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VPLS with Point-To-Multipoint LSPs Management Information Base
draft-mcast-vpls-mib-00

Abstract

This memo defines an experimental portion of the Management Information Base for use with network management protocols in the Internet community.

In particular, it describes managed objects to configure and/or monitor multicast in VPLS using Point-to-Multipoint LSPs or VPLS-MCAST [[I-D.ietf-l2vpn-vpls-mcast](#)].

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1. Introduction

VPLS using Point-to-Multipoint LSPs or [VPLS-MCAST] describes procedures for VPLS multicast that utilize multicast trees in the service provider (SP) network. The multicast tree is typically formed using point-to-multipoint LSPs and is used to flood broadcast, multicast, and unknown unicast traffic across a VPLS core network to all the PE routers.

This memo describes managed objects to configure and/or monitor multicast in VPLS using Point-to-Multipoint LSPs or VPLS-MCAST [[I-D.ietf-l2vpn-vpls-mcast](#)].

In the current version of this memo does not address MIB Objects for Inter-AS VPLS Multicast. Objects related to this would be addressed in subsequent updates of this proposal.

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](#)].

[4.](#) Terminology

Terminology used in this document:

VPLS : Virtual Provider LAN Service.

P2MP : Point-to-Multipoint.

MLDP : Multicast Label Distribution Protocol.

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SNMP : Simple Network Management Protocol.

MIB : Management Information Base.

PE Router: Provider Edge Router.

P Router : Provider Core Router.

I-PMSI : Inclusive-Provider Multicast Service Interface.

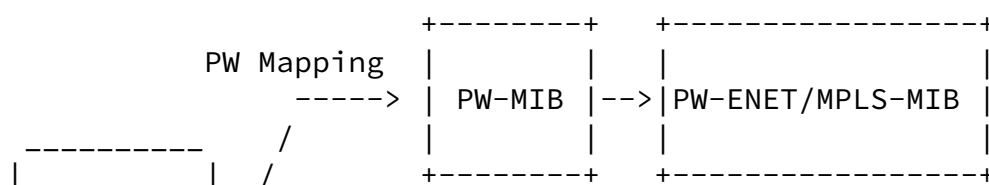
S-PMSI : Selective-Provider Multicast Service Interface.

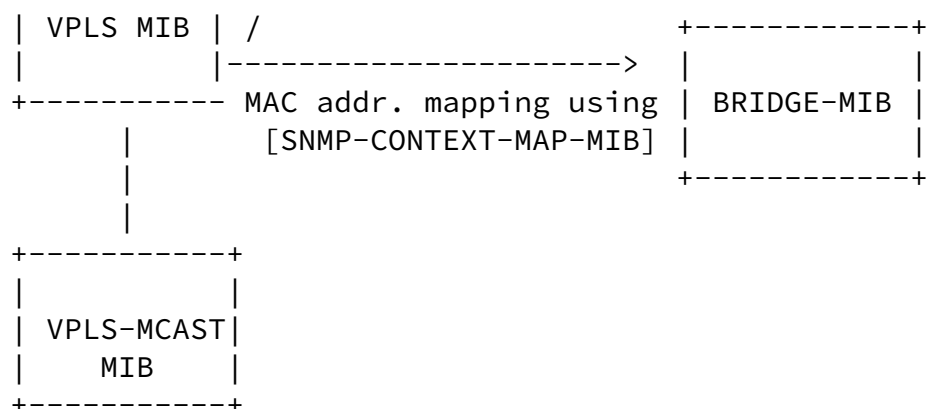
MVPN : Multicast Virtual Private Networks.

[5.](#) Structure of the MIB Module

The MIB Structure for defining VPLS using Point-to-Multipoint LSPs or [VPLS-MCAST] would be based off the existing VPLS-MIB [I-D.ietf-l2vpn-vpls-mib] defination.

Following is the relation of the VPLS-MCAST MIB with existing VPLS-MIB





5.1. Summary of MIB Module

The configuration and states specific to an VPLS-MCAST include the following:

- C-multicast routing exchange protocol BGP
- I-PMSI, S-PMSI and corresponding provider tunnels
- Mapping of c-multicast states to PMSI/tunnels

To represent them, the following tables defined.

```

VplsMcastGeneral ----> VplsPmsiConfig          <----- VplsSpmsiConfig

VplsIpmsi             ----> VplsPmsiTunnelAttribute <----- VplsSpmsi
                        |
                        +-VplsIpmsiBgpADAttribute
                        +-VplsIpmsiBgpVplsAttribute
  
```

- vplsMcastGeneralTable

An entry in this table contains general informaion about VPLS-PMSI

created on the device.

- vplsPmsiConfigTable

An entry in this table is created for each PMSI configured on this router. It can be referred to by base VPLS configuration (in vplsConfigEntry) or S-PMSI configuration (in vplsSpmsiConfigEntry).

- vplsIpmsiBgpADTable

This table specifies all advertised and received I-PMSI advertisements. An entry is created in this table for each IPMSI attribute advertised/ received in BGP-AD

- vplsIpmsiBgpVplsTable

An entry is created in this table for each IPMSI attribute advertised/ received in BGP-VPLS

- vplsPmsiTunnelAttributeTable

This table is specified for advertised/received PMSI attributes to be referred to by I-PMSI or S-PMSI table entries.

- vplsSpmsiConfigTable

This table specifies S-PMSI configuration for each VPLS entry

- vplsSpmsiTable

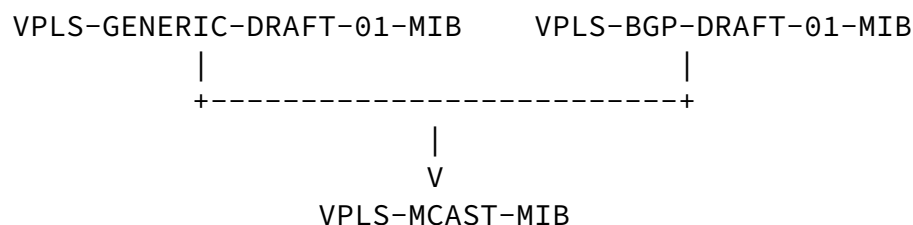
This table contains information about the VPLS S-PMSIs advertised/ received for a given VPLS instance

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

This section provides an overview of the relationship between the VPLS-MCAST MIB module and other VPLS MIB modules.

The arrows in the following diagram show a 'depends on' relationship. A relationship "MIB module A depends on MIB module B" means that MIB module A uses an object, object identifier, or textual convention

defined in MIB module B, or that MIB module A contains a pointer (index or RowPointer) to an object in MIB module B.



7. Definitions

```
VPLS-MCAST-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
  MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
  experimental, Unsigned32
  FROM SNMPv2-SMI
```

```
  MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
  FROM SNMPv2-CONF
```

```
  TruthValue, RowPointer, RowStatus, TimeStamp, TimeInterval
  FROM SNMPv2-TC
```

```
  SnmpAdminString
  FROM SNMP-FRAMEWORK-MIB
```

```
InetAddress, InetAddressType
  FROM INET-ADDRESS-MIB
```

```
MplsLabel
  FROM MPLS-TC-STD-MIB
```

```
vplsConfigIndex,
vplsBgpADConfigRouteDistinguisher,
```

```

vplsBgpADConfigPrefix,
vplsBgpADConfigVplsId
    FROM VPLS-GENERIC-DRAFT-01-MIB

vplsBgpVename
    FROM VPLS-BGP-DRAFT-01-MIB;

vplsMcastMIB MODULE-IDENTITY
    LAST-UPDATED "201203141200Z" -- 14 March 2012 12:00:00 GMT
    ORGANIZATION "IETF Layer-2 Virtual Private
                  Networks Working Group."
    CONTACT-INFO

        "

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        "

    DESCRIPTION

```


multicast in Layer 2 VPLS defined by [L2VPN].
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```
-- Revision history.
REVISION "201203141200Z" -- 14 March 2012 12:00:00 GMT
DESCRIPTION
    "Initial version of the draft."
::= { experimental 99 } -- number to be assigned

-- Top level components of this MIB.
-- Traps
    vplsMcastNotifications OBJECT IDENTIFIER ::= { vplsMcastMIB 0 }

-- tables, scalars
    vplsMcastObjects      OBJECT IDENTIFIER ::= { vplsMcastMIB 1 }

-- conformance
    vplsMcastConformance  OBJECT IDENTIFIER ::= { vplsMcastMIB 2 }

    vplsMcastScalars      OBJECT IDENTIFIER ::= { vplsMcastObjects 1 }
    vplsMcastGeneral       OBJECT IDENTIFIER ::= { vplsMcastObjects 2 }
    vplsMcastConfig        OBJECT IDENTIFIER ::= { vplsMcastObjects 3 }
    vplsMcastStates        OBJECT IDENTIFIER ::= { vplsMcastObjects 4 }

-- Scalar Objects

vplsMcastNotificationEnable OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "If this object is TRUE, then the generation of all
        notifications defined in this MIB is enabled."
    DEFVAL { false }
    ::= { vplsMcastScalars 1 }

vplsMcastGeneralTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF VplsMcastGeneralEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "This table specifies the general information about the VPLS-PMSE
        present in this device."
    ::= { vplsMcastGeneral 1 }
```

vplsMcastGeneralEntry OBJECT-TYPE

SYNTAX VplsMcastGeneralEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in this table is created for every MVRF in the device."

INDEX { vplsConfigIndex }

::= { vplsMcastGeneralTable 1 }

VplsMcastGeneralEntry ::= SEQUENCE {

vplsMcastGenOperStatusChange	INTEGER,
vplsMcastGenOperChangeTime	TimeStamp,
vplsMcastGenIpmsiConfig	RowPointer,
vplsMcastGenInterasPmsiConfig	RowPointer,
vplsMcastGenRowStatus	RowStatus

}

vplsMcastGenOperStatusChange OBJECT-TYPE

SYNTAX INTEGER { createdVplsPmsi(1),
deletedVplsPmsi(2),
modifiedVplsIpmsiConfig(3),
modifiedVplsSpmsiConfig(4)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object describes the last operational change that happened for the given VPLS-PMSI."

createdVplsPmsi - indicates that VPLS PMSI was created in the device.

deletedVplsPmsi - indicates that the VPLS PMSI was deleted from the device. A row in this table will never have vplsMcastGenOperStatusChange equal to deletedVplsPmsi(2), because in that case the row itself will be deleted from the table. This value for vplsMcastGenOperStatusChange is defined mainly for use in vplsMcastPmsiChange notification.

modifiedVplsIpmsiConfig - indicates that the I-PMSI for the VPLS was configured, deleted or changed.

modifiedVplsSpmsiConfig - indicates that the S-PMSI for the VPLS was configured, deleted or changed."

DEFVAL { createdVplsPmsi }

::= { vplsMcastGeneralEntry 1 }

vplsMcastGenOperChangeTime OBJECT-TYPE

SYNTAX TimeStamp

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time at which the last operational change for the VPLS-PMSI in question took place. The last operational change is specified by vplsMcastGenOperStatusChange."

::= { vplsMcastGeneralEntry 2 }

vplsMcastGenIpmsiConfig OBJECT-TYPE

SYNTAX RowPointer

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This points to a row in vplsMcastPmsiConfigTable, for I-PMSI configuration."

::= { vplsMcastGeneralEntry 3 }

vplsMcastGenInterasPmsiConfig OBJECT-TYPE

SYNTAX RowPointer

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This points to a row in vplsMcastPmsiConfigTable, for inter-as I-PMSI configuration in case of segmented inter-as provider tunnels."

::= { vplsMcastGeneralEntry 4 }

vplsMcastGenRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This is used to create or delete a row in this table."

::= { vplsMcastGeneralEntry 5 }

-- VPLS PMSI Configuration Table

```

vplsPmsiConfigTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF VplsPmsiConfigEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "An entry in this table is created for each PMSI configured
        on this router. It can be referred to by base VPLS
        configuration (in vplsConfigEntry) or S-PMSI configuration
        (in vplsSpmsiConfigEntry)"

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```

 ::= { vplsMcastConfig 1 }

vplsPmsiConfigEntry OBJECT-TYPE
    SYNTAX          VplsPmsiConfigEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "An entry in this table is created for each PMSI configured
        on this router under VPLS Service"
    INDEX           { vplsConfigIndex }
    ::= { vplsPmsiConfigTable 1 }

VplsPmsiConfigEntry ::= SEQUENCE {
    vplsPmsiCfgTunnelType          INTEGER,
    vplsPmsiCfgTunnelAuxInfo       Unsigned32,
    vplsPmsiCfgTunnelOrTemplateName SnmpAdminString,
    vplsPmsiCfgEncapsType          INTEGER,
    vplsPmsiCfgSiteType            INTEGER,
    vplsPmsiCfgExcludeUnknownUnicast TruthValue,
    vplsPmsiCfgRowStatus            RowStatus
}

vplsPmsiCfgTunnelType OBJECT-TYPE
    SYNTAX          INTEGER { rsvpP2mp (1),
                               ldpP2mp (2),
                               ingressReplication (3)
                             }
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "Type of tunnel used to instantiate the PMSI."

```

```
::= { vplsPmsiConfigEntry 1 }
```

vplsPmsiCfgTunnelAuxInfo OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Additional tunnel information depending on the type.

 rsvp-p2mp: 1 for statically specified rsvp-p2mp tunnel

 2 for dynamically created rsvp-p2mp tunnel

 ingress-replication:

 1 for using any existing p2p/mp2p lsp

 2 for dynamically creating new p2p lsp"

```
::= { vplsPmsiConfigEntry 2 }
```

vplsPmsiCfgTunnelOrTemplateName OBJECT-TYPE

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SYNTAX SnmpAdminString

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The tunnel name or template name used to create tunnels.

Depending on vplsPmsiCfgTunnelType and

vplsPmsiCfgTunnelAuxInfo:

 dynamically created rsvp-p2mp tunnel:

 template name

 statically specified rsvp-p2mp tunnel:

 tunnel name

 ingress-replication using

 dynamically created lsps:

 template name

 other:

 null"

```
::= { vplsPmsiConfigEntry 3 }
```

vplsPmsiCfgEncapsType OBJECT-TYPE

SYNTAX INTEGER { greIp (1),
 ipIp (2),
 mpls (3)
 }

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The encapsulation type to be used, in case of
 ingress-replication."

```

 ::= { vplsPmsiConfigEntry 4 }

vplsPmsiCfgSiteType OBJECT-TYPE
    SYNTAX          INTEGER {
                        senderReceiver (1),
                        receiverOnly   (2),
                        senderOnly     (3)
                    }
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "Whether this site is a receiver-only site or not.
         sender-receiver (1):  both sender and receiver site.
         receiver-only   (2):  receiver-only site.
         sender-only     (3):  sender only site."
 ::= { vplsPmsiConfigEntry 5 }

vplsPmsiCfgExcludeUnknownUnicast OBJECT-TYPE
    SYNTAX          TruthValue
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "If this object is TRUE, then Unknown Unicast will not

```

```

        be mapped to the provider tunnel.
        If this object is FALSE, then Unknown Unicast will be
        mapped to the provider tunnel."
    DEFVAL { false }
 ::= { vplsPmsiConfigEntry 6 }

vplsPmsiCfgRowStatus OBJECT-TYPE
    SYNTAX          RowStatus
    MAX-ACCESS      read-create
    STATUS          current
    DESCRIPTION
        "Used to create/modify/delete a row in this table."
 ::= { vplsPmsiConfigEntry 7 }

-- Table of IPMSI BGP-AD Advertised/Received.

vplsIpmsiBgpADTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF VplsIpmsiBgpADEntry

```

```

MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "This table specifies all advertised and received IPmsi advertisements."
 ::= { vplsMcastStates 1 }

vplsIpmsiBgpADEntry OBJECT-TYPE
    SYNTAX      VplsIpmsiBgpADEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry is created in this table for each IPMSI attribute advertisement."
    INDEX       { vplsConfigIndex,
                  vplsBgpADConfigRouteDistinguisher,
                  vplsBgpADConfigPrefix,
                  vplsBgpADConfigVplsId }
 ::= { vplsIpmsiBgpADTable 1 }

VplsIpmsiBgpADEntry ::= SEQUENCE {
    vplsIpmsiBgpADAttribute          RowPointer
}

vplsIpmsiBgpADAttribute      OBJECT-TYPE
    SYNTAX      RowPointer
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Points to a row in the vplsIpmsiTunnelAttributeTable."
 ::= { vplsIpmsiBgpADEntry 1 }

```

-- Table of IPMSI BGP-VPLS Advertised/Received.

```

vplsIpmsiBgpVplsTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF VplsIpmsiBgpVplsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table specifies the all advertised and received IPmsi advertisements."
 ::= { vplsMcastStates 2 }

vplsIpmsiBgpVplsEntry OBJECT-TYPE

```

```

SYNTAX          VplsIpmsiBgpVplsEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "An entry is created in this table for each IPMSI attribute advertisement"
INDEX          { vplsConfigIndex,
                  vplsBgpVename }
 ::= { vplsIpmsiBgpVplsTable 1 }

VplsIpmsiBgpVplsEntry ::= SEQUENCE {
    vplsIpmsiBgpVplsAttribute      RowPointer
}

vplsIpmsiBgpVplsAttribute          OBJECT-TYPE
    SYNTAX          RowPointer
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Points to a row in the vplsIpmsiTunnelAttributeTable."
    ::= { vplsIpmsiBgpVplsEntry 1 }

-- Table of VPLS PMSI attributes

vplsPmsiTunnelAttributeTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF VplsPmsiTunnelAttributeEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "This table is for advertised/received PMSI attributes,
         to be referred to by I-PMSI or S-PMSI table entries"
    ::= { vplsMcastStates 3 }

vplsPmsiTunnelAttributeEntry OBJECT-TYPE
    SYNTAX          VplsPmsiTunnelAttributeEntry
    MAX-ACCESS      not-accessible
    STATUS          current

```

DESCRIPTION

"An entry in this table corresponds to an PMSI attribute that is advertised/received on this router.
For BGP-based signaling (for I-PMSI via auto-discovery


```

        procedure, or for S-PMSI via S-PMSI A-D routes),
        they are just as signaled by BGP."
INDEX {
    vplsPmsiTunnelAttributeType,
    vplsPmsiTunnelAttributeLabel,
    vplsPmsiTunnelAttributeFlags,
    vplsPmsiTunnelAttributeId
}
 ::= { vplsPmsiTunnelAttributeTable 1 }

VplsPmsiTunnelAttributeEntry ::= SEQUENCE {
    vplsPmsiTunnelAttributeType      Unsigned32,
    vplsPmsiTunnelAttributeLabel     MplsLabel,
    vplsPmsiTunnelAttributeFlags     OCTET STRING,
    vplsPmsiTunnelAttributeId        OCTET STRING,
    vplsPmsiTunnelPointer            RowPointer,
    vplsPmsiTunnelIf                 RowPointer
}

vplsPmsiTunnelAttributeType OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The tunnel type identifies the type of tunneling technology
        used to establish the PMSI tunnel. This document discusses the
        following tunnel types:
            0 - No tunnel information present
            1 - RSVP-TE P2MP LSP
            2 - mLDP P2MP LSP
        "
    ::= { vplsPmsiTunnelAttributeEntry 1 }

vplsPmsiTunnelAttributeLabel OBJECT-TYPE
    SYNTAX      MplsLabel
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "If the MPLS Label field is non-zero, then it contains an MPLS
        label encoded as 3 octets, where the high-order 20 bits contain the
        value. Absence of MPLS Label is indicated by setting the MPLS Label
        field to zero."
    ::= { vplsPmsiTunnelAttributeEntry 2 }

```

vplsPmsiTunnelAttributeFlags OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (1))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The Flags field has the following format:

```

      0 1 2 3 4 5 6 7
      +---+---+---+---+
      | reserved |L|
      +---+---+---+---+

```

This document defines the following flags:

+ Leaf Information Required (L)"

::= { vplsPmsiTunnelAttributeEntry 3 }

vplsPmsiTunnelAttributeId OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (4|8|12))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"When the type is set to 'No tunnel information present', the PMSI Tunnel attribute carries no tunnel information (no Tunnel Identifier). This type is to be used only in the following case: to enable explicit tracking for a particular customer multicast flow (setting the Leaf Information Required flag to 1), but without binding this flow to a particular provider tunnel (by omitting any tunnel information).

When the type is set to RSVP-TE P2MP LSP, the Tunnel Identifier is (Extended Tunnel ID, Reserved, Tunnel ID, P2MP ID) as carried in the RSVP-TE P2MP LSP SESSION Object [[RFC4875](#)].

When the type is set to mLDP P2MP LSP, the Tunnel Identifier is a P2MP FEC Element [mLDP]."

::= { vplsPmsiTunnelAttributeEntry 4 }

vplsPmsiTunnelPointer OBJECT-TYPE

SYNTAX RowPointer

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If the tunnel exists in some MIB table, this is the row pointer to it."

::= { vplsPmsiTunnelAttributeEntry 5 }

vplsPmsiTunnelIf OBJECT-TYPE

SYNTAX RowPointer

MAX-ACCESS read-only

```

DESCRIPTION
    "If the tunnel has a corresponding interface, this is the
    row pointer to the ifName table."
 ::= { vplsPmsiTunnelAttributeEntry 6 }

-- S-PMSI configuration table

vplsSpmsiConfigTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF VplsSpmsiConfigEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "This table specifies S-PMSI configuration."
    ::= { vplsMcastConfig 2 }

vplsSpmsiConfigEntry OBJECT-TYPE
    SYNTAX      VplsSpmsiConfigEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "An entry is created for each S-PMSI configuration."
    INDEX       { vplsConfigIndex,
                  vplsSpmsiCfgCmcastAddressType,
                  vplsSpmsiCfgCmcastGroupAddress,
                  vplsSpmsiCfgCmcastGroupPrefixLen,
                  vplsSpmsiCfgCmcastSrcAddress,
                  vplsSpmsiCfgCmcastSrcPrefixLen }
    ::= { vplsSpmsiConfigTable 1 }

VplsSpmsiConfigEntry ::= SEQUENCE {
    vplsSpmsiCfgCmcastAddressType      InetAddressType,
    vplsSpmsiCfgCmcastGroupAddress     InetAddress,
    vplsSpmsiCfgCmcastGroupPrefixLen   Unsigned32,
    vplsSpmsiCfgCmcastSrcAddress       InetAddress,
    vplsSpmsiCfgCmcastSrcPrefixLen     Unsigned32,
    vplsSpmsiCfgThreshold               Unsigned32,
    vplsSpmsiCfgPmsiPointer             RowPointer,
    vplsSpmsiCfgRowStatus               RowStatus
}

```

vplsSpmsiCfgCmcastAddressType OBJECT-TYPE
 SYNTAX InetAddressType
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "Type of C-multicast address"
 ::= { vplsSpmsiConfigEntry 1 }

vplsSpmsiCfgCmcastGroupAddress OBJECT-TYPE
 SYNTAX InetAddress
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "C-multicast group address"
 ::= { vplsSpmsiConfigEntry 2 }

vplsSpmsiCfgCmcastGroupPrefixLen OBJECT-TYPE
 SYNTAX Unsigned32
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "C-multicast group address prefix length.
 A group 0 (or ::0) with prefix length 32 (or 128)
 indicates wildcard group, while a group 0 (or ::0)
 with prefix length 0 indicates any group."
 ::= { vplsSpmsiConfigEntry 3 }

vplsSpmsiCfgCmcastSrcAddress OBJECT-TYPE
 SYNTAX InetAddress
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "C-multicast source address"
 ::= { vplsSpmsiConfigEntry 4 }

vplsSpmsiCfgCmcastSrcPrefixLen OBJECT-TYPE
 SYNTAX Unsigned32
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "C-multicast source address prefix length."

A source 0 (or ::0) with prefix length 32 (or 128) indicates a wildcard source, while a source 0 (or ::0) with prefix length 0 indicates any source."
 ::= { vplsSpmsiConfigEntry 5 }

vplsSpmsiCfgThreshold OBJECT-TYPE

SYNTAX Unsigned32 (0..4294967295)

UNITS "kilobits per second"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The bandwidth threshold value which when exceeded for a multicast routing entry in the given VPLS, triggers usage of S-PMSI."

::= { vplsSpmsiConfigEntry 6 }

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vplsSpmsiCfgPmsiPointer OBJECT-TYPE

SYNTAX RowPointer

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This points to a row in vplsPmsiConfigTable, to specify tunnel attributes."

::= { vplsSpmsiConfigEntry 7 }

vplsSpmsiCfgRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Used to create/modify/delete a row in this table."

::= { vplsSpmsiConfigEntry 8 }

-- Table of S-PMSIs advertised/received

vplsSpmsiTable OBJECT-TYPE

SYNTAX SEQUENCE OF VplsSpmsiEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table has information about the S-PMSIs sent/received
by a device."
 ::= { vplsMcastStates 4 }

vplsSpmsiEntry OBJECT-TYPE

SYNTAX VplsSpmsiEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in this table is created or updated for every S-PMSI
advertised/received in a particular VPLS."

INDEX { vplsConfigIndex,
vplsSpmsiCmcastAddrType,
vplsSpmsiCmcastGroup,
vplsSpmsiCmcastGroupPrefixLen,
vplsSpmsiCmcastSource,
vplsSpmsiCmcastSourcePrefixLen,
vplsSpmsiOrigAddrType,
vplsSpmsiOrigAddress}

::= { vplsSpmsiTable 1 }

VplsSpmsiEntry ::= SEQUENCE {

vplsSpmsiCmcastAddrType	InetAddressType,
vplsSpmsiCmcastGroup	InetAddress,
vplsSpmsiCmcastGroupPrefixLen	Unsigned32,
vplsSpmsiCmcastSource	InetAddress,
vplsSpmsiCmcastSourcePrefixLen	InetAddress,
vplsSpmsiOrigAddrType	InetAddressType,
vplsSpmsiOrigAddress	InetAddress,
vplsSpmsiTunnelAttribute	RowPointer,
vplsSpmsiUpTime	TimeInterval,
vplsSpmsiExpTime	TimeInterval,
vplsSpmsiRefCnt	Unsigned32
}	

vplsSpmsiCmcastAddrType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The Internet address type of vplsSpmsiCmcastGroup/Source."

```

::= { vplsSpmsiEntry 1 }

vplsSpmsiCmcastGroup OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (4|16|20))
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "S-PMSI C-multicast group address.
         If it is 0 (or ::0), this is a wildcard group,
         and vplsSpmsiCmcastGroupPrefixLen must be 32 (or 128)."
```

```

::= { vplsSpmsiEntry 2 }

vplsSpmsiCmcastGroupPrefixLen OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "S-PMSI C-multicast group address prefix length."
    ::= { vplsSpmsiEntry 3 }

vplsSpmsiCmcastSource OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (4|16|20))
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "S-PMSI C-multicast source address
         If it is 0 (or ::0), this is a wildcard source,
         and vplsSpmsiCmcastSourcePrefixLen must be 32 (or 128)."
```

```

::= { vplsSpmsiEntry 4 }

```

```

vplsSpmsiCmcastSourcePrefixLen OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (4|16|20))
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "S-PMSI C-multicast source address prefix length."
    ::= { vplsSpmsiEntry 5 }

vplsSpmsiOrigAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS   not-accessible
    STATUS       current

```

```

DESCRIPTION
    "The Internet address type of vplsSpmsiOrigAddress."
 ::= { vplsSpmsiEntry 6 }

vplsSpmsiOrigAddress OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The BGP address of the device that originated the S-PMSI."
 ::= { vplsSpmsiEntry 7 }

vplsSpmsiTunnelAttribute OBJECT-TYPE
    SYNTAX      RowPointer
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "A row pointer to the vplsPmsiTunnelAttributeTable"
 ::= { vplsSpmsiEntry 8 }

vplsSpmsiUpTime OBJECT-TYPE
    SYNTAX      TimeInterval
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "The time since this S-PMSI
         was first advertised/received by the device."
 ::= { vplsSpmsiEntry 9 }

vplsSpmsiExpTime OBJECT-TYPE
    SYNTAX      TimeInterval
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "For UDP-based S-PMSI signaling for VPLS,
         the amount of time remaining before this

```

```

        received S-PMSI Join Message expires,
        or the next S-PMSI Join Message refresh is to be
        advertised again from the device."
 ::= { vplsSpmsiEntry 10 }

```



```

vplsSpmsiRefCnt OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "The number of c-multicast routes that are mapped to
         this S-PMSI."
    ::= { vplsSpmsiEntry 11 }

-- Module compliance.
vplsMcastCompliances
    OBJECT IDENTIFIER ::= { vplsMcastConformance 1 }

vplsMcastModuleFullCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "Compliance requirement for implementations that
         provide full support for VPLS-LDP-DRAFT-01-MIB.
         Such devices can then be monitored and configured using
         this MIB module."

    MODULE -- this module

    MANDATORY-GROUPS {
        vplsMcastGroup,
        vplsMcastNotificationGroup
    }

    ::= { vplsMcastCompliances 1 }

-- Units of conformance.

vplsMcastGroups
    OBJECT IDENTIFIER ::= { vplsMcastConformance 2 }

vplsMcastGroup OBJECT-GROUP
    OBJECTS {
        vplsMcastGenOperStatusChange,
        vplsMcastGenOperChangeTime,
        vplsMcastGenIpmsiConfig,
        vplsMcastGenInterasPmsiConfig,

```

```

        vplsMcastGenRowStatus,
        vplsPmsiCfgTunnelType,
        vplsPmsiCfgTunnelAuxInfo,
        vplsPmsiCfgTunnelOrTemplateName,
        vplsPmsiCfgEncapsType,
        vplsPmsiCfgSiteType,
        vplsPmsiCfgExcludeUnknownUnicast,
        vplsPmsiCfgRowStatus,
        vplsIpmsiBgpADAttribute,
        vplsIpmsiBgpVplsAttribute,
        vplsPmsiTunnelPointer,
        vplsPmsiTunnelIf,
        vplsSpmsiCfgThreshold,
        vplsSpmsiCfgPmsiPointer,
        vplsSpmsiCfgRowStatus,
        vplsSpmsiTunnelAttribute,
        vplsSpmsiUpTime,
        vplsSpmsiExpTime,
        vplsSpmsiRefCnt
    }
    STATUS    current
    DESCRIPTION
        "TODO"
    ::= { vplsMcastGroups 1 }

vplsMcastNotificationGroup OBJECT-GROUP
    OBJECTS { vplsMcastNotificationEnable
    }
    STATUS    current
    DESCRIPTION
        "TODO"
    ::= { vplsMcastGroups 2 }

END

```

[8.](#) Security Considerations

TODO

[9.](#) IANA Considerations

IANA is requested to root MIB objects in the MIB module contained in this document under the transmission subtree.

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[10.](#) Contributors

TODO.

[11.](#) Acknowledgements

[TODO].

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