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A SNMP MIB to manage GMPLS with General Constraints support  
draft-gmngm-ccamp-gencons-snmp-mib-01

## Abstract

This memo defines a portion of the Management Information Base (MIB) used by Simple Network Management Protocol (SNMP) for GMPLS based networks.

In particular in the context Wavelength Switching Optical Network (WSON) two sets of information were defined: a general constraints set (reusable by other technologies) and a WSON specific set. This document defines a MIB module for supporting general constraint information.

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GMPLS General Constrain MIB

October 2012

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GMPLS General Constrain MIB

October 2012

## 1. Introduction

This memo defines a portion of the Management Information Base (MIB) used by Simple Network Management Protocol (SNMP) in GMPLS networks in particular for Wavelength Switched Optical Networks (WSON) as defined in [\[RFC6163\]](#).

Those extentions were divided in two parts: generic constrains (as they can be easily applied to other technologies) and WSON specific constraints. This document aim to defines MIBs extentions to cover only the generic constrain part. The WSON specific MIB extentions will be covered by a separate document [\[I-D.gmggm-ccamp-wson-snmp-mib\]](#).

As such, document [\[I-D.ietf-ccamp-general-constraint-encode\]](#) defines specific TLVs while [\[I-D.ietf-ccamp-gmpls-general-constraints-ospf-te\]](#) implement OSPF-TE related extentions. This MIB document aim to cover information defined in those general constrain drafts.

[EDITOR NOTE] Very early draft to start MIB activity on GMPSL-WSON related extentions and collect feedback from working group.

## 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 [RFC 2119](#) [[RFC2119](#)]. In the description of OIDs the convention: Set (S) Get (G) and Trap (T) conventions will describe the action allowed by the parameter.

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### 4. Overview

Regarding existing GMPLS MIBs modules, since the TED module [[I-D.ietf-ccamp-gmpls-ted-mib](#)] already provides an extension to previous GMPLS modules, we provide here a direct extension to it. Additional GMPLS MIB modules this document uses are [[RFC4802](#)] and [[RFC4803](#)].

Current GMPLS MIBs are covered by several documents. The most important to reference here are the [[RFC4802](#)] and [[RFC4803](#)]. Most recent works on GMPLS MIBs is in [[I-D.ietf-ccamp-gmpls-ted-mib](#)], whenever possible this document will reuse the same approach.

General constraints can be classified in two broad categories: link information (as other GMPLS TED information) and Node information (this is different from what currently available). For link information the most similar definitions are the ones from [[RFC4803](#)] where the label table is defined. For node information however, new specific information has to be defined.

### 5. Structure of the MIB Module

Modules defined here provide additional information to existing GMPLS MIBs in order to represent the general constraint information as reported in [[I-D.ietf-ccamp-general-constraint-encode](#)]. This module is organized into two tables as reported in the following subsections.

### [5.1.](#) gmplsGenConsAvailableLabelsTable

This object represent the Available Labels sub-TLV as defined in [[I-D.ietf-ccamp-general-constraint-encode](#)] [section 2.3](#). The object represent a list of labels available on a given link, so the object looks very similar to gmplsLabelTable defined in [[RFC4803](#)] (so the GmplsLabelEntry might be reused here). The table entry will likely need a reference to [[I-D.ietf-ccamp-gmpls-ted-mib](#)] (the index of the corresponding TED MIB entry). The entry definition must report also the priority associated to the label set as defined in sub-TLV.

Note that there should be some relationship among entries in this table and entries in gmplsLabelTable: if a label appears in this table, it cannot appear in gmplsLabelTable.

### [5.2.](#) gmplsGenConsSharedBackupLabelsTable

This object is exactly the equivalent of gmplsGenConsAvailableLabels but for backup/restoration purpose. The object table will be

different but the table entry will be the same as the previous table.

### [5.3.](#) gmplsGenConsNodeTable

This table indicates the Node constraints introduced by [[I-D.ietf-ccamp-general-constraint-encode](#)] as additional constrains compared to link/label constrains reported above.

Among main information available in this table there are:

- o Connectivity Matrixes. This information represent some node internal constrain in term of connectivity. More than one matrix can be defined for a node.
- o Port Labels restrictions. This information represent a constrain on ports vs labels (i.e. some ports may not support all wavelenghts).

TBD how to organize this information.

## [6.](#) Relationship to Other MIB Modules

[6.1.](#) Relationship to the [TEMPLATE TODO] MIB

[6.2.](#) MIB modules required for IMPORTS

## [7.](#) Definitions

```
TED-GENCONS-MIB DEFINITIONS ::= BEGIN
    -- to be added once the structure is clearly defined

END
```

## [8.](#) 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:

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.

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.

## 9. IANA Considerations

### Option #1:

The MIB module in this document uses the following IANA-assigned OBJECT IDENTIFIER values recorded in the SMI Numbers registry:

Descriptor	OBJECT IDENTIFIER value
-----	-----
sampleMIB	{ mib-2 XXX }

### Option #2:

Editor's Note (to be removed prior to publication): the IANA is requested to assign a value for "XXX" under the 'mib-2' subtree and to record the assignment in the SMI Numbers registry. When the assignment has been made, the RFC Editor is asked to replace "XXX" (here and in the MIB module) with the assigned value and to remove this note.

Note well: prior to official assignment by the IANA, an internet draft MUST use placeholders (such as "XXX" above) rather than actual numbers. See [RFC4181 Section 4.5](#) for an example of how this is done in an internet draft MIB module.

### Option #3:

This memo includes no request to IANA.

## 10. Contributors

to be added.

## 11. References

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[Appendix A](#). Change Log

This optional section should be removed before the internet draft is submitted to the IESG for publication as an RFC.

Note to RFC Editor: please remove this appendix before publication as an RFC.

[Appendix B](#). Open Issues

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