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## 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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## Table of Contents

<a href="#">1.</a>	Introduction . . . . .	<a href="#">2</a>
<a href="#">2.</a>	The Internet-Standard Management Framework . . . . .	<a href="#">2</a>
<a href="#">3.</a>	Conventions . . . . .	<a href="#">3</a>
<a href="#">4.</a>	Overview . . . . .	<a href="#">3</a>
<a href="#">5.</a>	Relationship to Other MIB Modules . . . . .	<a href="#">4</a>
<a href="#">6.</a>	Relationship to the SNMP Notification to SYSLOG Mapping . . .	<a href="#">6</a>
<a href="#">7.</a>	Definitions . . . . .	<a href="#">5</a>
<a href="#">8.</a>	Usage Example . . . . .	<a href="#">18</a>
<a href="#">9.</a>	IANA Considerations . . . . .	<a href="#">18</a>
<a href="#">10.</a>	Security Considerations . . . . .	<a href="#">19</a>
<a href="#">11.</a>	Acknowledgments . . . . .	<a href="#">20</a>
<a href="#">12.</a>	References . . . . .	<a href="#">20</a>
<a href="#">12.1.</a>	Normative References . . . . .	<a href="#">20</a>
<a href="#">12.2.</a>	Informative References . . . . .	<a href="#">21</a>

[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)
```

```
+-- SyslogTimeStamp syslogMsgTimeStamp(5)
+-- DisplayString    syslogMsgHostName(6)
+-- DisplayString    syslogMsgAppName(7)
+-- DisplayString    syslogMsgProcID(8)
+-- DisplayString    syslogMsgMsgID(9)
+-- Unsigned32       syslogMsgSDParams(10)
+-- OctetString      syslogMsgMsg(11)
```

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.

```
--syslogMsgObjects(1)
|
+--syslogMsgSDTable(3)
|
+--syslogMsgSDEntry(1) [syslogMsgIndex,
                        syslogMsgSDParamIndex,
                        syslogMsgSDID,
                        syslogMsgSDParamName]
|
+-- Unsigned32      syslogMsgSDParamIndex(1)
+-- DisplayString    syslogMsgSDID(2)
+-- DisplayString    syslogMsgSDParamName(3)
+-- SyslogParamValueString syslogMsgSDParamValue(4)
```

## [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](#)].

The textual convention SyslogParamValueString uses the UTF-8 transformation format of the ISO/IEC IS 10646-1 character set defined in [[RFC3629](#)].

## [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"

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#### 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.

field	octets	contents	range
-----	-----	-----	-----
<a href="#">1</a>	1-2	year*	0..65536
<a href="#">2</a>	3	month	1..12
<a href="#">3</a>	4	day	1..31
<a href="#">4</a>	5	hour	0..23
<a href="#">5</a>	6	minutes	0..59
<a href="#">6</a>	7	seconds (use 60 for leap-second)	0..60
<a href="#">7</a>	8-10	microseconds*	0..999999
8	11	direction from UTC	'+' / '-'
<a href="#">9</a>	12	hours from UTC*	0..13
<a href="#">10</a>	13	minutes from UTC	0..59

\* 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](#)."



10646 standard from time to time, implementations must be prepared to encounter any code point from 0x00000000 to 0x7fffffff. 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

[RFC 5676](#)

SYSLOG-MSG-MIB

October 2009

#### 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

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
```

```
}
STATUS      current
DESCRIPTION
  "A collection of control objects to control the size of the
   syslogMsgTable and to enable/disable notifications."
 ::= { syslogMsgGroups 4 }
```

END

## [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:

- o `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.
- o `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:

- o 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.
- o 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

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

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2578] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Structure of Management Information Version 2 (SMIv2)", [RFC 2578](#), STD 58, April 1999.

- [RFC2579] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Textual Conventions for SMIv2", [RFC 2579](#), STD 58, April 1999.
- [RFC2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Conformance Statements for SMIv2", [RFC 2580](#), STD 58, 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.

- [RFC3412] Case, J., Harrington, D., Presuhn, R., and B. Wijnen, "Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)", STD 62, [RFC 3412](#), December 2002.
- [RFC3629] Yergeau, F., "UTF-8, a transformation format of ISO 10646", STD 63, [RFC 3629](#), November 2003.
- [RFC5424] Gerhards, R., "The Syslog Protocol", [RFC 5424](#), March 2009.
- [RFC5427] Keeni, G., "Textual Conventions for Syslog Management", [RFC 5427](#), March 2009.
- [RFC5675] Marinov, V. and J. Schoenwaelder, "Mapping Simple Network Management Protocol (SNMP) Notifications to SYSLOG Messages", [RFC 5675](#), October 2009.

## [12.2.](#) Informative References

- [RFC3014] Kavasseri, R., Ed., "Notification Log MIB", [RFC 3014](#), November 2002.
- [RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Management Framework", [RFC 3410](#), December 2002.

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