-MSG-MIB and the mapping of SNMP notifications to SYSLOG messages may process information from the SYSLOG-MSG-MIB in order to emit a SYSLOG message representing the SYSLOG message recorded in the SYSLOG-MSG-MIB module. This configuration allows operators to build a forwarding chain where SYSLOG messages are "tunneled" through SNMP messages. A notification receiver can determine whether a syslogMsgNotification contained all structured data element parameters of a SYSLOG message. In case parameters are missing, a forwarding application MUST retrieve the missing parameters from the SYSLOG-MSG-MIB. Regular polling of the SYSLOG-MSG-MIB can be used to take care of any lost SNMP notifications.

7. Definitions

SYSLOG-MSG-MIB DEFINITIONS ::= BEGIN

IMPORTS
  MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE, Unsigned32, mib-2
  FROM SNMPv2-SMI
  TEXTUAL-CONVENTION, DisplayString, TruthValue
  FROM SNMPv2-TC
  OBJECT-GROUP, NOTIFICATION-GROUP, MODULE-COMPLIANCE
  FROM SNMPv2-CONF
  SyslogFacility, SyslogSeverity
FROM SYSLOG-TC-MIB;

syslogMsgMib MODULE-IDENTITY
LAST-UPDATED "200908130800Z"
ORGANIZATION "IETF OPSAWG Working Group"
CONTACT-INFO
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India"

DESCRIPTION
"This MIB module represents SYSLOG messages as SNMP objects.

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This version of this MIB module is part of RFC 5676; see the RFC itself for full legal notices."

REVISION "200908130800Z"
DESCRIPTION
"Initial version issued as part of RFC 5676."
::= { mib-2 192 }
-- textual convention definitions

SyslogTimeStamp ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "2d-1d-1d,1d:1d:1d.3d,1a1d:1d"
    STATUS current
    DESCRIPTION
    "A date-time specification. This type is similar to the
    DateAndTime type defined in the SNMPv2-TC, except the
    subsecond granulation is microseconds instead of
deciseconds and a zero-length string can be used
to indicate a missing value.

<table>
<thead>
<tr>
<th>field</th>
<th>octets</th>
<th>contents</th>
<th>range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-2</td>
<td>year*</td>
<td>0..65536</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>month</td>
<td>1..12</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>day</td>
<td>1..31</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>hour</td>
<td>0..23</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>minutes</td>
<td>0..59</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>seconds</td>
<td>0..60</td>
</tr>
<tr>
<td></td>
<td>8-10</td>
<td>microseconds*</td>
<td>0..999999</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>direction from UTC</td>
<td>‘+’ / ‘-’</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>hours from UTC*</td>
<td>0..13</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>minutes from UTC</td>
<td>0..59</td>
</tr>
</tbody>
</table>

* Notes:
- the value of year is in network-byte order
- the value of microseconds is in network-byte order
- daylight saving time in New Zealand is +13

For example, Tuesday May 26, 1992 at 1:30:15 PM EDT would be
displayed as:

1992-5-26,13:30:15.0,-4:0

Note that if only local time is known, then timezone
information (fields 11-13) is not present."

SYNTAX       OCTET STRING (SIZE (0 | 10 | 13))

SyslogParamValueString ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "65535t"
    STATUS current
    DESCRIPTION
    "The value of a SYSLOG SD-PARAM is represented using the
    ISO/IEC IS 10646-1 character set, encoded as an octet string
    using the UTF-8 transformation format described in RFC 3629."
Since additional code points are added by amendments to the 10646 standard from time to time, implementations must be prepared to encounter any code point from 0x00000000 to 0x7ffffff. Byte sequences that do not correspond to the valid UTF-8 encoding of a code point or that are outside this range are prohibited. Similarly, overlong UTF-8 sequences are prohibited.

UTF-8 may require multiple bytes to represent a single character / code point; thus, the length of this object in octets may be different from the number of characters encoded. Similarly, size constraints refer to the number of encoded octets, not the number of characters represented by an encoding.

REFERENCE
"RFC 3629: UTF-8, a transformation format of ISO 10646"

SYNTAX OCTET STRING

-- object definitions

syslogMsgNotifications OBJECT IDENTIFIER ::= { syslogMsgMib 0 }
syslogMsgObjects OBJECT IDENTIFIER ::= { syslogMsgMib 1 }
syslogMsgConformance OBJECT IDENTIFIER ::= { syslogMsgMib 2 }

syslogMsgControl OBJECT IDENTIFIER ::= { syslogMsgObjects 1 }

syslogMsgTableMaxSize OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"The maximum number of SYSLOG messages that may be held in syslogMsgTable. A particular setting does not guarantee that there is sufficient memory available for the maximum number of table entries indicated by this object. A value of 0 means no fixed limit.

If an application reduces the limit while there are SYSLOG messages in the syslogMsgTable, the SYSLOG messages that are in the syslogMsgTable for the longest time MUST be discarded to bring the table down to the new limit.

The value of this object should be kept in nonvolatile memory."
DEFVAL { 0 }
::= { syslogMsgControl 1 }

syslogMsgEnableNotifications OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
  "Indicates whether syslogMsgNotification notifications are
generated.

  The value of this object should be kept in nonvolatile
memory."
DEFVAL      { false }
::= { syslogMsgControl 2 }

syslogMsgTable OBJECT-TYPE
SYNTAX      SEQUENCE OF SyslogMsgEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
  "A table containing recent SYSLOG messages. The size of the
table is controlled by the syslogMsgTableMaxSize object."
::= { syslogMsgObjects 2 }

syslogMsgEntry OBJECT-TYPE
SYNTAX      SyslogMsgEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
  "An entry of the syslogMsgTable."
INDEX { syslogMsgIndex }
::= { syslogMsgTable 1 }

SyslogMsgEntry ::= SEQUENCE {
  syslogMsgIndex    Unsigned32,
  syslogMsgFacility SyslogFacility,
  syslogMsgSeverity SyslogSeverity,
  syslogMsgVersion  Unsigned32,
  syslogMsgTimeStamp SyslogTimeStamp,
  syslogMsgHostName DisplayString,
  syslogMsgAppName  DisplayString,
  syslogMsgProcID   DisplayString,
  syslogMsgMsgID    DisplayString,
  syslogMsgSDParams Unsigned32,
  syslogMsgMsg      OCTET STRING
}

syslogMsgIndex OBJECT-TYPE
SYNTAX      Unsigned32 (1..4294967295)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION

"A monotonically increasing number used to identify entries in
the syslogMsgTable. When syslogMsgIndex reaches the maximum
value (4294967295), the value wraps back to 1.

Applications periodically polling the syslogMsgTable for new
entries should take into account that a complete rollover of
syslogMsgIndex will happen if more than 4294967294 messages
are received during a poll interval."

::= { syslogMsgEntry 1 }

syslogMsgFacility OBJECT-TYPE
SYNTAX    SyslogFacility
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
"The facility of the SYSLOG message."
REFERENCE
"RFC 5424: The Syslog Protocol (Section 6.2.1)
RFC 5427: Textual Conventions for Syslog Management"

::= { syslogMsgEntry 2 }

syslogMsgSeverity OBJECT-TYPE
SYNTAX    SyslogSeverity
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
"The severity of the SYSLOG message"
REFERENCE
"RFC 5424: The Syslog Protocol (Section 6.2.1)
RFC 5427: Textual Conventions for Syslog Management"

::= { syslogMsgEntry 3 }

syslogMsgVersion OBJECT-TYPE
SYNTAX    Unsigned32 (0..999)
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
"The version of the SYSLOG message. A value of 0 indicates
that the version is unknown."
REFERENCE
"RFC 5424: The Syslog Protocol (Section 6.2.2)"

::= { syslogMsgEntry 4 }

syslogMsgTimeStamp OBJECT-TYPE
SYNTAX    SyslogTimeStamp
MAX-ACCESS read-only
STATUS     current
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SYSLOG-MSG-MIB

DESCRIPTION
"The timestamp of the SYSLOG message. A zero-length string is returned if the timestamp is unknown."

REFERENCE
"RFC 5424: The Syslog Protocol (Section 6.2.3)"
::= { syslogMsgEntry 5 }

syslogMsgHostName OBJECT-TYPE
SYNTAX DisplayString (SIZE (0..255))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The hostname and the (optional) domain name of the SYSLOG message. A zero-length string indicates an unknown hostname. The SYSLOG protocol specification constrains this string to printable US-ASCII code points."

REFERENCE
"RFC 5424: The Syslog Protocol (Section 6.2.4)"
::= { syslogMsgEntry 6 }

syslogMsgAppName OBJECT-TYPE
SYNTAX DisplayString (SIZE (0..48))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The app-name of the SYSLOG message. A zero-length string indicates an unknown app-name. The SYSLOG protocol specification constrains this string to printable US-ASCII code points."

REFERENCE
"RFC 5424: The Syslog Protocol (Section 6.2.5)"
::= { syslogMsgEntry 7 }

syslogMsgProcID OBJECT-TYPE
SYNTAX DisplayString (SIZE (0..128))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The procid of the SYSLOG message. A zero-length string indicates an unknown procid. The SYSLOG protocol specification constrains this string to printable US-ASCII code points."

REFERENCE
"RFC 5424: The Syslog Protocol (Section 6.2.6)"
::= { syslogMsgEntry 8 }

syslogMsgMsgID OBJECT-TYPE
SYNTAX DisplayString (SIZE (0..32))
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The msgid of the SYSLOG message. A zero-length string
indicates an unknown msgid. The SYSLOG protocol specification
constrains this string to printable US-ASCII code points."
REFERENCE
"RFC 5424: The Syslog Protocol (Section 6.2.7)"
::= { syslogMsgEntry 9 }

syslogMsgSDParams OBJECT-TYPE
SYNTAX      Unsigned32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The total number of structured data element parameters
carried in the SYSLOG message. This number effectively
indicates the number of entries in the syslogMsgSDTable.
It can be used, for example, by a notification receiver
to determine whether a notification carried all
structured data element parameters of a SYSLOG message."
::= { syslogMsgEntry 10 }

syslogMsgMsg OBJECT-TYPE
SYNTAX      OCTET STRING
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The message part of the SYSLOG message. The syntax does not
impose a size restriction. Implementations of this MIB module
may truncate the message part of the SYSLOG message such that
it fits into the size constraints imposed by the implementation
environment. Such truncations can also happen elsewhere in the
SYSLOG forwarding chain.

If the first octets contain the value 'EFBBBF'h, then the rest
of the message is a UTF-8 string. Since SYSLOG messages may be
truncated at arbitrary octet boundaries during forwarding, the
message may contain invalid UTF-8 encodings at the end."
REFERENCE
"RFC 5424: The Syslog Protocol (Sections 6.1 and 6.4)"
::= { syslogMsgEntry 11 }

syslogMsgSDTable OBJECT-TYPE
SYNTAX      SEQUENCE OF SyslogMsgSDEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"A table containing structured data elements of SYSLOG messages."
::= { syslogMsgObjects 3 }

syslogMsgSDEntry OBJECT-TYPE
SYNTAX      SyslogMsgSDEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION  "An entry of the syslogMsgSDTable."
INDEX { syslogMsgIndex, syslogMsgSDParamIndex,
syslogMsgSDID, syslogMsgSDParamName }
::= { syslogMsgSDTable 1 }

SyslogMsgSDEntry ::= SEQUENCE {
  syslogMsgSDParamIndex  Unsigned32,
  syslogMsgSDID          DisplayString,
  syslogMsgSDParamName   DisplayString,
  syslogMsgSDParamValue  SyslogParamValueString
}

syslogMsgSDParamIndex OBJECT-TYPE
SYNTAX      Unsigned32 (1..4294967295)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION  "This object indexes the structured data element parameters
contained in a SYSLOG message. The first structured data
element parameter has the index value 1, and subsequent
parameters are indexed by incrementing the index of the
previous parameter. The index increases across structured
data element boundaries so that the value reflects the
position of a structured data element parameter in a
SYSLOG message."
REFERENCE  "RFC 5424: The Syslog Protocol (Section 6.3.3)"
::= { syslogMsgSDEntry 1 }

syslogMsgSDID OBJECT-TYPE
SYNTAX      DisplayString (SIZE (1..32))
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION  "The name (SD-ID) of a structured data element. The SYSLOG
protocol specification constrains this string to printable
US-ASCII code points."
REFERENCE  "RFC 5424: The Syslog Protocol (Section 6.3.2)"
::= { syslogMsgSDEntry 2 }

syslogMsgSDParamName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..32))
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The name of a parameter of the structured data element.  The
SYSLOG protocol specification constrains this string to
printable US-ASCII code points."
REFERENCE
"RFC 5424: The Syslog Protocol (Section 6.3.3)"
::= { syslogMsgSDEntry 3 }

syslogMsgSDParamValue OBJECT-TYPE
SYNTAX SyslogParamValueString
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of the parameter of a SYSLOG message identified by
the index of this table.  The value is stored in the unescaped
format."
REFERENCE
"RFC 5424: The Syslog Protocol (Section 6.3.3)"
::= { syslogMsgSDEntry 4 }

-- notification definitions

syslogMsgNotification NOTIFICATION-TYPE
OBJECTS { syslogMsgFacility, syslogMsgSeverity,
syslogMsgVersion, syslogMsgTimeStamp,
syslogMsgHostName, syslogMsgAppName,
syslogMsgProcID, syslogMsgMsgID,
syslogMsgSDParams, syslogMsgMsg }
STATUS current
DESCRIPTION
"The syslogMsgNotification is generated when a new SYSLOG
message is received and the value of
syslogMsgGenerateNotifications is true.

Implementations may add syslogMsgSDParamValue objects as long
as the resulting notification fits into the size constraints
imposed by the implementation environment and the notification
message size constraints imposed by maxMessageSize [RFC3412]
and SNMP transport mappings."
::= { syslogMsgNotifications 1 }

-- conformance statements
syslogMsgGroups OBJECT IDENTIFIER ::= { syslogMsgConformance 1 }
syslogMsgCompliances OBJECT IDENTIFIER ::= { syslogMsgConformance 2 }

syslogMsgFullCompliance MODULE-COMPLIANCE
  STATUS current
  DESCRIPTION "The compliance statement for implementations of the
  SYSLOG-MSG-MIB."
  MODULE -- this module
  MANDATORY-GROUPS {
    syslogMsgGroup,
    syslogMsgSDGroup,
    syslogMsgControlGroup,
    syslogMsgNotificationGroup
  }
  ::= { syslogMsgCompliances 1 }

syslogMsgReadOnlyCompliance MODULE-COMPLIANCE
  STATUS current
  DESCRIPTION "The compliance statement for implementations of the
  SYSLOG-MSG-MIB that do not support read-write access."
  MODULE -- this module
  MANDATORY-GROUPS {
    syslogMsgGroup,
    syslogMsgSDGroup,
    syslogMsgControlGroup,
    syslogMsgNotificationGroup
  }
  OBJECT syslogMsgTableMaxSize
  MIN-ACCESS read-only
  DESCRIPTION "Write access is not required."
  OBJECT syslogMsgEnableNotifications
  MIN-ACCESS read-only
  DESCRIPTION "Write access is not required."
  ::= { syslogMsgCompliances 2 }

syslogMsgNotificationCompliance MODULE-COMPLIANCE
  STATUS current
  DESCRIPTION "The compliance statement for implementations of the
  SYSLOG-MSG-MIB that do only generate notifications and do not
  provide a table to allow read access to SYSLOG message
details."
  MODULE -- this module
  MANDATORY-GROUPS {
syslogMsgGroup,
syslogMsgSDGroup,
syslogMsgNotificationGroup
)

OBJECT syslogMsgFacility
MIN-ACCESS accessible-for-notify
DESCRIPTION
"Read access is not required."

OBJECT syslogMsgSeverity
MIN-ACCESS accessible-for-notify
DESCRIPTION
"Read access is not required."

OBJECT syslogMsgVersion
MIN-ACCESS accessible-for-notify
DESCRIPTION
"Read access is not required."

OBJECT syslogMsgTimeStamp
MIN-ACCESS accessible-for-notify
DESCRIPTION
"Read access is not required."

OBJECT syslogMsgHostName
MIN-ACCESS accessible-for-notify
DESCRIPTION
"Read access is not required."

OBJECT syslogMsgAppName
MIN-ACCESS accessible-for-notify
DESCRIPTION
"Read access is not required."

OBJECT syslogMsgProcID
MIN-ACCESS accessible-for-notify
DESCRIPTION
"Read access is not required."

OBJECT syslogMsgMsgID
MIN-ACCESS accessible-for-notify
DESCRIPTION
"Read access is not required."

OBJECT syslogMsgSDParams
MIN-ACCESS accessible-for-notify
DESCRIPTION
"Read access is not required."

OBJECT syslogMsgMsg
MIN-ACCESS accessible-for-notify
DESCRIPTION
"Read access is not required."

OBJECT syslogMsgSDParamValue
MIN-ACCESS accessible-for-notify
DESCRIPTION
"Read access is not required."
::= { syslogMsgCompliances 3 }

syslogMsgNotificationGroup NOTIFICATION-GROUP
  NOTIFICATIONS {
    syslogMsgNotification
  }
  STATUS      current
  DESCRIPTION
    "The notifications emitted by this MIB module."
::= { syslogMsgGroups 1 }

syslogMsgGroup OBJECT-GROUP
  OBJECTS {
    -- syslogMsgIndex,
    syslogMsgFacility,
    syslogMsgSeverity,
    syslogMsgVersion,
    syslogMsgTimeStamp,
    syslogMsgHostName,
    syslogMsgAppName,
    syslogMsgProcID,
    syslogMsgMsgID,
    syslogMsgSDParams,
    syslogMsgMsg
  }
  STATUS      current
  DESCRIPTION
    "A collection of objects representing a SYSLOG message, excluding structured data elements."
::= { syslogMsgGroups 2 }

syslogMsgSDGroup OBJECT-GROUP
  OBJECTS {
    -- syslogMsgSDParamIndex,
    -- syslogMsgSDID,
    -- syslogMsgSDParamName,
    syslogMsgSDParamValue
  }
  STATUS      current
  DESCRIPTION
    "A collection of objects representing the structured data elements of a SYSLOG message."
::= { syslogMsgGroups 3 }

syslogMsgControlGroup OBJECT-GROUP
  OBJECTS {
    syslogMsgTableMaxSize,
    syslogMsgEnableNotifications
  }
8. Usage Example

The following example shows a valid SYSLOG message including structured data. The otherwise-unprintable Unicode byte order mark (BOM) is represented as "BOM" in the example.

<165>1 2003-10-11T22:14:15.003Z mymachine.example.com
     evntslog - ID47 [exampleSDID@32473 iut="3" eventSource="Application"
     eventID="1011"] BOMAn application event log entry...

This SYSLOG message leads to the following entries in the syslogMsgTable and the syslogMsgSDTable (note that string indexes are written as strings for readability reasons):

syslogMsgIndex.1 = 1
syslogMsgFacility.1 = 20
syslogMsgSeverity.1 = 5
syslogMsgVersion.1 = 1
syslogMsgTimeStamp.1 = 2003-10-11,22:14:15.003,+0:0
syslogMsgHostName.1 = "mymachine.example.com"
syslogMsgAppName.1 = "evntslog"
syslogMsgProcID.1 = "--"
syslogMsgMsgID.1 = "ID47"
syslogMsgMsg.1 = "BOMAn application event log entry..."
syslogMsgSDParamValue.1.1."exampleSDID@32473"."iut" = "3"
syslogMsgSDParamValue.1.2."exampleSDID@32473"."eventSource" = "Application"
syslogMsgSDParamValue.1.3."exampleSDID@32473"."eventID" = "1011"

9. IANA Considerations

The IANA has assigned value "192" under the 'mib-2' subtree and recorded the assignment in the SMI Numbers registry.
10. Security Considerations

There are a number of management objects defined in this MIB module with a MAX-ACCESS clause of read-write and/or read-create. 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. These are the tables and objects and their sensitivity/vulnerability:

- **syslogMsgTableMaxSize**: This object controls how many entries are kept in the syslogMsgTable. Unauthorized modifications may either cause increased memory consumption (by setting this object to a large value) or turn off the capability to retrieve notifications using GET class operations (by setting this object to zero). This might be used to hide traces of an attack.

- **syslogMsgEnableNotifications**: This object enables notifications. Unauthorized modifications to disable notification generation can be used to hide an attack by preventing management applications that use SNMP from receiving real-time notifications about events carried in SYSLOG messages. Unauthorized modifications to enable notification generation may be used as part of a denial-of-service attack against a network management system if, for example, the SYSLOG-to-SNMP translator accepts unauthorized SYSLOG messages.

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control even GET and/or NOTIFY access to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP. These are the tables and objects and their sensitivity/vulnerability:

- **syslogMsgTableMaxSize**, **syslogMsgEnableNotifications**: These objects provide information regarding whether SYSLOG messages are forwarded as SNMP notifications and how many messages will be maintained in the syslogMsgTable. This information might be exploited by an attacker in order to plan actions with the goal of hiding attack activities.

- **syslogMsgFacility**, **syslogMsgSeverity**, **syslogMsgVersion**, **syslogMsgTimeStamp**, **syslogMsgHostName**, **syslogMsgAppName**, **syslogMsgProcID**, **syslogMsgMsgID**, **syslogMsgSDParams**, **syslogMsgMsg**, **syslogMsgSDParamValue**: These objects carry the content of SYSLOG messages and the SYSLOG-message-oriented security considerations of [RFC5424] apply. In particular, an attacker who gains access to SYSLOG messages via SNMP may use the knowledge gained from

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SYSLOG messages to compromise a machine or do other damage. It is therefore desirable to configure SNMP access control rules, enforcing a consistent security policy for SYSLOG messages.

SNMP versions prior to SNMPv3 did not include adequate security. 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/create/delete) the objects in this MIB module.

It is RECOMMENDED that implementers consider the security features as provided by the SNMPv3 framework (see [RFC3410], section 8), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

Using the security features of the SNMPv3 framework secures the transport of SYSLOG data via SNMP only. It is therefore RECOMMENDED that deployments use SYSLOG security mechanisms in order to prevent attackers from adding malicious SYSLOG data to the MIB tables.

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12. References

12.1. Normative References


12.2. Informative References


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