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Definitions of Textual Conventions for Generalized Multiprotocol Label Switching (GMPLS) Management

Status of This Memo

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Abstract

This document defines a Management Information Base (MIB) module that contains textual conventions (TCs) to represent commonly used Generalized Multiprotocol Label Switching (GMPLS) management information. The intent is that these textual conventions will be imported and used in GMPLS-related MIB modules that would otherwise define their own representations.

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1. Introduction

This document defines a MIB module that contains textual conventions (TCs) for Generalized Multiprotocol Label Switching (GMPLS) networks. These textual conventions should be imported by MIB modules that manage GMPLS networks.

This MIB module supplements the MIB module in [RFC3811] that defines textual conventions for Multiprotocol Label Switching (MPLS) management. [RFC3811] may continue to be used without this MIB module in networks that support only MPLS.

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 BCP 14, RFC 2119 [RFC2119].

For an introduction to the concepts of GMPLS, see [RFC3945].

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. GMPLS Textual Conventions MIB Definitions

This MIB module makes reference to the following documents: [RFC2578], [RFC2579], [RFC3471], and [RFC3811].

```
GMPLS-TC-STD-MIB DEFINITIONS ::= BEGIN

IMPORTS
  MODULE-IDENTITY
    FROM SNMPv2-SMI                                    -- RFC 2578
  TEXTUAL-CONVENTION
    FROM SNMPv2-TC                                     -- RFC 2579
  mplsStdMIB
    FROM MPLS-TC-STD-MIB                               -- RFC 3811
;

gmplsTCStdMIB MODULE-IDENTITY
  LAST-UPDATED
    "200702280000Z" -- 28 February 2007 00:00:00 GMT
  ORGANIZATION
    "IETF Common Control and Measurement Plane (CCAMP) Working Group"
  CONTACT-INFO
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     Comments about this document should be emailed directly to the
     CCAMP working group mailing list at ccamp@ops.ietf.org"
  DESCRIPTION
    "Copyright (C) The IETF Trust (2007).  This version of
     this MIB module is part of RFC 4801; see the RFC itself for
     full legal notices.

     This MIB module defines TEXTUAL-CONVENTIONs for concepts used in
     Generalized Multiprotocol Label Switching (GMPLS) networks."
  REVISION
     "200702280000Z" -- 28 February 2007 00:00:00 GMT
  DESCRIPTION
    "Initial version published as part of RFC 4801."
::= { mplsStdMIB 12 }

GmplsFreeformLabelTC ::= TEXTUAL-CONVENTION
  STATUS      current
  DESCRIPTION
```

```
      "This TEXTUAL-CONVENTION can be used as the syntax of an object
       that contains any GMPLS Label.  Objects with this syntax can be
       used to represent labels that have label types that are not
       defined in any RFCs.  The freeform GMPLS Label may also be used
       by systems that do not wish to represent labels that have
       label types defined in RFCs using type-specific syntaxes."
    REFERENCE
      "1. Generalized Multi-Protocol Label Switching (GMPLS) Signaling
          Functional Description, RFC 3471, section 3.2."
    SYNTAX OCTET STRING (SIZE (0..64))

  GmplsLabelTypeTC ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
      "Determines the interpretation that should be applied to an
       object that encodes a label.  The possible types are:

       gmplsMplsLabel(1)           - The label is an MPLS Packet, Cell,
                                     or Frame Label and is encoded as
                                     described for the TEXTUAL-
                                     CONVENTION MplsLabel defined in
                                     RFC 3811.

       gmplsPortWavelengthLabel(2) - The label is a Port or Wavelength
                                     Label as defined in RFC 3471.

       gmplsFreeformLabel(3)       - The label is any form of label
                                     encoded as an OCTET STRING using
                                     the TEXTUAL-CONVENTION
                                     GmplsFreeformLabel.

       gmplsSonetLabel(4)          - The label is a Synchronous Optical
                                     Network (SONET) Label as
                                     defined in RFC 4606.

       gmplsSdhLabel(5)            - The label is a Synchronous Digital
                                     Hierarchy (SDH) Label as defined
                                     in RFC 4606.

       gmplsWavebandLabel(6)       - The label is a Waveband Label as
                                     defined in RFC 3471."
    REFERENCE
      "1. Generalized Multi-Protocol Label Switching (GMPLS) Signaling
          Functional Description, RFC 3471, section 3.
       2. Definition of Textual Conventions and for Multiprotocol Label
          Switching (MPLS) Management, RFC 3811, section 3.
       3. Generalized Multi-Protocol Label Switching (GMPLS) Extensions
          for Synchronous Optical Network (SONET) and Synchronous
```

```
            Digital Hierarchy (SDH) Control, RFC 4606."
       SYNTAX INTEGER {
         gmplsMplsLabel(1),
         gmplsPortWavelengthLabel(2),
         gmplsFreeformGeneralizedLabel(3),
         gmplsSonetLabel(4),
         gmplsSdhLabel(5),
         gmplsWavebandLabel(6)
       }

   GmplsSegmentDirectionTC ::= TEXTUAL-CONVENTION
     STATUS      current
     DESCRIPTION
       "The direction of data flow on an Label Switched Path (LSP)
        segment with respect to the head of the LSP.

        Where an LSP is signaled using a conventional signaling
        protocol, the 'head' of the LSP is the source of the signaling
        (also known as the ingress) and the 'tail' is the destination
        (also known as the egress).  For unidirectional LSPs, this
        usually matches the direction of flow of data.

        For manually configured unidirectional LSPs, the direction of
        the LSP segment matches the direction of flow of data.  For
        manually configured bidirectional LSPs, an arbitrary decision
        must be made about which LER is the 'head'."
     SYNTAX  INTEGER {
       forward(1),   -- data flows from head-end of LSP toward tail-end
       reverse(2)    -- data flows from tail-end of LSP toward head-end
     }

   END
```

4. Security Considerations

This module does not define any management objects. Instead, it defines a set of textual conventions which may be used by other GMPLS MIB modules to define management objects.

Meaningful security considerations can only be written in the MIB modules that define management objects. Therefore, this document has no impact on the security of the Internet.

5. IANA Considerations

IANA has rooted MIB objects in this MIB module under the mplsStdMIB subtree by assigning an OID to gmplsTCStdMIB.

IANA has made the following assignments in the "NETWORK MANAGEMENT PARAMETERS" registry located at http://www.iana.org/assignments/smi-numbers in table:

...mib-2.transmission.mplsStdMIB (1.3.6.1.2.1.10.166)

Decimal	Name	References
12	GMPLS-TC-STD-MIB	[RFC4801]

In the future, GMPLS-related standards-track MIB modules should be rooted under the mplsStdMIB (sic) subtree. IANA has been requested to manage that namespace in the SMI Numbers registry [RFC3811]. New assignments can only be made via a Standards Action as specified in [RFC2434].

6. References

6.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC2434] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 2434, October 1998.

[RFC2578] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Structure of Management Information Version 2 (SMIv2)", STD 58, RFC 2578, April 1999.

[RFC2579] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Textual Conventions for SMIv2", STD 58, RFC 2579, April 1999.

[RFC2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Conformance Statements for SMIv2", STD 58, RFC 2580, April 1999.

[RFC3471] Berger, L., "Generalized Multi-Protocol Label Switching (GMPLS) Signaling Functional Description", RFC 3471, January 2003.

[RFC3811] Nadeau, T. and J. Cucchiara, "Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management", RFC 3811, June 2004.

[RFC4606] Mannie, E. and D. Papadimitriou, "Generalized Multi-Protocol Label Switching (GMPLS) Extensions for Synchronous Optical Network (SONET) and Synchronous Digital Hierarchy (SDH) Control", RFC 4606, August 2006.

6.2. Informative References

[RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Management Framework", RFC 3410, December 2002.

[RFC3945] Mannie, E., "Generalized Multi-Protocol Label Switching (GMPLS) Architecture", RFC 3945, October 2004.

7. Acknowledgements

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