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Definitions of Managed Objects for  
the General Switch Management Protocol (GSMP)

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## 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 describes managed objects for the General Switch Management Protocol (GSMP).

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Internet Draft

GSMP MIB

June 2000

## 1. Introduction

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it describes managed objects for the General Switch Management Protocol (GSMP). [[RFC1987](#)].

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](#)].

## 2. The SNMP Management Framework

The SNMP Management Framework presently consists of five major components:

- \* An overall architecture, described in [RFC 2571](#) [[RFC2571](#)].
- \* Mechanisms for describing and naming objects and events for the purpose of management. The first version of this Structure of Management Information (SMI) is called SMIV1 and described in STD 16, [RFC 1155](#) [[RFC1155](#)], STD 16, [RFC 1212](#) [[RFC1212](#)] and [RFC 1215](#) [[RFC1215](#)]. The second version, called SMIV2, is described in STD 58, [RFC 2578](#) [[RFC2578](#)], [RFC 2579](#) [[RFC2579](#)] and [RFC 2580](#) [[RFC2580](#)].
- \* Message protocols for transferring management information. The first version of the SNMP message protocol is called SNMPv1 and described in STD 15, [RFC 1157](#) [[RFC1157](#)]. A second version of the SNMP message protocol, which is not an Internet standards track protocol, is called SNMPv2c and described in [RFC 1901](#) [[RFC1901](#)] and [RFC 1906](#) [[RFC1906](#)]. The third version of the message protocol is called SNMPv3 and described in [RFC 1906](#) [[RFC1906](#)], [RFC 2572](#) [[RFC2572](#)] and [RFC 2574](#) [[RFC2574](#)].
- \* Protocol operations for accessing management information. The

first set of protocol operations and associated PDU formats is described in STD 15, [RFC 1157](#) [[RFC1157](#)]. A second set of operations and associated PDU formats is described in 1905 [[RFC1905](#)].

- \* A set of fundamental applications described in [RFC 2573](#) [[RFC2573](#)] and the view-based access control mechanism described [RFC 2575](#) [[RFC2575](#)].

A more detailed introduction to the current SNMP Management Framework can be found in [RFC 2570](#) [[RFC2570](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the mechanisms defined in the SMI.

This memo specifies a MIB module that is compliant to the SMIV2. A MIB conforming to the SMIV1 can be produced through the appropriate translations. The resulting translated MIB must be semantically equivalent, except where objects or events are omitted because no translation is possible (use of Counter64). Some machine readable information in SMIV2 will be converted into textual descriptions in SMIV1 during the translation process. However, this loss of machine readable information is not considered to change the semantics of the MIB.

### [3. Structure of the MIB](#)

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it describes managed objects for the General Switch Management Protocol (GSMP) as defined in [[GSMPv3](#)].

#### [3.1 Overview](#)

The MIB provides objects to configure/set-up potential GSMP sessions on specific switch or controllers. Two tables are used to configure potential GSMP sessions, where each row in the table initiates a GSMP session. To create a Virtual Switch, an entry in the `gsmPVseTable` is created. To create a Virtual Switch Controller, an entry in the `gsmPVsceTable` is created.

In order to define and configure what encapsulation the potential GSMP session shall use, the `encapType` object in the respective tables is set to either `ethernet`, `atm` or `tcp/ip`. If `atm` is used, a row in the `gsmPAtmEncapTable` has to be created with the same index. If `tcp/ip` is used, a row in the `gsmPTcpIpEncapTable` has to be created with the same index. No extra encapsulation info is needed if `ethernet` is used.

Another table, the `gsmPSessionTable`, shows the actual sessions that have been, or are in the process of being established. Each row represents a specific session between an Entity and a peer. This table carries information about the peer, the session and parameters that was negotiated by the adjacency procedures. The `gsmPSessionStatTable` augments the `gsmPSessionTable` with statistical information regarding the session.

## [3.2 MIB groups](#)

### [3.2.1 GSMP Virtual Switch Controller group](#)

The VSCE group is used to configure a potential GSMP session on a Virtual Switch Controller. A row in the `gsmpVsceTable` is created for each such session. If ATM or TCP/IP encapsulation is used a corresponding row has to be created in these tables before the session adjacency protocol is initiated.

The encapsulation used is specified in the `encap` type object. If ATM or TCP/IP is used, further `encap` data is defined in the corresponding encapsulation tables. If ethernet is used the MAC address of the interface defined for the session is set by the VSCE ID object.

The adjacency parameters are defined; such as

- Max supported GSMP version
- ; Time between the periodic adjacency messages
- ; VSCE Name, local port number and instance number.
- ; The partition ID for this specific partition if partitions are used.
- ; The switch type defined by the manufacturer, which might be predefined or configured.

The maximum number of controllers that are allowed for this VSE, which e.g. could be used to restrict multiple controllers if set to one. Also, the suggested maximum window size for unacknowledged request messages could be set.

The notification mapping is set to specify for with events the corresponding SNMP notifications are sent.

### [3.2.2 GSMP Virtual Switch group](#)

The VSE group is used to configure a potential GSMP session on a Virtual Switch. A row in the `gsmpVseTable` is created for each such session. If ATM or TCP/IP encapsulation is used a corresponding row has to be created in these tables before the session adjacency protocol is initiated.

The encapsulation used is specified in the `encap` type object. If ATM or TCP/IP is used, further `encap` data is defined in the corresponding encapsulation tables. If ethernet is used the MAC

address of the interface defined for the session is set by the VSE ID object.

The adjacency parameters are defined; such as

- Max supported GSMP version
- ; Time between the periodic adjacency messages
- ; VSCE Name, local port number and instance number.
- ; The partition ID for this specific partition if partitions are used.

The resynchronisation strategy for the session is specified. Also, a notification mapping is set to specify for with events the corresponding SNMP notifications are sent.

### [3.2.3](#) GSMP Encapsulation groups

The ATM Encapsulation Table and the TCP/IP Encapsulation Table provides a way to configure information that are encapsulation specific. The encapsulation data is further specified in [[GSMPenc](#)].

If ATM encapsulation is used, the interface and the virtual channel are specified.

If TCP/IP is used, the IP address and the port number are specified.

No special config data needed if Ethernet encapsulation is used.

### [3.2.4](#) GSMP General group

The GSMP session table provides a way to define, configure and monitor new GSMP session. Each row in the GSMP session table will have a corresponding row in the session statistics table.

The session is defined by a Virtual Switch Controller Entity and Virtual Switch Entity pair.

### [3.2.5](#) The GSMP Notifications Group

The GSMP Notification Group defines notifications for GSMP entities. These notifications provide a mechanism for a GSMP device to inform the management station of status changes. Also a

notification is defined for each type of GSMP events. To disable or enable sending of the notifications is done by setting the bitmap accordingly in the Notification mapping objects in the VSCE or VSE tables.

The group of notifications consists of the following notifications:

1) gsmpSessionDownTrap

This notification is generated when a session is terminating, to report the final accounting statistics of the session.

2) gsmpSessionUpTrap

This notification is generated when a new session is established.

3) gsmpSendFailureIndicationTrap

This notification is generated when a message with a failure indication was sent. This means that this notification identifies a change to the gsmpSessionStatFailureIndication object in a row of the gsmpSessionStatsTable.

4) gsmpReceivedFailureIndicationTrap

This notification is generated when a message with a failure indication received. This means that this notification identifies a change to the gsmpSessionStatReceivedFailure object in a row of the gsmpSessionStatsTable.

5) gsmpPortUpEventTrap

This notification is generated when a Port Up Event occurs. This means that this notification identifies a change to the gsmpSessionStatPortUpEvents object in a row of the gsmpSessionStatsTable.

6) gsmpPortDownEventTrap

This notification is generated when a Port Down Event occurs. This means that this notification identifies a change to the



gsmpSessionStatPortDownEvents object in a row of the gsmpSessionStatsTable.

7) gsmpInvalidLabelEventTrap

This notification is generated when an Invalid Label Event occurs. This means that this notification identifies a change to the gsmpSessionStatInvalidLabelEvents object in a row of the gsmpSessionStatsTable.

8) gsmpNewPortEventTrap

This notification is generated when New Port Event occurs. This means that this notification identifies a change to the gsmpSessionStatNewPortEvents object in a row of the gsmpSessionStatsTable.

9) gsmpDeadPortEventTrap

This notification is generated when a Dead Port Event occurs. This means that this notification identifies a change to the gsmpSessionStatDeadPortEvents object in a row of the gsmpSessionStatsTable.

10) gsmpAdjacencyUpdateEventTrap

This notification is generated when an Adjacency Update Event occurs. This means that this notification identifies a change to the gsmpSessionStatAdjacencyUpdateEvents object in a row of the gsmpSessionStatsTable.

#### [4.](#) GSMP MIB Definitions

```
GSMP-MIB DEFINITIONS ::= BEGIN
```

```
    IMPORTS
```

```
        OBJECT-TYPE, MODULE-IDENTITY, NOTIFICATION-TYPE,
        Unsigned32, experimental, Integer32, Counter32,IpAddress,BITS
        FROM SNMPv2-SMI
        MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
        FROM SNMPv2-CONF
```

```
RowStatus,TruthValue,TimeStamp
  FROM SNMPv2-TC
InterfaceIndex
  FROM IF-MIB
AtmVcIdentifier, AtmVpIdentifier
  FROM ATM-TC-MIB
;
```

gsmpMIB MODULE-IDENTITY

```
LAST-UPDATED "0006091400Z" -- 9 June 2000, 16.00 MET DST
ORGANIZATION "General Switch Management Protocol (gsmp)
              Working Group"
```

CONTACT-INFO

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```

DESCRIPTION

```
"This MIB contains managed object definitions for the
General Switch Management Protocol, GSMP, version 3"
 ::= { experimental 9877 } -- to be assigned
```

```
--*****
-- GSMP Textual Conventions
--*****
```

```
gsmpObjects          OBJECT IDENTIFIER ::= { gsmpMIB 1 }
gsmpNotifications    OBJECT IDENTIFIER ::= { gsmpMIB 2 }
gsmpConformance      OBJECT IDENTIFIER ::= { gsmpMIB 3 }
```

```
--*****
-- GSMP Entity Objects
--*****
```

```
--
-- Virtual Switch Controller Entity table
--
```

```
gsmpVsceTable OBJECT-TYPE
  SYNTAX          SEQUENCE OF GsmpVsceEntry
```

MAX-ACCESS not-accessible  
 STATUS current  
 DESCRIPTION  
 "This table represents the Virtual Switch Controller  
 Entity that needs to be configured before a gsmp session  
 might be started."  
 ::= { gsmpObjects 1 }

gsmpVsceEntry OBJECT-TYPE  
 SYNTAX GsmpVsceEntry  
 MAX-ACCESS not-accessible  
 STATUS current  
 DESCRIPTION  
 "An entry in the table showing  
 the data for a specific Virtual Switch Controller  
 Entity. "  
 INDEX { gsmpVsceId }  
 ::= { gsmpVsceTable 1 }

GsmpVsceEntry ::= SEQUENCE {  
 gsmpVsceId OCTET STRING,  
 gsmpVsceEncapType INTEGER,  
 gsmpVsceMaxVersion INTEGER,  
 gsmpVsceTimer Unsigned32,  
 gsmpVsceName OCTET STRING,  
 gsmpVscePort Unsigned32,  
 gsmpVsceInstance Unsigned32,  
 gsmpVscePartitionId OCTET STRING,  
 gsmpVsceDoResync TruthValue,  
 gsmpVsceNotificationMapping BITS,  
 gsmpVsceRowStatus RowStatus  
 }

gsmpVsceId OBJECT-TYPE  
 SYNTAX OCTET STRING (SIZE(6))  
 MAX-ACCESS not-accessible  
 STATUS current  
 DESCRIPTION  
 "The Virtual Switch Controller Entity Id is a 48-  
 bit quantity that is unique within the operational  
 context of the device. A 48-bit IEEE 802 MAC address, if  
 available, may be used for the VCSE Id."  
 ::= { gsmpVsceEntry 1 }

gsmpVsceEncapType OBJECT-TYPE  
 SYNTAX INTEGER {  
 ethernet(1),  
 atm(2),  
 tcpip(3)  
 }  
 MAX-ACCESS read-create

STATUS current  
DESCRIPTION  
"The encapsulation used to for this Vsce.

If atm, a corresponing row in the gsmpAtmEncapTable has to be defined.  
If tcpip, a corresponing row in the gsmpTcpIpEncapTable has to be defined."  
 ::= { gsmpVsceEntry 2 }

gsmpVsceMaxVersion OBJECT-TYPE

SYNTAX INTEGER {  
 version1dot1(1),  
 version2dot0(2),  
 version3(3)  
 }

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The max version number of the GSMP protocol being used in this session. The version is negotiated by the adjacency protocol."

::= { gsmpVsceEntry 3 }

gsmpVsceTimer OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The timer specifies the nominal time between periodic adjacency protocol messages. It is a constant for the duration of a GSMP session. The timer is specified in units of 100ms."

::= { gsmpVsceEntry 4 }

gsmpVsceName OBJECT-TYPE

SYNTAX OCTET STRING

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The name of the VSCE as advertised in the adjacency message. The most first three octets must be an Organisationally Unique Identifier (OUI) that identifies the manufacturer of the VSCE."

::= {gsmpVsceEntry 5}

gsmpVscePort OBJECT-TYPE

SYNTAX Unsigned32  
MAX-ACCESS read-create  
STATUS current

DESCRIPTION

"The local port number for the Virtual Switch Controller Entity."

::= { gsmpVsceEntry 6 }

gsmpVsceInstance OBJECT-TYPE

SYNTAX Unsigned32  
MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The instance number for the Virtual Switch Controller Entity."

::= { gsmpVsceEntry 7 }

gsmpVscePartitionId OBJECT-TYPE

SYNTAX OCTET STRING (SIZE(1))  
MAX-ACCESS read-only  
STATUS current

DESCRIPTION

"The Id for the specific switch partition that this Vsce is concerned with. The format of the Partition ID is not defined in GSMP. If desired, the Partition ID can be divided into multiple sub-identifiers within a single partition."

::= { gsmpVsceEntry 8 }

gsmpVsceDoResync OBJECT-TYPE

SYNTAX TruthValue  
MAX-ACCESS read-create  
STATUS current

DESCRIPTION

"In case of loss of synchronisation, should the controller resynchronise or should it reset. If this object is set to true than the Vsce should resync with PFLAG=2."

::= { gsmpVsceEntry 9 }

gsmpVsceNotificationMapping OBJECT-TYPE

```

SYNTAX          BITS {
                sessionDown(0),
                sessionUp(1),
                sendFailiureIndication(2),
                receivedFailiureIndication(3),
                portUpEvent(4),
                portDownEvent(5),
                invalidLabelEvent(6),
                newPortEvent(7),
                deadPortEvent(8),
                adjacencyUpdateEvent(9)
                }
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "This bitmap defines wheither a corresponding SNMP
    notification should be send if an GSMP event is received
    by the VSCE. If the bit is set to 1 a notfication should
    be send."
 ::= { gsmpVsceEntry 10 }

```

```

gsmpVsceRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current

```

```

DESCRIPTION
    "An object that allows entries in this table to
    be created and deleted using the
    RowStatus convention."
 ::= { gsmpVsceEntry 11 }

--
-- Virtual Switch Entity table
--

gsmpVseTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF GsmpVseEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table represents the Virtual Switch
        Entity that needs to be configured before a gsmp session
        might be started."

```

```
::= { gsmpObjects 2 }
```

gsmpVseEntry OBJECT-TYPE

```
SYNTAX          GsmpVseEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "An entry in the table showing
    the data for a specific Virtual Switch Controller
    Entity. "
INDEX { gsmpVseId }
 ::= { gsmpVseTable 1 }
```

GsmpVseEntry ::= SEQUENCE {

```
gsmpVseId          OCTET STRING,
gsmpVseEncapType   INTEGER,
gsmpVseMaxVersion  INTEGER,
gsmpVseTimer       Unsigned32,
gsmpVseName        OCTET STRING,
gsmpVsePort        Unsigned32,
gsmpVseInstance   Unsigned32,
gsmpVsePartitionId OCTET STRING,
gsmpVseAllowMultContr Unsigned32,
gsmpVseNotificationMapping BITS,
gsmpVseSwitchType OCTET STRING,
gsmpVseWindowSize Unsigned32,
gsmpVseRowStatus   RowStatus
}
```

gsmpVseId OBJECT-TYPE

```
SYNTAX          OCTET STRING (SIZE(6))
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "The Virtual Switch Controller Entity Id is a 48-
    bit quantity that is unique within the operational
```

```
context of the device. A 48-bit IEEE 802 MAC address, if
available, may be used for the VSE Id."
```

```
::= { gsmpVseEntry 1 }
```

gsmpVseEncapType OBJECT-TYPE

```
SYNTAX          INTEGER {
                ethernet(1),
```

```

        atm(2),
        tcpip(3)
    }
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "The encapsulation used to for this Vse.
    If atm, a corresponing row in the gsmpAtmEncapTable
    has to be defined.
    If tcpip, a corresponing row in the gsmpTcpIpEncapTable
    has to be defined."
 ::= { gsmpVseEntry 2 }

gsmpVseMaxVersion OBJECT-TYPE
    SYNTAX      INTEGER {
                    version1dot1(1),
                    version2dot0(2),
                    version3(3)
                }
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "The max version number of the GSMP protocol being
        supported by this VSE. The version is negotiated by the
        adjacency protocol."
 ::= { gsmpVseEntry 3 }

gsmpVseTimer OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "The timer specifies the nominal time between
        periodic adjacency protocol messages. It is a constant
        for the duration of a GSMP session. The timer is
        specified in units of 100ms."
 ::= { gsmpVseEntry 4 }

gsmpVseName OBJECT-TYPE
    SYNTAX      OCTET STRING
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "The name of the Vse. The first three octets must be an
        Organisationally Unique Identifier (OUI) that identifies
        the manufacturer of the Vse."
 ::= { gsmpVseEntry 5}

```



```
gsmpVsePort OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The local port number for the Virtual Switch
        Entity."
    ::= { gsmpVseEntry 6 }

gsmpVseInstance OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The instance number for the Virtual Switch
        Entity."
    ::= { gsmpVseEntry 7 }

gsmpVsePartitionId OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE(1))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The Id for this specific switch partition that the Vse
        is represents. The format of the Partition ID is not
        defined in GSMP. "
    ::= { gsmpVseEntry 8 }

gsmpVseAllowMultContr OBJECT-TYPE
    SYNTAX      Unsigned32(0..255)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This object specifies the maximum number of controllers
        are alloed to control this VSE."
    ::= { gsmpVseEntry 9 }

gsmpVseNotificationMapping OBJECT-TYPE
    SYNTAX      BITS {
        sessionDown(0),
        sessionUp(1),
        sendFailiureIndication(2),
        receivedFailiureIndication(3),
        portUpEvent(4),
        portDownEvent(5),
        invalidLabelEvent(6),
        newPortEvent(7),
```

```

                                deadPortEvent(8),
                                adjacencyUpdateEvent(9)
                                }
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION

```

"This bitmap defines whether a corresponding SNMP notification should be send if an GSMP event is send by the VSE. If the bit is set to 1 a notfication should be send."

```
 ::= { gsmpVseEntry 10 }
```

```
gsmpVseSwitchType OBJECT-TYPE
```

```
SYNTAX      OCTET STRING (SIZE(2))
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

```
DESCRIPTION
```

"A 16-bit field allocated by the manufacturer of the switch. The Switch Type identifies the product. When the Switch Type is combined with the OUI from the Switch Name the product is uniquely identified. "

```
 ::= { gsmpVseEntry 11 }
```

```
gsmpVseWindowSize OBJECT-TYPE
```

```
SYNTAX      Unsigned32(1..65535)
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

```
DESCRIPTION
```

"The maximum number of unacknowledged request messages that may be transmitted by the controller without the possibility of loss. This field is used to prevent request messages being lost in the switch because of overflow in the receive buffer. The field is a hint to the controller."

```
 ::= { gsmpVseEntry 12 }
```

```
gsmpVseRowStatus OBJECT-TYPE
```

```
SYNTAX      RowStatus
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

```
DESCRIPTION
```

"An object that allows entries in this table to

```
        be created and deleted using the
        RowStatus convention."
 ::= { gsmpVseEntry 13 }
```

```
--*****
-- GSMP Encapsulation Objects
--*****
```

```
--
-- GSMP ATM Encapsulation Table
--
```

```
gsmpAtmEncapTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF GsmpAtmEncapEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
```

```
        "This table contains the atm encapsulation data
        for the VSCE or VSE that uses atm as encapsulation."
 ::= { gsmpObjects 3 }
```

```
gsmpAtmEncapEntry OBJECT-TYPE
    SYNTAX          GsmpAtmEncapEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "An entry in the table showing
        the encapsulation data for a
        specific VSCE or VSE."
    INDEX { gsmpAtmEncapEntityId }
 ::= { gsmpAtmEncapTable 1 }
```

```
GsmpAtmEncapEntry ::= SEQUENCE {
    gsmpAtmEncapEntityId      OCTET STRING,
    gsmpAtmEncapIfIndex       InterfaceIndex,
    gsmpAtmEncapVpi           AtmVpIdentifier,
    gsmpAtmEncapVci           AtmVcIdentifier
}
```

```
gsmpAtmEncapEntityId OBJECT-TYPE
    SYNTAX          OCTET STRING (SIZE(6))
    MAX-ACCESS      not-accessible
    STATUS          current
```

DESCRIPTION

"The VSCE or VSE Id is a 48-bit quantity that is unique within the operational context of the device. A 48-bit IEEE 802 MAC address, if available, may be used for the entity Id."

::= { gsmpAtmEncapEntry 1 }

gsmpAtmEncapIfIndex OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The interface index for the virtual channel over which the GSMP session is established over, i.e the GSMP control channel for LLC/SNAP encapsulated GSMP messages on an ATM data link layer"

::= { gsmpAtmEncapEntry 2 }

gsmpAtmEncapVpi OBJECT-TYPE

SYNTAX AtmVpIdentifier

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" The VPI value for the virtual channel over which the GSMP session is established over, i.e the GSMP control channel for LLC/SNAP encapsulated GSMP messages on an ATM data link layer"

DEFVAL { 0 }

::= { gsmpAtmEncapEntry 3 }

gsmpAtmEncapVci OBJECT-TYPE

SYNTAX AtmVcIdentifier

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" The VCI value for the virtual channel over which the GSMP session is established over, i.e the GSMP control channel for LLC/SNAP encapsulated GSMP messages on an ATM data link layer"

DEFVAL { 15 }

::= { gsmpAtmEncapEntry 4 }

-- GSMP TCP/IP Encapsulation Table  
--

gsmpTcpIpEncapTable OBJECT-TYPE  
SYNTAX SEQUENCE OF GsmpTcpIpEncapEntry  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"This table contains the atm encapsulation data  
for the VSCE or VSE that uses atmTCP/IP as  
encapsulation."  
 ::= { gsmpObjects 4 }

gsmpTcpIpEncapEntry OBJECT-TYPE  
SYNTAX GsmpTcpIpEncapEntry  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"An entry in the table showing  
the encapsulation data for a  
specific VSCE or VSE."  
INDEX { gsmpTcpIpEncapEntityId }  
 ::= { gsmpTcpIpEncapTable 1 }

GsmpTcpIpEncapEntry ::= SEQUENCE {  
gsmpTcpIpEncapEntityId OCTET STRING,  
gsmpTcpIpEncapAddress IpAddress,  
gsmpTcpIpPortNumber Unsigned32  
}

gsmpTcpIpEncapEntityId OBJECT-TYPE  
SYNTAX OCTET STRING (SIZE(6))  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"The VSCE or VSE Id is a 48-  
bit quantity that is unique within the operational  
context of the device. A 48-bit IEEE 802 MAC address, if  
available, may be used for the entity Id."

::= { gsmpTcpIpEncapEntry 1 }

gsmpTcpIpEncapAddress OBJECT-TYPE  
SYNTAX IpAddress

```

MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "The IPv4 address of the GSMP session peer."
 ::= { gsmpTcpIpEncapEntry 2 }

gsmpTcpIpPortNumber OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "The TCP port number used for the TCP session
    to the GSMP peer. The default value of this object
    is the well know GSMP port number. "
 ::= { gsmpTcpIpEncapEntry 3 }

--*****
-- GSMP Session Objects
--*****

--
-- GSMP Session table
--

gsmpSessionTable OBJECT-TYPE
SYNTAX SEQUENCE OF GsmpSessionEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "This table represents the sessions between
    VSCE and VSE pairs. "
 ::= { gsmpObjects 5 }

gsmpSessionEntry OBJECT-TYPE
SYNTAX GsmpSessionEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "An entry in the table showing
    the data for a specific VSCE and
    VSE pair."
INDEX { gsmpSessionThisSideId, gsmpSessionFarSideId }
 ::= { gsmpSessionTable 1 }

GsmpSessionEntry ::= SEQUENCE {
    gsmpSessionThisSideId OCTET STRING,
    gsmpSessionFarSideId OCTET STRING,
    gsmpSessionVersion INTEGER,
    gsmpSessionTimer Integer32,
    gsmpSessionState INTEGER,

```

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```
gsmSessionAdjacencyCount      Unsigned32,
gsmSessionFarSideName         OCTET STRING,
gsmSessionFarSidePort         Unsigned32,
gsmSessionFarSideInstance     Unsigned32,
gsmSessionLastFailureCode     Unsigned32,
gsmSessionDiscontinuityTime   TimeStamp
}
```

gsmSessionThisSideId OBJECT-TYPE

SYNTAX OCTET STRING (SIZE(6))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This side ID uniquely identifies the entity that this session relates to within the operational context of the device. "

::= { gsmSessionEntry 1 }

gsmSessionFarSideId OBJECT-TYPE

SYNTAX OCTET STRING (SIZE(6))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The Far side ID uniquely identifies the entity that this session is established against. "

::= { gsmSessionEntry 2 }

gsmSessionVersion OBJECT-TYPE

SYNTAX INTEGER {  
version1dot1(1),  
version2dot0(2),  
version3(3)  
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The version number of the GSMP protocol being used in this session. The version is the result of the negotiation by the adjacency protocol."

::= { gsmSessionEntry 3 }

gsmSessionTimer OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current  
DESCRIPTION  
"The timer specifies the time remaining until the adjacency timer expires. The object could take negative values since if no valid GSMP messages are received in any period of time in excess of three times the value of the Timer negotiated by the adjacency protocol loss of synchronisation may be declared. The timer is specified in units of 100ms."  
 ::= { gsmpSessionEntry 4 }

gsmpSessionState OBJECT-TYPE  
SYNTAX INTEGER {  
null(1),  
synsent(2),  
synrcvd(3),  
estab(4)  
}  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
"The state the session currently is in. "  
 ::= { gsmpSessionEntry 5 }

gsmpSessionAdjacencyCount OBJECT-TYPE  
SYNTAX Unsigned32(1..255)  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
"This object specifies the current number of adjecensies that are established with the controller and partition that is used for this session."  
 ::= { gsmpSessionEntry 6 }

gsmpSessionFarSideName OBJECT-TYPE  
SYNTAX OCTET STRING  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
"The name of the far side as advertised in the adjacency message."  
 ::= {gsmpSessionEntry 7}



gsmpSessionFarSidePort OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The local port number of the link across which the message is being sent."

::= { gsmpSessionEntry 8 }

gsmpSessionFarSideInstance OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The instance number used for the link during this session. Zero is not a valid instance number."

::= { gsmpSessionEntry 9 }

gsmpSessionLastFailureCode OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is the last failure code that was received over this session. If no failure code has been received, the value is zero."

::= { gsmpSessionEntry 10 }

gsmpSessionDiscontinuityTime OBJECT-TYPE

SYNTAX TimeStamp

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The value of sysUpTime on the most recent occasion at which any one or more of this session's counters suffered a discontinuity. The relevant counters are the specific instances associated with this session of any Counter32 or Counter64 object contained in the gsmpSessionStatsTable. If no such discontinuities have occurred since then this object contains a zero value.

Also, an NMS can distinguish when a session between a given Entity and the far side goes away and

```

        then is 're-established'. This value would change and
        thus indicate to the NMS that this is a
        different session."
 ::= { gsmSessionEntry 11 }

--
-- GSMP Session stats table
--

gsmSessionStatTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF GsmSessionStatEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table contains the statistics collected for
        the different sessions. "
 ::= { gsmObjects 6 }

gsmSessionStatEntry OBJECT-TYPE
    SYNTAX      GsmSessionStatEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry in the table contains
        statistics data for a specific session."
    AUGMENTS { gsmSessionEntry }
 ::= { gsmSessionStatTable 1 }

GsmSessionStatEntry ::= SEQUENCE {
    gsmSessionStatUptime          Counter32,
    gsmSessionStatSendmessages   Counter32,
    gsmSessionStatFailiureIndication Counter32,

```

```

    gsmSessionStatReceivedmessages   Counter32,
    gsmSessionStatReceivedFailiure   Counter32,
    gsmSessionStatPortUpEvents       Counter32,
    gsmSessionStatPortDownEvents     Counter32,
    gsmSessionStatInvalidLabelEvents Counter32,
    gsmSessionStatNewPortEvents      Counter32,
    gsmSessionStatDeadPortEvents     Counter32,
    gsmSessionStatAdjacencyUpdateEvents Counter32
}

```

```

gsmSessionStatUptime OBJECT-TYPE

```

```

SYNTAX          Counter32
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "The time in seconds that the session has been in
    established state."
 ::= { gsmpSessionStatEntry 1 }

gsmpSessionStatSendmessages OBJECT-TYPE
SYNTAX          Counter32
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "The number of messages that has been sent in this
    session."
 ::= { gsmpSessionStatEntry 2 }

gsmpSessionStatFailiureIndication OBJECT-TYPE
SYNTAX          Counter32
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "The number of messages that has been sent with a
    failiure indication in this session."
 ::= { gsmpSessionStatEntry 3 }

gsmpSessionStatReceivedmessages OBJECT-TYPE
SYNTAX          Counter32
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "The number of messages that has been received in
    this session."
 ::= { gsmpSessionStatEntry 4 }

gsmpSessionStatReceivedFailiure OBJECT-TYPE
SYNTAX          Counter32
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "The number of messages that has been received in
    this session with a failiure indication."
 ::= { gsmpSessionStatEntry 5 }

```

gsmpSessionStatPortUpEvents OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of Port Up events that has been send or received on this session."

::= { gsmpSessionStatEntry 6 }

gsmpSessionStatPortDownEvents OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of Port Down events that has been send or received on this session."

::= { gsmpSessionStatEntry 7 }

gsmpSessionStatInvalidLabelEvents OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of Invalid label events that has been send or received on this session."

::= { gsmpSessionStatEntry 8 }

gsmpSessionStatNewPortEvents OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of New Port events that has been send or received on this session."

::= { gsmpSessionStatEntry 9 }

gsmpSessionStatDeadPortEvents OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of Dead Port events that has been send or received on this session."

::= { gsmpSessionStatEntry 10 }

gsmpSessionStatAdjacencyUpdateEvents OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of Adjacency Update events that has been send or received on this session."  
 ::= { gsmpSessionStatEntry 11 }

```
-- *****
-- GSMP Notifications
-- *****

gsmpNotificationsPrefix OBJECT IDENTIFIER ::= { gsmpNotifications 0 }
gsmpNotificationsObjects OBJECT IDENTIFIER ::= { gsmpNotifications 1 }

--
-- Notification objects
--

gsmpEventPort OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  accessible-for-notify
    STATUS      current
    DESCRIPTION
        "This object specifies the Port Number that is
        carried in this event."
    ::= { gsmpNotificationsObjects 1 }

gsmpEventPortSessionNumber OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  accessible-for-notify
    STATUS      current
    DESCRIPTION
        "This object specifies the Port Session Number that is
        carried in this event."
    ::= { gsmpNotificationsObjects 2 }

gsmpEventSequenceNumber OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  accessible-for-notify
    STATUS      current
    DESCRIPTION
        "This object specifies the Event Sequence Number that is
        carried in this event."
    ::= { gsmpNotificationsObjects 3 }
```

```
gsmpEventLabel OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  accessible-for-notify
    STATUS      current
    DESCRIPTION
        "This object specifies the Label that is
         carried in this event."
    ::= { gsmpNotificationsObjects 4 }

--
-- Notifications
```

```
--

gsmpSessionDownTrap NOTIFICATION-TYPE
    OBJECTS {
        gsmpSessionThisSideId,
        gsmpSessionFarSideId,
        gsmpSessionStatUptime,
        gsmpSessionStatSendmessages,
        gsmpSessionStatFailiureIndication,
        gsmpSessionStatReceivedmessages,
        gsmpSessionStatReceivedFailiure,
        gsmpSessionStatPortUpEvents,
        gsmpSessionStatPortDownEvents,
        gsmpSessionStatInvalidLabelEvents,
        gsmpSessionStatNewPortEvents,
        gsmpSessionStatDeadPortEvents,
        gsmpSessionStatAdjacencyUpdateEvents
    }
    STATUS current
    DESCRIPTION
        "When it has been enabled, this notification is generated
         whenever an session is taken down, regardless of whether
         the session went down normally or abnormally.
         Its purpose is to allow a management application
         (primarily an accounting application) that is
         monitoring the session statistics to receive the final values
         of these counts, so that the application can properly account
         for the amounts the counts were incremented since the last
         time the application polled them. The gsmpSessionStatUptime
         object provides the total amount of time that the session was
         active."
```

This notification is not a substitute for polling the session statistic counts. In particular, the count values reported in this notification cannot be assumed to be the complete totals for the life of the session, since they may have wrapped while the session was up.

The session to which the objects in this notification apply is identified by the session gsmpSessionThisSideId, gsmpSessionFarSideId objects.

An instance of this notification will contain exactly one instance of each of its objects, and these objects will all belong to the same conceptual row of the gsmpSessionTable."

```
::= { gsmpNotificationsPrefix 1 }
```

```
gsmpSessionUpTrap NOTIFICATION-TYPE
```

```
OBJECTS {  
    gsmpSessionThisSideId,  
    gsmpSessionFarSideId,  
    gsmpSessionState  
}
```

```
STATUS current
```

```
DESCRIPTION
```

```
"When it has been enabled, this notification is generated  
when new session is established.
```

```
The new session is identified by the session  
gsmpSessionThisSideId, gsmpSessionFarSideId objects."
```

```
::= { gsmpNotificationsPrefix 2 }
```

```
gsmpSendFailureIndicationTrap NOTIFICATION-TYPE
```

```
OBJECTS {  
    gsmpSessionThisSideId,  
    gsmpSessionFarSideId,  
    gsmpSessionLastFailureCode,  
    gsmpSessionStatFailureIndication  
}
```

```
STATUS current
```

```
DESCRIPTION
```

```
"When it has been enabled, this notification is generated  
when a message with a failure indication was sent.
```

The notification indicates a change in the value of  
gsmpSessionStatFailiureIndication. The  
gsmpSessionLastFailiureCode contains the failiure reason."  
 ::= { gsmpNotificationsPrefix 3 }

gsmpReceivedFailiureIndicationTrap NOTIFICATION-TYPE

OBJECTS {  
    gsmpSessionThisSideId,  
    gsmpSessionFarSideId,  
    gsmpSessionLastFailiureCode,  
    gsmpSessionStatReceivedFailiure  
}

STATUS current

DESCRIPTION

"When it has been enabled, this notification is generated  
when a message with a failure indication received.

The notification indicates a change in the value of  
gsmpSessionStatReceivedFailiure. The  
gsmpSessionLastFailiureCode contains the failiure reason."

::= { gsmpNotificationsPrefix 4 }

gsmpPortUpEventTrap NOTIFICATION-TYPE

OBJECTS {  
    gsmpSessionThisSideId,  
    gsmpSessionFarSideId,  
    gsmpSessionStatPortUpEvents,  
    gsmpEventPort,  
    gsmpEventPortSessionNumber,  
    gsmpEventSequenceNumber  
}

STATUS current

DESCRIPTION

"When it has been enabled, this notification is generated  
when a Port Up Event occurs.

The notification indicates a change in the value of  
gsmpSessionStatPortUpEvents."

::= { gsmpNotificationsPrefix 5 }

gsmpPortDownEventTrap NOTIFICATION-TYPE

OBJECTS {



```

        gsmpSessionThisSideId,
        gsmpSessionFarSideId,
        gsmpSessionStatPortDownEvents,
        gsmpEventPort,
        gsmpEventPortSessionNumber,
        gsmpEventSequenceNumber
    }
STATUS current
DESCRIPTION
    "When it has been enabled, this notification is generated
    when a Port Down Event occurs.

    The notification indicates a change in the value of
    gsmpSessionStatPortDownEvents."
 ::= { gsmpNotificationsPrefix 6 }

gsmpInvalidLabelEventTrap NOTIFICATION-TYPE
OBJECTS {
    gsmpSessionThisSideId,
    gsmpSessionFarSideId,
    gsmpSessionStatInvalidLabelEvents,
    gsmpEventPort,
    gsmpEventLabel,
    gsmpEventSequenceNumber
}
STATUS current
DESCRIPTION
    "When it has been enabled, this notification is generated
    when an Invalid Label Event occurs.

    The notification indicates a change in the value of
    gsmpSessionStatInvalidLabelEvents."
 ::= { gsmpNotificationsPrefix 7 }

gsmpNewPortEventTrap NOTIFICATION-TYPE
OBJECTS {
    gsmpSessionThisSideId,
    gsmpSessionFarSideId,
    gsmpSessionStatNewPortEvents,
    gsmpEventPort,
    gsmpEventPortSessionNumber,
    gsmpEventSequenceNumber
}
STATUS current
DESCRIPTION

```

"When it has been enabled, this notification is generated when a New Port Event occurs.

The notification indicates a change in the value of `gsmpSessionStatNewPortEvents`."

```
::= { gsmpNotificationsPrefix 8 }
```

`gsmpDeadPortEventTrap` NOTIFICATION-TYPE

```
OBJECTS {  
    gsmpSessionThisSideId,  
    gsmpSessionFarSideId,  
    gsmpSessionStatDeadPortEvents,  
    gsmpEventPort,  
    gsmpEventPortSessionNumber,  
    gsmpEventSequenceNumber  
}
```

STATUS current

DESCRIPTION

"When it has been enabled, this notification is generated when a Dead Port Event occurs.

The notification indicates a change in the value of `gsmpSessionStatDeadPortEvents`."

```
::= { gsmpNotificationsPrefix 9 }
```

`gsmpAdjacencyUpdateEventTrap` NOTIFICATION-TYPE

```
OBJECTS {  
    gsmpSessionThisSideId,  
    gsmpSessionFarSideId,  
    gsmpSessionAdjacencyCount,  
    gsmpSessionStatAdjacencyUpdateEvents,  
    gsmpEventSequenceNumber  
}
```

STATUS current

DESCRIPTION

"When it has been enabled, this notification is generated when an Adjacency Update Event occurs.

The `gsmpSessionAdjacencyCount` contains the new value of the number of adjecensies that are established with the controller and partition that is used for this session.

The notification indicates a change in the value of `gsmpSessionStatAdjacencyUpdateEvents`."

```
::= { gsmpNotificationsPrefix 10 }
```

```
--*****
-- GSMP Compliance
--*****
```

```
gsmpGroups          OBJECT IDENTIFIER ::= { gsmpConformance 1 }
gsmpCompliances     OBJECT IDENTIFIER ::= { gsmpConformance 2 }
```

```
gsmpModuleCompliance MODULE-COMPLIANCE
  STATUS current
  DESCRIPTION
    "The compliance statement for agents that support
    the GSMP MIB."
  MODULE -- this module
  MANDATORY-GROUPS { gsmpGeneralGroup
                    }
  GROUP gsmpVsceGroup
  DESCRIPTION
    "This group is mandatory for all Virtual Switch
    Controllers"

  GROUP gsmpVseGroup
  DESCRIPTION
    "This group is mandatory for all Virtual Switches"

  GROUP gsmpAtmEncapGroup
  DESCRIPTION
    "This group must be supported if ATM is used for GSMP
    encapsulation. "

  GROUP gsmpTcpIpEncapGroup
  DESCRIPTION
    "This group must be supported if TCP/IP is used for GSMP
    encapsulation. "

  GROUP gsmpNotificationObjectsGroup
  DESCRIPTION
    "This group must be supported if notifications
    are supported. "

  GROUP gsmpNotificationsGroup
  DESCRIPTION
    "This group must be supported if notifications
    are supported. "
```

```
 ::= { gsmpCompliances 1 }

-- units of conformance

gsmpGeneralGroup OBJECT-GROUP
  OBJECTS {
    gsmpSessionVersion,
    gsmpSessionTimer,
    gsmpSessionState,
    gsmpSessionAdjacencyCount,
    gsmpSessionFarSideName,
    gsmpSessionFarSidePort,
    gsmpSessionFarSideInstance,
    gsmpSessionLastFailureCode,
    gsmpSessionDiscontinuityTime,
    gsmpSessionStatUptime,
```

```
gsmpSessionStatSendmessages,
gsmpSessionStatFailureIndication,
gsmpSessionStatReceivedmessages,
gsmpSessionStatReceivedFailure,
gsmpSessionStatPortUpEvents,
gsmpSessionStatPortDownEvents,
gsmpSessionStatInvalidLabelEvents,
gsmpSessionStatNewPortEvents,
gsmpSessionStatDeadPortEvents,
gsmpSessionStatAdjacencyUpdateEvents
}
STATUS current
DESCRIPTION
  "Objects that apply to all GSMP implementations."
 ::= { gsmpGroups 1 }
```

```
gsmpVsceGroup OBJECT-GROUP
  OBJECTS {
    gsmpVsceEncapType,
    gsmpVsceMaxVersion,
    gsmpVsceTimer,
    gsmpVsceName,
    gsmpVscePort,
    gsmpVsceInstance,
    gsmpVscePartitionId,
    gsmpVsceDoResync,
```

```
    gsmpVsceNotificationMapping,  
    gsmpVsceRowStatus  
  }  
STATUS    current  
DESCRIPTION  
    "Objects that apply GSMP implementations of  
    Virtual Switch Controllers."  
 ::= { gsmpGroups 2 }
```

```
gsmpVseGroup OBJECT-GROUP  
  OBJECTS {  
    gsmpVseEncapType,  
    gsmpVseMaxVersion,  
    gsmpVseTimer,  
    gsmpVseName,  
    gsmpVsePort,  
    gsmpVseInstance,  
    gsmpVsePartitionId,  
    gsmpVseAllowMultContr,  
    gsmpVseNotificationMapping,  
    gsmpVseSwitchType,  
    gsmpVseWindowSize,  
    gsmpVseRowStatus  
  }  
STATUS    current  
DESCRIPTION  
    "Objects that apply GSMP implementations of  
    Virtual Switches."
```

```
 ::= { gsmpGroups 3 }
```

```
gsmpAtmEncapGroup OBJECT-GROUP  
  OBJECTS {  
    gsmpAtmEncapIfIndex,  
    gsmpAtmEncapVpi,  
    gsmpAtmEncapVci  
  }  
STATUS    current  
DESCRIPTION  
    "Objects that apply to GSMP implementations that  
    supports ATM for GSMP encapsulation."  
 ::= { gsmpGroups 4 }
```

```
gsmpTcpIpEncapGroup OBJECT-GROUP
```

```
OBJECTS {
  gsmpTcpIpEncapAddress,
  gsmpTcpIpPortNumber
}
STATUS    current
DESCRIPTION
  "Objects that apply to GSMP implementations that
  supports TCP/IP for GSMP encapsulation."
 ::= { gsmpGroups 5 }
```

```
gsmpNotificationObjectsGroup OBJECT-GROUP
  OBJECTS {
    gsmpEventPort,
    gsmpEventPortSessionNumber,
    gsmpEventSequenceNumber,
    gsmpEventLabel
  }
  STATUS    current
  DESCRIPTION
    "Objects that are contained in the notifications."
  ::= { gsmpGroups 6 }
```

```
gsmpNotificationsGroup NOTIFICATION-GROUP
  NOTIFICATIONS {
    gsmpSessionDownTrap,
    gsmpSessionUpTrap,
    gsmpSendFailiureIndicationTrap,
    gsmpReceivedFailiureIndicationTrap,
    gsmpPortUpEventTrap,
    gsmpPortDownEventTrap,
    gsmpInvalidLabelEventTrap,
    gsmpNewPortEventTrap,
    gsmpDeadPortEventTrap,
    gsmpAdjacenyUpdateEventTrap
  }
  STATUS    current
  DESCRIPTION
    "The notifications which indicate specific changes in the
    value of objects gsmpSessionTable and gsmpSessionStatTable."
```

```
 ::= { gsmpGroups 7 }
```

END

## [5. Revision History](#)

This section should be removed when this document is published as an RFC.

### [5.1 Design considerations](#)

#### [5.1.1 Switch partitions](#)

The management of switch partitions falls outside of the management of GSMP, so this is excluded from the GSMP mib.

#### [5.1.2 Protocol mib](#)

The GSMP mib is only a protocol mib. It contains object to manage the GSMP protocol. It does not provide any information learned via the protocol, such as "all ports config" information.

#### [5.1.3 VSCE/VSE/VSC/VS relationships](#)

The relationships between Virtual Switch Controller Entity, Virtual Switch Entity, Virtual Switch Controller and Virtual Switch are not included in the mib.

#### [5.1.4 Multiple controllers](#)

It is possible to define the maximum number of VSCE controlling one VSE. It is however not possible to define that one VSCE doesn't allow other VSCE on the same switch. It is assumed that there are mechanisms that synchronize controllers and the configuration of them. This is outside the scope of this mib.

#### [5.1.5 Row index in notifications](#)

{gsmpSessionThisSideId, gsmpSessionFarSideId} are used as index in the in the notifications. Since they are row indexes they are specified as not-accessible in their definition and are hence not possible to send in a notification. It is considered poor MIB design to use index items in the these clauses because their value is the same as the instance returned. Their value is inferred from the instance OID of other objects in the notification.

However, we violated this rule on purpose since we think that it's clearer this way. We need input from the WG for how their respective management systems prefer to get the information.

The mib compiles (smicng) if option -CN is used.

## 5.2 Changes from < [draft-ietf-gsmp-mib-00.txt](#) >

Mib totaly remade :-)

## 5.3 Changes from < [draft-ietf-gsmp-mib-01.txt](#) >

- Imported AtmVcIdentifier, AtmVpIdentifier FROM ATM-TC-MIB
- Removed serviceModelType
- Separated the Vse and Vsce config stuf in separate tables.
- Also added ATM,TCP/IP, Vse and Vsce groups
- Added control of multiple controllers
- Added Vse window size and switch type configuration.
- Added control of resync strategy
- Added last failure code and discontinuity time
- Added event config and count
- Added notifications

## 6. Acknowledgments

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## 7. References

- [RFC1155] Rose, M., and K. McCloghrie, "Structure and Identification of Management Information for TCP/IP-based Internets", STD 16, [RFC 1155](#), May 1990
- [RFC1212] Rose, M., and K. McCloghrie, "Concise MIB Definitions", STD 16, [RFC 1212](#), March 1991



[RFC1215] M. Rose, "A Convention for Defining Traps for use with the SNMP", [RFC 1215](#), March 1991

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---

Internet Draft

GSMP MIB

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- [RFC1157] Case, J., Fedor, M., Schoffstall, M., and J. Davin, "Simple Network Management Protocol", STD 15, [RFC 1157](#), May 1990.
- [RFC1901] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Introduction to Community-based SNMPv2", [RFC 1901](#), January 1996.
- [RFC1905] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Protocol Operations for Version 2 of the Simple Network Management Protocol (SNMPv2)", [RFC 1905](#), January 1996.
- [RFC1906] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Transport Mappings for Version 2 of the Simple Network Management Protocol (SNMPv2)", [RFC 1906](#), January 1996.
- [RFC1987] Newman, P., Edwards, W., Hinden, R., Hoffman, E. Ching Liaw, F., Lyon, T. and Minshall, G., "Ipsilon's General Switch Management Protocol Specification," Version 1.1, [RFC 1987](#), August 1996.
- [RFC2026] Bradner, S., "The Internet Standards Process -- Revision 3", [BCP 9](#), [RFC 2026](#), Harvard University, October 1996
- [RFC2233] McCloghrie, K., F. Kastenholz, "The Interfaces Group MIB using SMIV2", [RFC 2233](#), November 1997.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), Harvard University, March 1997
- [RFC2397] Newman, P., Edwards, W., Hinden, R., Hoffman, E., Ching Liaw, F., Lyon, T. and Minshall, G., "Ipsilon's General Switch Management Protocol Specification," Version 2.0, [RFC 2397](#), March 1998.
- [RFC2434] Narten, T., and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs.", [RFC 2434](#), IBM, Maxware, October 1998

- [RFC2514] Noto, M., E. Spiegel, K. Tesink, "Definition of Textual Conventions and OBJECT-IDENTITIES for ATM Management", [RFC 2514](#), February 1999.
- [RFC2570] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction to Version 3 of the Internet-standard Network Management Framework", [RFC 2570](#), April 1999
- [RFC2571] Harrington, D., Presuhn, R., and B. Wijnen, "An Architecture for Describing SNMP Management Frameworks", [RFC 2571](#), April 1999
- [RFC2572] Case, J., Harrington D., Presuhn R., and B. Wijnen, "Message Processing and Dispatching for the Simple Network Management

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---

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GSMP MIB

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- Protocol (SNMP)", [RFC 2572](#), April 1999
- [RFC2573] Levi, D., Meyer, P., and B. Stewart, "SNMPv3 Applications", [RFC 2573](#), April 1999
- [RFC2574] Blumenthal, U., and B. Wijnen, "User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)", [RFC 2574](#), April 1999
- [RFC2575] Wijnen, B., Presuhn, R., and K. McCloghrie, "View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)", [RFC 2575](#), April 1999
- [RFC2578] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Structure of Management Information Version 2 (SMIv2)", STD 58, [RFC 2578](#), April 1999
- [RFC2579] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Textual Conventions for SMIv2", STD 58, [RFC 2579](#), April 1999
- [RFC2580] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Conformance Statements for SMIv2", STD 58, [RFC 2580](#), April 1999
- [GSMPv3] Doria, Hellstrand, Sundell, Worster, "General Switch Management Protocol V3", work in progress, April 2000
- [GSMPenc] Doria, Worster, "GSMP Packet Encapsulations for ATM, Ethernet

and TCP", work in progress, April 2000

## 8. Security Considerations

Assuming that secure network management (such as SNMP v3) is implemented, the objects represented in this MIB do not pose a threat to the security of the network.

There are a number of management objects defined in this MIB that have 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.

There are a number of managed objects in this MIB that may contain sensitive information. These are contained in the gsmPVsceTable and gsmPVseTable. It is thus important to control even GET access to these objects and possibly to even encrypt the values of these object when sending them over the network via SNMP. Not all versions of SNMP provide features for such a secure environment.

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SNMPv2 by itself is not a secure environment. 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.

It is recommended that the implementers consider the security features as provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model [RFC 2574](#) [[RFC2574](#)] and the View-based Access Control Model [RFC 2575](#) [[RFC2575](#)] is recommended.

It is then a customer/user responsibility to ensure that the SNMP entity giving access to an instance of this MIB, 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. Authors' Addresses

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