



Technical Specification

MEF 31.0.1

Amendment to Service OAM SNMP MIB for Fault Management

January 2012

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1. Introduction

The purpose of this document is to update the TC MIB requirements to include the Textual Conventions needed for the MEF SOAM PM MIB. The updated text is indicated by Tracked Changes for the appropriate sections.

The amendment makes the following changes:

Section 6:

Adds the following textual conventions: *MefSoamTcAvailabilityType*, *MefSoamTcDelayMeasurementBinType*, *MefSoamTcMeasurementPeriodType*, *MefSoamTcSessionType* and *MefSoamTcStatusType*.

Section 8:

Adds the following textual conventions to the MEF-SOAM-TC-MIB: *MefSoamTcAvailabilityType*, *MefSoamTcDelayMeasurementBinType*, *MefSoamTcMeasurementPeriodType*, and *MefSoamTcStatusType*, updates the date, and the references to MEF 30 and PM IA.

Section 10:

Updates reference to MEF 30 and PM IA.

6. SOAM TC MIB Requirements

The SOAM TC MIB defines the Textual Conventions that are to be used with other MEF SOAM MIB modules.

The SOAM TC MIB defines textual conventions for the following:

- *MefSoamTcAvailabilityType* - defines the availability of a MEP during a loss measurement session
- *MefSoamTcConnectivityStatusType* - the connectivity status type of a MEG or MEP
- *MefSoamTcDataPatternType* - defines the data pattern type used in Data TLVs
- *MefSoamTcDelayMeasurementBinType* - distinguishes between measurement bins for Frame Delay, Frame Delay Range, and Inter-frame Delay variation
- *MefSoamTcIntervalTypeAisLck* - defines the interval for sending AIS and LCK PDUs
- *MefSoamTcMegIdType* - defines the MEG ID type
- *MefSoamTcMeasurementPeriodType* - indicates the transmission time between the SOAM PM frames for a PM session
- *MefSoamTcOperationTimeType* - defines when an operation is initiated or stopped

- *MefSoamTcSessionType* - defines the type of a PM session (proactive or on-demand)
- *MefSoamTcStatusType* - defines the status of a PM session (measurement instance) of a MEP
- *MefSoamTcTestPatternType* - defines the test pattern used in Test TLVs

8. SOAM TC MIB Definitions

```
MEF-SOAM-TC-MIB DEFINITIONS ::= BEGIN

-- *****
-- TEXTUAL-CONVENTIONS MIB for Metro Ethernet Forum (MEF) SOAM (Service
-- Operations, Administration, and Maintenance)
-- *****

IMPORTS
    MODULE-IDENTITY, enterprises, Unsigned32
        FROM SNMPv2-SMI          -- RFC 2578
    TEXTUAL-CONVENTION
        FROM SNMPv2-TC;         -- RFC 2579

mefSoamTcMib MODULE-IDENTITY
    LAST-UPDATED      "201201100000Z" -- January 10, 2012
    ORGANIZATION      "Metro Ethernet Forum"
    CONTACT-INFO
        "Web URL: http://metroethernetforum.org/
        E-mail: mibs@metroethernetforum.org
        Postal: Metro Ethernet Forum
              6033 W. Century Boulevard, Suite 830
              Los Angeles, CA 90045
              U.S.A.
        Phone: +1 310-642-2800
        Fax:   +1 310-642-2808"
    DESCRIPTION
        "This MIB module defines the textual conventions used
        throughout the Ethernet Services Operations, Administration
        and Maintenance MIB modules.
        Copyright 2010 Metro Ethernet Forum.
        All rights reserved."

    REVISION      "201201100000Z" -- January 10, 2012
    DESCRIPTION   "Updated text to add textual conventions for the SOAM PM MIB."

    REVISION      "201010110000Z" -- October 11, 2010
    DESCRIPTION   "Initial Version."
    ::= { enterprises mef(15007) mefSoam(1) 1 }

-- *****
-- Reference Overview
--
-- A number of base documents have been used to create the Textual Conventions
-- MIB, the SOAM-PM MIB and SOAM-FM MIB. The following are the
-- abbreviations for the baseline documents:
--
-- [CFM] refers to 'Connectivity Fault Management', IEEE 802.1ag-2007,
-- December 2007
-- [MEF7.1] refers to MEF 7.1 'Phase 2 EMS-NMS Information Model',
```

```

--      October 2009
-- [MEF17] refers to MEF 17 'Service OAM Requirements & Framework - Phase 1',
--      April 2007
-- [MEF SOAM-PM] refers to MEF 35 'Service OAM Performance Monitoring
--      Implementation Agreement', January 2012
-- [MEF SOAM-FM] refers to MEF 30 'Service OAM Fault Management Implementation
--      Agreement', January 2011
-- [Q.840.1] refers to 'ITU-T Requirements and analysis for NMS-EMS
--      management interface of Ethernet over Transport and Metro Ethernet
--      Network (EoT/MEN)', March 2007
-- [Y.1731] refers to ITU-T Y.1731 'OAM functions and mechanisms for Ethernet
--      based networks', February 2008
-- *****
-- *****
-- Textual Conventions (TC)
-- *****
-- TC definitions are placed in alphabetical order

MefSoamTcAvailabilityType ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
        "This enumeration data type defines the availability of a session,
        measured by a loss measurement session.

        The valid enumerated values associated with this type are:

        available(1)      indicates the MEP is available.

        unavailable(2)    indicates the MEP is unavailable.

        unknown(3)       indicates the availability is not known, for
                        instance because insufficient time has passed to
                        make an availability calculation, the time has been
                        excluded because of a maintenance interval, or because
                        availability measurement is not enabled.
        "
    SYNTAX      INTEGER {
                available(1),
                unavailable(2),
                unknown(3)
                }

MefSoamTcConnectivityStatusType ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
        "This enumeration data type defines the connectivity status
        of a Maintenance Entity (ME) or a Maintenance Entity Group (MEG).

        The valid enumerated values associated with this type are:

        inactive(1)       indicates an inactive connectivity state of a group
                        and refers to the inability to exchange SOAM PDU frame
                        among any of the entities in a group.

        active(2)         indicates an active connectivity state of a group
                        and refers to the ability to exchange SOAM PDU frames
                        among all the entities in a group

        partiallyActive(3) indicates a partially active connectivity state of a
                        group and refers to the ability to exchange SOAM PDU
                        frames among some entities of a group. This enumerated
                        value is only applicable for Multipoint-to-Multipoint
                        MEG.
    "

```

```

"
REFERENCE
  "[MEF17] 9.2 and [MEF7.1] III.2 Enumeration"
SYNTAX   INTEGER {
          inactive(1),
          active(2),
          partiallyActive(3)
          }
MefSoamTcDataPatternType ::= TEXTUAL-CONVENTION
STATUS      current
DESCRIPTION
  "This enumeration data type indicates the type of data pattern to be
  sent in an OAM PDU Data TLV.

  The valid enumerated values associated with this type are:

  zeroPattern(1)           indicates the Data TLV contains all zeros
  onesPattern(2)          indicates the Data TLV contains all ones
"
SYNTAX     INTEGER {
          zeroPattern(1),
          onesPattern(2)
          }
MefSoamTcDelayMeasurementBinType ::= TEXTUAL-CONVENTION
STATUS      current
DESCRIPTION
  "This enumeration data type is used to distinguish between
  measurement bins for Frame Delay, Frame Delay Range, and
  Inter-frame Delay variation.

  The valid enumerated values associated with this type are:

  twoWayFrameDelay(1)      indicates a measurement bin for two-way
                          Frame Delay.
  forwardFrameDelay(2)     indicates a measurement bin for one-way
                          Frame Delay in the forward direction.
  backwardFrameDelay(3)    indicates a measurement bin for one-way
                          Frame Delay in the backward direction.
  twoWayIfdv(4)           indicates a measurement bin for two-way
                          Inter-frame Delay Variation.
  forwardIfdv(5)          indicates a measurement bin for one-way
                          Inter-frame Delay Variation in the forward
                          direction.
  backwardIfdv(6)         indicates a measurement bin for one-way
                          Inter-frame Delay Variation in the backward
                          direction.
  twoWayFrameDelayRange(7) indicates a measurement bin for two-way
                          Frame Delay Range.
  forwardFrameDelayRange(8) indicates a measurement bin for one-way
                          Frame Delay Range in the forward direction.
  backwardFrameDelayRange(9) indicates a measurement bin for one-way
                          Frame Delay Range in the backward direction.
"
SYNTAX     INTEGER {
          twoWayFrameDelay(1),
          forwardFrameDelay(2),
          backwardFrameDelay(3),
          twoWayIfdv(4),
          forwardIfdv(5),
          backwardIfdv(6),
          twoWayFrameDelayRange(7),
          forwardFrameDelayRange(8),

```

```

        backwardFrameDelayRange(9)
    }

MefSoamTcIntervalTypeAisLck ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
        "This enumeration data type defines the AIS/LCK transmission time
        interval for an Alarm Indication Signal (AIS) or LCK frame.

        The valid enumerated values associated with this type are:

        oneSecond(1)  indicates a one second transmission interval.
        oneMinute(2)  indicates a one minute transmission interval.
        "
    REFERENCE
        "[MEF7.1] III.2 Enumeration, [Y.1731] 7.4, 7.6"
    SYNTAX          INTEGER {
        oneSecond(1),
        oneMinute(2)
    }

MefSoamTcMeasurementPeriodType ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS          current
    DESCRIPTION
        "Indicates the transmission time between the SOAM PM frames for a
        PM session, in ms.
        "
    REFERENCE
        "[MEF SOAM-PM] R56"
    SYNTAX          Unsigned32 (3..3600000)

MefSoamTcMegIdType ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
        "This enumeration data type indicates the format of the MEG ID
        that is sent in the OAM PDUs. Types 1-4 are more fully explained
        in [CFM] 17.5. Type 32 is from [Y.1731] Annex A.

        The valid enumerated values associated with this type are:

        primaryVid(1)      Primary VLAN ID.
                            12 bits represented in a 2-octet integer:
                            - 4 least significant bits of the first
                              byte contains the 4 most significant
                              bits of the 12 bits primary VID
                            - second byte contains the 8 least
                              significant bits of the primary VID

                            0 1 2 3 4 5 6 7 8
                            +---+---+---+---+
                            |0 0 0 0| (MSB) |
                            +---+---+---+---+
                            |  VID  LSB  |
                            +---+---+---+---+

        charString(2)      RFC2579 DisplayString, except that the
                            character codes 0-31 (decimal) are not
                            used. (1..45) octets

        unsignedInt16 (3)  2-octet integer/big endian

        rfc2865VpnId(4)    RFC 2685 VPN ID
                            3 octet VPN authority Organizationally

```

Unique Identifier followed by 4 octet VPN
index identifying VPN according to the OUI:

```

0 1 2 3 4 5 6 7 8
+---+---+---+---+
| VPN OUI (MSB) |
+---+---+---+---+
| VPN OUI |
+---+---+---+---+
| VPN OUI (LSB) |
+---+---+---+---+
|VPN Index (MSB)|
+---+---+---+---+
| VPN Index |
+---+---+---+---+
| VPN Index |
+---+---+---+---+
|VPN Index (LSB)|
+---+---+---+---+

```

iccBased (32) ICC-based MEG ID Format, thirteen octet field

REFERENCE

"[Y.1731] Table A-1, [CFM] 17.5, 21.6.5.1"

```

SYNTAX      INTEGER {
    primaryVid (1),
    charString (2),
    unsignedInt16 (3),
    rfc2865VpnId (4),
    iccBased (32)
}

```

MefSoamTcOperationTimeType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This enumeration data type indicates the operation type start or end time to indicate when an OAM operation is initiated or stopped.

The valid enumerated values associated with this type are:

```

none(1)      The operation is never started or is stopped immediately
              if used to indicate a start time, or the operation never
              ends if it is used to indicate an end time
immediate(2) The operation is to begin immediately
relative(3)  The operation is to begin at a relative time from the
              current time or stop a relative time after it has started
fixed(4)     The operation is to begin/stop at the given UTC time/date

```

REFERENCE

"[SOAM-PM] R2, [SOAM-FM] 8.7"

```

SYNTAX      INTEGER {
    none(1),
    immediate(2),
    relative(3),
    fixed(4)
}

```

MefSoamTcSessionType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This enumeration data type defines the status of PM session of a MEP.

The valid enumerated values associated with this type are:

```
proactive(1)    indicates the measurement instance is Proactive
onDemand(2)    indicates the measurement instance is On-demand
```

"

```
SYNTAX        INTEGER {
                proactive(1),
                onDemand(2)
            }
```

MefSoamTcStatusType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This enumeration data type defines the status of PM session of a MEP.

The valid enumerated values associated with this type are:

```
active(1)       indicates the measurement instance is active
notActive(2)    indicates the measurement instance is not active
```

"

```
SYNTAX        INTEGER {
                active(1),
                notActive(2)
            }
```

MefSoamTcTestPatternType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This enumeration data type indicates the type of test pattern to be sent in an OAM PDU Test TLV.

The valid enumerated values associated with this type are:

```
null(1)         Null signal without CRC-32
nullCrc32(2)    Null signal with CRC-32
prbs(3)         PRBS 2^31-1 without CRC-32
prbsCrc32(4)    PRBS 2^31-1 with CRC-32
```

"

REFERENCE

"[MEF7.1], Appendix III.2 Enumeration, [Y.1731] 7.7"

```
SYNTAX        INTEGER {
                null(1),
                nullCrc32(2),
                prbs(3),
                prbsCrc32(4)
            }
```

END

10. References

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- [21] IEEE Std 802.3-2008, *IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications*, 26 December 2008.
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