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Virtual Private Lan Services (VPLS) Management Information Base

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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 to configure and/or monitor Virtual Private LAN services. It needs to be used in conjunction with The Pseudowire (PW) Management Information Base.

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[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 defines three MIB modules that can be used to manage VPLS (Virtual Private LAN Services) for transmission over a packet Switched Network (PSN) using LDP [[RFC4762](#)] or BGP [[RFC4761](#)] signaling. This MIB module provides generic management of VPLS services as defined by the IETF L2VPN Working Group. Additional MIB modules are also defined for management of LDP VPLS and BGP VPLS services as defined by the IETF L2VPN Working Group.

[2.](#) Terminology

This document adopts the definitions, acronyms and mechanisms described in [[RFC3985](#)]. Unless otherwise stated, the mechanisms of [[RFC3985](#)] apply and will not be re-described here.

[2.1.](#) Conventions used in this document

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 [[RFC2119](#)].

[3.](#) 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 set of MIB modules that are compliant to the SMIV2, which is described in STD 58 [[RFC2578](#)] [[RFC2579](#)] [[RFC2580](#)].

[4.](#) VPLS MIB Module Architecture

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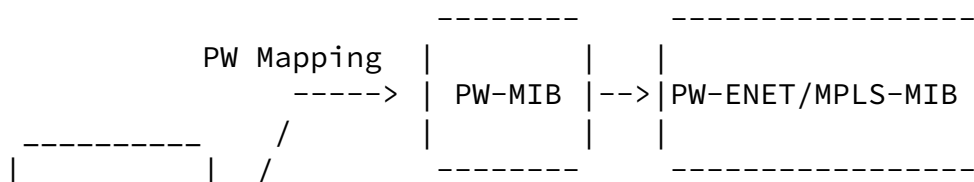
The MIB structure for defining a VPLS service is composed from three MIB modules.

The first is the VPLS-GENERIC-MIB module, which configures general parameters of the VPLS service that are common to all types of VPLS services.

The second is the VPLS-LDP-MIB module, which configures VPLS-LDP [[RFC4762](#)] specific parameters of the VPLS service.

The third is the VPLS-BGP-MIB module, which configures VPLS-BGP [[RFC4761](#)] specific parameters of the VPLS service.

The arrows in Figure A indicate whether we can map data from one module into another.



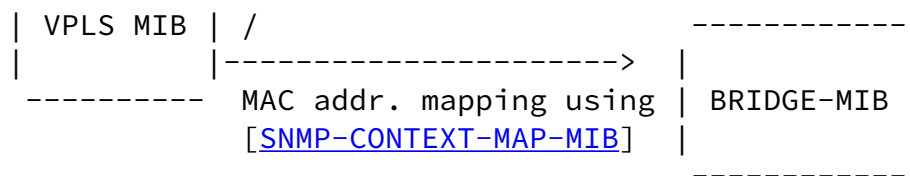


Figure A

Additionally service-specific modules may be defined in other documents.

[4.1.](#) VPLS-GENERIC-MIB Module Usage

An entry in the `vplsConfigTable` MUST exist for every VPLS service. This table holds generic parameters which apply to a VPLS service which can be signaled via LDP or BGP.

A conceptual row can be created in the `vplsConfigTable` in one of the following ways:

- 1) An NMS creates a row in the `vplsConfigTable` using SNMP Set requests which causes the node to create and start a new VPLS service. The agent MUST support the creation of VPLS services in this way.
- 2) The agent MAY create a row in the `vplsConfigTable` automatically due to some auto discovery application, or based on

configuration that is done through non-SNMP applications. This mode is OPTIONAL.

At least one entry in the `vplsPwBindTable` MUST exist for each VPLS service. This binding table links one VPLS service with one or many pseudowires (defined in [\[RFC5601\]](#)). Each pseudowire may be used as a spoke or as part of a mesh based on the parameters defined in this table.

For each VPLS service, an entry in the `vplsBgpAdConfigTable` MUST exist if Auto-discovery has been enabled for that service. This table stores the information required for auto-discovery.

For each VPLS service, at least one entry in the `vplsBgpRteTargetTable` MUST exist if auto-discovery has been configured for that service. One service can import and export multiple Route Targets.

[4.2.](#) VPLS-LDP-MIB Module Usage

An entry in the `vplsLdpConfigTable` MUST be created by the agent for a VPLS service signaled using LDP.

[4.3.](#) VPLS-BGP-MIB Module Usage

An entry in the `vplsBgpConfigTable` MUST be created by the agent for a VPLS service signaled using BGP.

[4.4.](#) Relations to other MIB modules

- The `vplsPwBindTable` links the VPLS entry to the `pwTable` in [\[RFC5601\]](#)
- The association of MAC addresses to VPLS entries is possible by adding a turnstile function to interpret the entries in [\[SNMP-CONTEXT-MAP-MIB\]](#). In [\[SNMP-CONTEXT-MAP-MIB\]](#) there is a mapping between the `vacmContextName` [\[RFC3415\]](#) to `dot1dBasePort` [\[RFC4188\]](#) and `vplsConfigIndex`. This mapping can be used to map the `vplsConfigIndex` to a `dot1dBasePort` in the BRIDGE-MIB. This resulting value of `dot1dBasePort` can be used to access corresponding MAC addresses that belong to a particular `vplsConfigIndex`.
- Unless all the necessary entries in the applicable tables have been created and all the parameters have been consistently configured in those tables, signaling cannot be performed

from the local node, and the `vplsConfigRowStatus` should report 'notReady'.

- Statistics can be gathered from the Pseudowire performance tables in [\[RFC5601\]](#)

5. Example of the VPLS MIB modules usage

In this section we provide an example of using the MIB objects described in [section 7](#) to set up a VPLS service over MPLS. While this example is not meant to illustrate every permutation of the MIB, it is intended as an aid to understanding some of the key concepts. It is meant to be read after going through the MIB itself.

In this example a VPLS service (VPLS-A) is setup using LDP for signaling the pseudowire. The binding between the VPLS service and the pseudowire is reflected in the VplsPwBindTable. The pseudowire configuration is defined in [RFC 5601](#).

In the VPLS-GENERIC-MIB module:

Row in vplsConfigTable:

```
{
    vplsConfigIndex          10,
    vplsConfigName           "VPLS-A"
    vplsConfigAdminStatus    1(up),
    vplsConfigMacLearning    1(true),
    vplsConfigDiscardUnknownDest 2(false),
    vplsConfigMacAging       1(true),
    vplsConfigVpnId          "100:10"
    vplsConfigRowStatus      1(active)
}
```

Row in vplsStatusTable:

```
{
    vplsStatusOperStatus    1(up),
    vplsStatusPeerCount     1
}
```

Row in VplsPwBindTable :

```
{
    vplsPwBindConfigType    manual,
    vplsPwBindType          spoke,
    vplsPwBindRowStatus     1(active),
    vplsPwBindStorageType   volatile
}
```

In the VPLS-LDP-MIB module:

Row in vplsLdpConfigTable:

```
{
    vplsLdpConfigMacAddrWithdraw          1(true),

}
```

Row in vplsLdpPwBindTable:

```
{
    vplsLdpPwBindType                      1(mesh),
    vplsLdpPwBindMacAddressLimit          100
}
```

[6.](#) Object definitions

[6.1.](#) VPLS-GENERIC-MIB

This MIB module makes references to the following documents.

[[RFC2578](#)], [[RFC2579](#)], [[RFC2580](#)], [[RFC3411](#)],
[[RFC2863](#)], [[RFC4265](#)] and [[RFC3813](#)].

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

```
IMPORTS
```

```
NOTIFICATION-TYPE, MODULE-IDENTITY, OBJECT-TYPE,
Unsigned32, Counter32, transmission
    FROM SNMPv2-SMI                                -- RFC2578
```

```
MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
    FROM SNMPv2-CONF                                -- RFC2580
```

```
TruthValue, RowStatus, StorageType, TEXTUAL-CONVENTION
    FROM SNMPv2-TC                                  -- RFC2579
```

```
SnmpAdminString
    FROM SNMP-FRAMEWORK-MIB                          -- RFC3411
```

```
pwIndex
    FROM PW-STD-MIB
```

```
VPNIdOrZero
    FROM VPN-TC-STD-MIB                            -- RFC4265
```


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;

vpplsGenericDraft01MIB MODULE-IDENTITY

-- RFC Editor: Please replace vpplsGenericDraft01MIB with
-- vpplsGenericMIB throughout the MIB and remove
-- this note.

LAST-UPDATED "201401301200Z" -- 30 Jan 2014 12:00:00 GMT

ORGANIZATION "Layer 2 Virtual Private Networks (L2VPN)
Working Group"

CONTACT-INFO

"

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The L2VPN Working Group (email distribution l2vpn@ietf.org,
<http://www.ietf.org/html.charters/l2vpn-charter.html>)

"

DESCRIPTION

"Copyright (C) The IETF Trust (2014). The initial
version of this MIB module was published in RFC XXXX.

-- RFC Editor: Please replace XXXX with RFC number & remove
-- this note.

For full legal notices see the RFC itself or see:

<http://www.ietf.org/copyrights/ianamib.html>

This MIB module contains generic managed object definitions
for Virtual Private LAN Services as define in [RFC4762](#) and
[RFC4761](#).

This MIB module enables the use of any underlying Pseudowire
network."

-- Revision history.

REVISION

"201401301200Z" -- 30 Jan 2014 12:00:00 GMT

DESCRIPTION "Initial version published as part of RFC YYYY."
-- RFC Editor: please replace YYYY with IANA assigned value, and
-- delete this note.

::= { transmission AAA }

-- RFC Editor: please replace AAA with IANA assigned value, and
-- delete this note.

-- VPLS BGP Auto-Discovery specific Textual Convention

VplsBgpRouteDistinguisher ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"Syntax for a route distinguisher that matches the definition in [RFC4364](#). For a complete definition of a route distinguisher, see [RFC4364](#). For more details on use of a route distinguisher for a VPLS service, see [RFC4761](#)."

REFERENCE

"[RFC4364](#)"

SYNTAX OCTET STRING(SIZE (0..256))

VplsBgpRouteTarget ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"Syntax for a route target that matches the definition in [RFC4364](#). For a complete definition of a route target, see [RFC4364](#)."

REFERENCE

"[RFC4364](#)"

SYNTAX OCTET STRING(SIZE (0..256))

VplsBgpRouteTargetType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"Used to define the type of a route target usage. Route targets can be specified to be imported, exported, or both. For a complete definition of a route target, see [RFC4364](#)."

REFERENCE

["RFC4364"](#)
SYNTAX INTEGER { import(1), export(2), both(3) }

-- Top-level components of this MIB.

-- Notifications
vplsNotifications OBJECT IDENTIFIER
::= { vplsGenericDraft01MIB 0 }

-- Tables, Scalars
vplsObjects OBJECT IDENTIFIER
::= { vplsGenericDraft01MIB 1 }

-- Conformance
vplsConformance OBJECT IDENTIFIER
::= { vplsGenericDraft01MIB 2 }

-- PW Virtual Connection Table

vplsConfigIndexNext OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object contains an appropriate value to be used
for vplsConfigIndex when creating entries in the
vplsConfigTable. The value 0 indicates that no
unassigned entries are available. To obtain the
value of vplsConfigIndex for a new entry in the
vplsConfigTable, the manager issues a management
protocol retrieval operation to obtain the current
value of vplsConfigIndex. After each retrieval
operation, the agent should modify the value to
reflect the next unassigned index. After a manager
retrieves a value the agent will determine through
its local policy when this index value will be made
available for reuse."
::= { vplsObjects 1 }

vplsConfigTable OBJECT-TYPE
SYNTAX SEQUENCE OF VplsConfigEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This table specifies information for configuring
and monitoring Virtual Private Lan Services(VPLS).
"

::= { vplsObjects 2 }

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vplsConfigEntry OBJECT-TYPE

SYNTAX VplsConfigEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A row in this table represents a Virtual Private Lan Service(VPLS) in a packet network. It is indexed by vplsConfigIndex, which uniquely identifies a single VPLS.

A row is created via SNMP or by the agent if a VPLS service is created by a non-SNMP application or due to the Auto-Discovery process.

All of the read-create objects values except vplsConfigSignalingType can be changed when vplsConfigRowStatus is in the active(1) state. Changes for vplsConfigSignalingType are only allowed when the vplsConfigRowStatus is in notInService(2) or notReady(3) states.
"

INDEX { vplsConfigIndex }

::= { vplsConfigTable 1 }

VplsConfigEntry ::=

SEQUENCE {

vplsConfigIndex	Unsigned32,
vplsConfigName	SnmpAdminString,
vplsConfigDescr	SnmpAdminString,
vplsConfigAdminStatus	INTEGER,
vplsConfigMacLearning	TruthValue,
vplsConfigDiscardUnknownDest	TruthValue,
vplsConfigMacAging	TruthValue,
vplsConfigFwdFullHighWatermark	Unsigned32,
vplsConfigFwdFullLowWatermark	Unsigned32,
vplsConfigRowStatus	RowStatus,
vplsConfigMtu	Unsigned32,
vplsConfigVpnId	VPnIdOrZero,
vplsConfigStorageType	StorageType,

```

vplsConfigSignalingType
}

```

vplsConfigIndex	OBJECT-TYPE
SYNTAX	Unsigned32 (1..2147483647)
MAX-ACCESS	not-accessible

```
STATUS          current
DESCRIPTION
    "Unique index for the conceptual row identifying
      a VPLS service."
 ::= { vplsConfigEntry 1 }
```

```

vplsConfigName    OBJECT-TYPE
    SYNTAX          SnmpAdminString
    MAX-ACCESS      read-create
    STATUS          current
    DESCRIPTION
        "A textual name of the VPLS.
         If there is no local name, or this object is
         otherwise not applicable, then this object MUST
         contain a zero-length octet string."
    DEFVAL          { "" }
    ::= { vplsConfigEntry 2 }

```

```

vplsConfigDescr  OBJECT-TYPE
    SYNTAX          SnmpAdminString
    MAX-ACCESS      read-create
    STATUS          current
    DESCRIPTION
        "A textual string containing information about the
        VPLS service. If there is no information for this VPLS
        service, then this object MUST contain a zero-length
        octet string."
    DEFVAL          { "" }
    ::= { vplsConfigEntry 3 }

```

```

vplsConfigAdminStatus OBJECT-TYPE
    SYNTAX          INTEGER {
                        up(1),
                        down(2),
    }

```

```

testing(3)    -- in some test mode

}
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
    "The desired administrative state of the VPLS
    service. If the administrative status of the
    VPLS service is changed to enabled then this
    service is able to utilize pseudowires to
    perform the tasks of a VPLS service.
    The testing(3) state indicates that no operational
    packets can be passed. "
DEFVAL        { down }

```

```

::= { vplsConfigEntry 4 }

vplsConfigMacLearning OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS   read-create
    STATUS      current
    DESCRIPTION
        "This object specifies if MAC Learning is enabled
        in this service. If this object is true then MAC
        Learning is enabled. If false, then MAC Learning is
        disabled."
    DEFVAL      { true }
    ::= { vplsConfigEntry 6 }

vplsConfigDiscardUnknownDest OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS   read-create
    STATUS      current
    DESCRIPTION
        "If the value of this object is 'true', then frames
        received with an unknown destination MAC are discarded
        in this VPLS. If 'false', then the packets are
        processed."
    DEFVAL      { false }
    ::= { vplsConfigEntry 7 }

```

```

vplsConfigMacAging OBJECT-TYPE
    SYNTAX          TruthValue
    MAX-ACCESS       read-create
    STATUS           current
    DESCRIPTION
        "If the value of this object is 'true'
        then the MAC aging process is enabled in
        this VPLS. If 'false', then the MAC aging process
        is disabled"
    DEFVAL           { true }
    ::= { vplsConfigEntry 8 }

```

```

vplsConfigFwdFullHighWatermark OBJECT-TYPE
    SYNTAX          Unsigned32 (0..100)
    UNITS            "percentage"
    MAX-ACCESS       read-create
    STATUS           current
    DESCRIPTION
        "This object specifies the utilization of the
        forwarding database for this VPLS instance at
        which the vplsFwdFullAlarmRaised notification
        will be sent. The value of this object must
        be higher than vplsConfigFwdFullLowWatermark."

```

```

    DEFVAL          { 95 }
    ::= { vplsConfigEntry 10 }

```

```

vplsConfigFwdFullLowWatermark OBJECT-TYPE
    SYNTAX          Unsigned32 (0..99)
    UNITS            "percentage"
    MAX-ACCESS       read-create
    STATUS           current
    DESCRIPTION
        "This object specifies the utilization of the
        forwarding database for this VPLS instance
        at which the vplsFwdFullAlarmCleared
        notification will be sent. The value of this
        object must be less than
        vplsConfigFwdFullHighWatermark"
    DEFVAL          { 90 }
    ::= { vplsConfigEntry 11 }

```

vplsConfigRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"For creating, modifying, and deleting this row.

All other objects in this row must be set to valid values before this object can be set to active(1).

None of the read-create objects in the conceptual rows may be changed when this object is in the active(1) state.

If this object is set to destroy(6) or deleted by the agent, all associated entries in the vplsPWBindTable, vplsBGPRTeTargetTable and vplsBgpVETable shall be deleted."

::= { vplsConfigEntry 12 }

vplsConfigMtu OBJECT-TYPE

SYNTAX Unsigned32 (64..9192)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The value of this object specifies the MTU of this vpls instance. This can be used to limit the MTU to a value lower than the MTU supported by the associated Pseudowires"

DEFVAL { 1518 }

::= { vplsConfigEntry 13 }

vplsConfigVpnId OBJECT-TYPE

SYNTAX VpnIdOrZero

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This objects indicates the IEEE 802-1990 VPN ID of the associated VPLS service."

::= { vplsConfigEntry 14 }


```

vplsConfigStorageType OBJECT-TYPE
    SYNTAX          StorageType
    MAX-ACCESS      read-create
    STATUS          current
    DESCRIPTION
        "This variable indicates the storage type for this row."
    DEFVAL { nonVolatile }
    ::= { vplsConfigEntry 15 }

```

```

vplsConfigSignalingType OBJECT-TYPE
    SYNTAX          INTEGER {
                        ldp(1),
                        bgp(2),
                        none(3)
                    }
    MAX-ACCESS      read-create
    STATUS          current
    DESCRIPTION
        "Desired signaling type of the VPLS service.

        If the value of this object is ldp(1), then a
        corresponding entry in vplsLdpConfigTable is required.

        If the value of this object is bgp(2), then a
        corresponding entry in vplsBgpConfigTable is required.

        If the value of this object is none(3), then it
        indicates a static configuration of PW labels."
    DEFVAL          { none }
    ::= { vplsConfigEntry 16 }

```

-- VPLS Status table

```

vplsStatusTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF VplsStatusEntry
    MAX-ACCESS      not-accessible
    STATUS          current

```

DESCRIPTION

"This table provides information for monitoring

```

        Virtual Private Lan Services (VPLS).
        "
 ::= { vplsObjects 3 }

vplsStatusEntry OBJECT-TYPE
    SYNTAX          VplsStatusEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "A row in this table represents a Virtual Private Lan
        Service(VPLS) in a packet network. It is indexed by
        vplsConfigIndex, which uniquely identifies a single VPLS.

        A row in this table is automatically created by the agent
        when a VPLS service is first set to active.
        "
    AUGMENTS         { vplsConfigEntry }
 ::= { vplsStatusTable 1 }

VplsStatusEntry ::=
    SEQUENCE {
        vplsStatusOperStatus          INTEGER,
        vplsStatusPeerCount           Counter32
    }

vplsStatusOperStatus OBJECT-TYPE
    SYNTAX          INTEGER {
                        other(0),
                        up(1),
                        down(2)
                    }
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "The current operational state of this VPLS Service."
 ::= { vplsStatusEntry 1 }

vplsStatusPeerCount OBJECT-TYPE
    SYNTAX          Counter32
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "This objects specifies the number of peers
        (pseudowires) present in this VPLS instance."
 ::= { vplsStatusEntry 2 }

```

-- VPLS PW Binding Table

vplsPwBindTable OBJECT-TYPE

SYNTAX SEQUENCE OF VplsPwBindEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table provides an association between a VPLS service and the corresponding pseudowires. A service can have more than one pseudowire association. Pseudowires are defined in the pwTable"

::= { vplsObjects 4 }

vplsPwBindEntry OBJECT-TYPE

SYNTAX VplsPwBindEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each row represents an association between a VPLS instance and a pseudowire defined in the pwTable. Each index is unique in describing an entry in this table. However both indexes are required to define the one to many association of service to pseudowire.

Entries in this table may be created or deleted through SNMP, as side-effects of console or other non-SNMP management commands, or upon learning via autodiscovery.

It is optional for the agent to allow entries to be created that point to non-existent entries in vplsConfigTable."

INDEX { vplsConfigIndex, pwIndex }

::= { vplsPwBindTable 1 }

VplsPwBindEntry ::=

SEQUENCE {

vplsPwBindConfigType INTEGER,

vplsPwBindType INTEGER,

vplsPwBindRowStatus RowStatus,

vplsPwBindStorageType StorageType

}

vpplsPwBindConfigType OBJECT-TYPE
SYNTAX INTEGER {

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manual (1),
autodiscovery (2)
}
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The value of this object indicates
whether the Pseudo Wire binding was created
via SNMP/Console or via Auto-Discovery.

The value of this object must be
specified when the row is created and cannot
be changed while the row status is active(1)"
::= { vpplsPwBindEntry 1 }

vpplsPwBindType OBJECT-TYPE
SYNTAX INTEGER {
mesh (1),
spoke (2)
}
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The value of this object indicates
whether the pseudowire binding is of
type mesh or spoke.

The value of this object must be
specified when the row is created and cannot
be changed while the row status is active(1)"
::= { vpplsPwBindEntry 2 }

vpplsPwBindRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"For creating, modifying, and deleting this row.

All other objects in this row must be set to valid values before this object can be set to active(1).

None of the read-create objects in the conceptual rows may be changed when this object is in the active(1) state.

If autodiscovered entries are deleted they would likely re-appear in the next autodiscovery interval."

```
::= { vplsPwBindEntry 3 }
```

```
vplsPwBindStorageType OBJECT-TYPE
```

```
SYNTAX          StorageType
```

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

```
STATUS          current
```

```
DESCRIPTION
```

```
    "This variable indicates the storage type for this row."
```

```
DEFVAL { volatile }
```

```
::= { vplsPwBindEntry 4 }
```

```
-- vplsBgpADConfigTable
```

```
vplsBgpADConfigTable OBJECT-TYPE
```

```
SYNTAX          SEQUENCE OF VplsBgpADConfigEntry
```

```
MAX-ACCESS      not-accessible
```

```
STATUS          current
```

```
DESCRIPTION
```

```
    "This table specifies information for configuring  
    BGP Auto-Discovery parameters for a given VPLS service."  
    "
```

```
::= { vplsObjects 5 }
```

```
vplsBgpADConfigEntry OBJECT-TYPE
```

```
SYNTAX          VplsBgpADConfigEntry
```

```
MAX-ACCESS      not-accessible
```

```
STATUS          current
```

```
DESCRIPTION
```

```
    "A row in this table indicates that BGP based Auto-  
    Discovery is in use for this instance of VPLS."
```

A row in this table is indexed by vplsConfigIndex, which uniquely identifies a single VPLS.

Entries in this table may be created or deleted through SNMP, as side-effects of console or other non-SNMP management commands, or upon learning via autodiscovery.

All of the read-create objects can be changed when vplsBGPADConfigRowStatus is in active(1) state."

```
INDEX          { vplsConfigIndex }
 ::= { vplsBgpADConfigTable 1 }
```

```
VplsBgpADConfigEntry ::=
  SEQUENCE {
    vplsBgpADConfigRouteDistinguisher  VplsBgpRouteDistinguisher,
    vplsBgpADConfigPrefix               Unsigned32,
    vplsBgpADConfigVplsId               VplsBgpRouteDistinguisher,
    vplsBgpADConfigRowStatus            RowStatus,
    vplsBgpADConfigStorageType          StorageType
  }
```

```
vplsBgpADConfigRouteDistinguisher OBJECT-TYPE
  SYNTAX          VplsBgpRouteDistinguisher
  MAX-ACCESS      read-create
  STATUS          current
  DESCRIPTION
    " The route distinguisher for this VPLS. See RFC4364
    for a complete definition of a route distinguisher.
    for more details on use of a route distinguisher
    for a VPLS service, see RFC4761. When not configured, the
    value is derived from the lower 6 bytes of
    vplsBgpADConfigVplsId.
    "
  ::= { vplsBgpADConfigEntry 1 }
```

```
vplsBgpADConfigPrefix          OBJECT-TYPE
  SYNTAX          Unsigned32
  MAX-ACCESS      read-create
  STATUS          current
```

DESCRIPTION

" In case of auto-discovery the default prefix advertised is the IP address of the loopback. In case the user wants to override the loopback address, vplsBgpADConfigPrefix should be set. When this value is non-zero this value is used along with vplsBgpADConfigRouteDistinguisher in the NLRI, see [RFC6074](#)
"

DEFVAL { 0 }

::= { vplsBgpADConfigEntry 2 }

vplsBgpADConfigVplsId OBJECT-TYPE

SYNTAX VplsBgpRouteDistinguisher

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" VplsId is a unique identifier for all VSIs belonging to

the same VPLS. It is advertised as an extended community.
"

::= { vplsBgpADConfigEntry 3 }

vplsBgpADConfigRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"For creating, modifying, and deleting this row.

All other objects in this row must be set to valid values before this object can be set to active(1).

None of the read-create objects in the conceptual rows may be changed when this object is in the active(1) state."

::= { vplsBgpADConfigEntry 4 }

vplsBgpADConfigStorageType OBJECT-TYPE

SYNTAX StorageType

MAX-ACCESS read-create

STATUS current

```

DESCRIPTION
"This variable indicates the storage type for this row."
DEFVAL { nonVolatile }
::= { vplsBgpADConfigEntry 5 }

```

```
-- vplsBgpRteTargetTable
```

```

vplsBgpRteTargetTable    OBJECT-TYPE
    SYNTAX                SEQUENCE OF VplsBgpRteTargetEntry
    MAX-ACCESS            not-accessible
    STATUS                current
    DESCRIPTION
        " This table specifies the list of Route Targets
        imported or exported by BGP during
        auto-discovery of VPLS.
        "
        ::= { vplsObjects 6 }

vplsBgpRteTargetEntry    OBJECT-TYPE
    SYNTAX                VplsBgpRteTargetEntry
    MAX-ACCESS            not-accessible
    STATUS                current
    DESCRIPTION
        "An entry in this table specifies the value of the
        Route Target being used by BGP. Depending on the value
        of vplsBgpRteTargetType a Route Target might be

```

exported or imported or both. Every VPLS which uses auto-discovery for finding peer nodes can import and export multiple Route Targets. This representation allows support for hierarchical VPLS.

Entries in this table may be created or deleted through SNMP, as side-effects of console or other non-SNMP management commands, or upon learning via autodiscovery.

It is optional for the agent to allow entries to be created that point to non-existent entries in vplsConfigTable."

```
INDEX      { vplsConfigIndex, vplsBgpRteTargetIndex }
```



```

        ::= { vplsBgpRteTargetTable 1 }

VplsBgpRteTargetEntry ::=
    SEQUENCE {
        vplsBgpRteTargetIndex          Unsigned32,
        vplsBgpRteTargetRTType         VplsBgpRouteTargetType,
        vplsBgpRteTargetRT             VplsBgpRouteTarget,
        vplsBgpRteTargetRowStatus      RowStatus,
        vplsBgpRteTargetStorageType    StorageType
    }

vplsBgpRteTargetIndex    OBJECT-TYPE
    SYNTAX                Unsigned32
    MAX-ACCESS             not-accessible
    STATUS                 current
    DESCRIPTION
        "This index along with vplsConfigIndex, identifies one
        entry in the vplsBgpRteTargetTable. By keeping
        vplsConfigIndex constant and using new value of
        vplsBgpRteTargetIndex users can configure multiple
        Route Targets for the same VPLS.
        "
    ::= { vplsBgpRteTargetEntry 1 }

vplsBgpRteTargetRTType  OBJECT-TYPE
    SYNTAX                VplsBgpRouteTargetType
    MAX-ACCESS             read-create
    STATUS                 current
    DESCRIPTION
        " Used to define the type of a route target usage.
        Route targets can be specified to be imported,
        exported, or both. For a complete definition of a
        route target, see RFC4364."
    ::= { vplsBgpRteTargetEntry 2 }

```

```

vplsBgpRteTargetRT      OBJECT-TYPE
    SYNTAX                VplsBgpRouteTarget
    MAX-ACCESS             read-create
    STATUS                 current
    DESCRIPTION
        " The route target associated with the VPLS service.
        For more details on use of route targets

```

for a VPLS service, see [RFC4761](#).

"

::= { vplsBgpRteTargetEntry 3 }

vplsBgpRteTargetRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This variable is used to create, modify, and/or delete a row in this table.

All other objects in this row must be set to valid values before this object can be set to active(1).

When a row in this table is in active(1) state, no objects in that row can be modified.

If autodiscovered entries are deleted they would likely re-appear in the next autodiscovery interval."

::= { vplsBgpRteTargetEntry 4 }

vplsBgpRteTargetStorageType OBJECT-TYPE

SYNTAX StorageType

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This variable indicates the storage type for this row."

DEFVAL { volatile }

::= { vplsBgpRteTargetEntry 5 }

vplsStatusNotifEnable OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"If this object is set to true(1), then it enables the emission of vplsStatusChanged notification, otherwise this notification is not

```

        emitted."
REFERENCE
    "See also RFC3413 for explanation that
    notifications are under the ultimate control of the
    MIB module in this document."
DEFVAL { false }
 ::= { vplsObjects 7 }

```

vplsNotificationMaxRate OBJECT-TYPE

```

SYNTAX      Unsigned32
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION

```

"This object indicates the maximum number of notifications issued per second. If events occur more rapidly, the implementation may simply fail to emit these notifications during that period, or may queue them until an appropriate time. A value of 0 means no throttling is applied and events may be notified at the rate at which they occur."

```

DEFVAL      { 0 }
 ::= { vplsObjects 8 }

```

-- VPLS Service Notifications

vplsStatusChanged NOTIFICATION-TYPE

```

OBJECTS {
    vplsConfigVpnId,
    vplsConfigAdminStatus,
    vplsStatusOperStatus
}
STATUS      current
DESCRIPTION

```

"The vplsStatusChanged notification is generated when there is a change in the administrative or operating status of a VPLS service.

The object instances included in the notification are the ones associated with the VPLS service whose status has changed."

```

 ::= { vplsNotifications 1 }

```

vplsFwdFullAlarmRaised NOTIFICATION-TYPE

```

OBJECTS {
    vplsConfigVpnId,
    vplsConfigFwdFullHighWatermark,
    vplsConfigFwdFullLowWatermark
}
STATUS      current

```

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DESCRIPTION

"The vplsFwdFullAlarmRaised notification is generated when the utilization of the Forwarding database is above the value specified by vplsConfigFwdFullHighWatermark. The object instances included in the notification are the ones associated with the VPLS service which has exceeded the threshold."

::= { vplsNotifications 2 }

vplsFwdFullAlarmCleared NOTIFICATION-TYPE

OBJECTS {

vplsConfigVpnId,
vplsConfigFwdFullHighWatermark,
vplsConfigFwdFullLowWatermark

}

STATUS current

DESCRIPTION

"The vplsFwdFullAlarmCleared notification is generated when the utilization of the Forwarding database is below the value specified by vplsConfigFwdFullLowWatermark.

The object instances included in the notification are the ones associated with the VPLS service which has fallen below the threshold."

::= { vplsNotifications 3 }

-- Conformance Section

vplsCompliances

OBJECT IDENTIFIER ::= { vplsConformance 1 }

-- Compliance requirement for fully compliant implementations

vplsModuleFullCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"Compliance requirement for implementations that provide full support for VPLS-GENERIC-MIB. Such devices can then be monitored and configured using this MIB module."

MODULE -- this module

```

MANDATORY-GROUPS {
    vplsGroup,
    vplsPwBindGroup,
    vplsNotificationGroup
}

```

```

 ::= { vplsCompliances 1 }

-- Compliance requirement for read-only implementations.

vplsModuleReadOnlyCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "Compliance requirement for implementations that only
        provide read-only support for VPLS-GENERIC-MIB.
        Such devices can then be monitored but cannot be
        configured using this MIB modules."

MODULE -- this module

MANDATORY-GROUPS {
    vplsGroup,
    vplsPwBindGroup,
    vplsNotificationGroup
}

OBJECT          vplsConfigName
MIN-ACCESS      read-only
DESCRIPTION
    "Write access is not required."

OBJECT          vplsConfigDescr
MIN-ACCESS      read-only
DESCRIPTION
    "Write access is not required."

OBJECT          vplsConfigAdminStatus
MIN-ACCESS      read-only

```

DESCRIPTION

"Write access is not required."

OBJECT vplsConfigMacLearning

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT vplsConfigDiscardUnknownDest

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT vplsConfigMacAging

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT vplsConfigFwdFullHighWatermark

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT vplsConfigFwdFullLowWatermark

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT vplsConfigRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT vplsConfigMtu

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT vplsPwBindConfigType
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT vplsPwBindType
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT vplsPwBindRowStatus
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

::= { vplsCompliances 2 }

-- Units of conformance.

vplsGroups
 OBJECT IDENTIFIER ::= { vplsConformance 2 }

vplsGroup OBJECT-GROUP
 OBJECTS {
 vplsConfigName,
 vplsBgpADConfigRouteDistinguisher,
 vplsBgpRteTargetRTType,
 vplsBgpRteTargetRT,
 vplsBgpRteTargetRowStatus,
 vplsBgpRteTargetStorageType,
 vplsBgpADConfigPrefix,
 vplsBgpADConfigVplsId,
 vplsBgpADConfigRowStatus,
 vplsBgpADConfigStorageType,
 vplsConfigDescr,
 vplsConfigAdminStatus,
 vplsConfigMacLearning,
 vplsConfigDiscardUnknownDest,
 vplsConfigMacAging,

```

        vplsConfigVpnId,
        vplsConfigFwdFullHighWatermark,
        vplsConfigFwdFullLowWatermark,
        vplsConfigRowStatus,
        vplsConfigIndexNext,
        vplsConfigMtu,
        vplsConfigStorageType,
        vplsConfigSignalingType,
        vplsStatusOperStatus,
        vplsStatusPeerCount,
        vplsStatusNotifEnable,
        vplsNotificationMaxRate
    }
    STATUS          current
    DESCRIPTION
        "The group of objects supporting
        management of L2VPN VPLS services"
    ::= { vplsGroups 1 }

vplsPwBindGroup OBJECT-GROUP
    OBJECTS {
        vplsPwBindConfigType,
        vplsPwBindType,
        vplsPwBindRowStatus,
        vplsPwBindStorageType
    }
    STATUS          current
    DESCRIPTION
        "The group of objects supporting
        management of

```

```

        Pseudo Wire (PW) Binding to VPLS."
    ::= { vplsGroups 2 }

vplsNotificationGroup NOTIFICATION-GROUP
    NOTIFICATIONS {
        vplsStatusChanged,
        vplsFwdFullAlarmRaised,
        vplsFwdFullAlarmCleared
    }
    STATUS          current

```



```

DESCRIPTION
    "The group of notifications supporting
      the Notifications generated for
      VPLS Services"
 ::= { vplsGroups 3 }

END

```

6.2. VPLS-LDP-MIB Object definitions

This MIB module makes references to the following documents.
[\[RFC2578\]](#), [\[RFC2579\]](#), [\[RFC2580\]](#), [\[RFC3411\]](#),
[\[RFC2863\]](#), [\[RFC4265\]](#) and [\[RFC3813\]](#).

```

VPLS-LDP-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
    Unsigned32, transmission
        FROM SNMPv2-SMI
        -- RFC2578

    MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
        FROM SNMPv2-CONF
        -- RFC2580

    TruthValue
        FROM SNMPv2-TC
        -- RFC2579
    pwIndex, pwID
        FROM PW-STD-MIB

    vplsConfigIndex, vplsConfigName
        FROM VPLS-GENERIC-MIB;

vplsLdpDraft01MIB MODULE-IDENTITY
-- RFC Editor: Please replace vplsLdpDraft01MIB with
--          vplsLdpMIB throughout the MIB and remove
--          this note.

```

Working Group"

CONTACT-INFO

"

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The L2VPN Working Group

(email distribution l2vpn@ietf.org,

<http://www.ietf.org/html.charters/l2vpn-charter.html>)

"

DESCRIPTION

"Copyright (C) The IETF Trust (2014). The initial version of this MIB module was published in RFC XXXX.

-- RFC Editor: Please replace XXXX with RFC number & remove
-- this note.

For full legal notices see the RFC itself or see:

<http://www.ietf.org/copyrights/ianamib.html>

This MIB module contains managed object definitions for LDP signaled Virtual Private LAN Services as in [RFC4762](#)

This MIB module enables the use of any underlying pseudowire network. "

-- Revision history.

REVISION

"201401230200Z" -- 30 Jan 2014 12:00:00 GMT

DESCRIPTION "Initial version published as part of RFC YYYY."

-- RFC Editor: please replace YYYY with IANA assigned value, and
-- delete this note.

::= { transmission BBB }

-- RFC Editor: please replace BBB with IANA assigned value, and
-- delete this note.

-- Top-level components of this MIB.

-- Notifications

```

vplsLdpNotifications OBJECT IDENTIFIER
    ::= { vplsLdpDraft01MIB 0 }

-- Tables, Scalars
vplsLdpObjects          OBJECT IDENTIFIER
    ::= { vplsLdpDraft01MIB 1 }

-- Conformance
vplsLdpConformance     OBJECT IDENTIFIER
    ::= { vplsLdpDraft01MIB 2 }

vplsLdpConfigTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF VplsLdpConfigEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "This table specifies information for configuring
        and monitoring LDP specific parameters for
        Virtual Private Lan Services (VPLS)."
```

::= { vplsLdpObjects 1 }

```

vplsLdpConfigEntry OBJECT-TYPE
    SYNTAX          VplsLdpConfigEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "A row in this table represents LDP specific information
        for Virtual Private Lan Services (VPLS) in a packet
        network. It is indexed by vplsConfigIndex, which uniquely
        identifies a single VPLS.
```

A row is automatically created when a VPLS service is configured using LDP signaling.

All of the writable objects values can be changed when vplsConfigRowStatus is in the active(1) state.

```

    "
    INDEX          { vplsConfigIndex }
    ::= { vplsLdpConfigTable 1 }
```

```
VplsLdpConfigEntry ::=
    SEQUENCE {
        vplsLdpConfigMacAddrWithdraw          TruthValue
    }
```

```
vplsLdpConfigMacAddrWithdraw OBJECT-TYPE
    SYNTAX          TruthValue
    MAX-ACCESS      read-write
    STATUS          current
    DESCRIPTION
        "This object specifies if MAC address withdrawal
         is enabled in this service. If this object is true
         then MAC address withdrawal is enabled. If false,
         then MAC address withdrawal is disabled."
    DEFVAL          { true }
    ::= { vplsLdpConfigEntry 1 }
```

-- VPLS LDP PW Binding Table

```
vplsLdpPwBindTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF VplsLdpPwBindEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "This table provides LDP specific information for
         an association between a VPLS service and the
         corresponding pseudowires. A service can have more
         than one pseudowire association. Pseudowires are
         defined in the pwTable."
    ::= { vplsLdpObjects 2 }
```

```
vplsLdpPwBindEntry OBJECT-TYPE
    SYNTAX          VplsLdpPwBindEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "Each row represents an association between a
         VPLS instance and one or more pseudowires
         defined in the pwTable. Each index is unique
         in describing an entry in this table. However
         both indexes are required to define the one
         to many association of service to pseudowire.

         An entry in this table is instantiated only when
         LDP signaling is used to configure VPLS service.

         Each entry in this table provides LDP specific
         information for the VPLS represented by
```

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```
        vplsConfigIndex."
INDEX   { vplsConfigIndex, pwIndex }
 ::= { vplsLdpPwBindTable 1 }

VplsLdpPwBindEntry ::=
    SEQUENCE {
        vplsLdpPwBindMacAddressLimit      Unsigned32
    }

vplsLdpPwBindMacAddressLimit OBJECT-TYPE
    SYNTAX      Unsigned32 (0..4294967295)
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION
        "The value of this object specifies the maximum
         number of learned and static entries allowed in the
         Forwarding database for this PW Binding. The value 0
         means there is no limit for this PW Binding."
    DEFVAL      { 0 }
    ::= { vplsLdpPwBindEntry 1 }

-- VPLS LDP Service Notifications

vplsLdpPwBindMacTableFull NOTIFICATION-TYPE
    OBJECTS {
        vplsConfigName,
        pwID
    }
    STATUS      current
    DESCRIPTION
        "The vplsLdpPwBindMacTableFull notification is generated
         when the number of learned MAC-Addresses increases to
         the value specified in vplsLdpPwBindMacAddressLimit."
    ::= { vplsLdpNotifications 1 }

-- Conformance Section

vplsLdpCompliances
```

```
OBJECT IDENTIFIER ::= { vplsLdpConformance 1 }
```

```
-- Compliance requirement for fully compliant implementations
```

```
vplsLdpModuleFullCompliance MODULE-COMPLIANCE
```

```
STATUS current
```

```
DESCRIPTION
```

```
"Compliance requirement for implementations that
```

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```
provide full support for VPLS-LDP-MIB.  
Such devices can then be monitored and configured using  
this MIB module."
```

```
MODULE -- this module
```

```
MANDATORY-GROUPS {  
    vplsLdpGroup,  
    vplsLdpNotificationGroup  
}
```

```
::= { vplsLdpCompliances 1 }
```

```
-- Compliance requirement for read-only implementations.
```

```
vplsLdpModuleReadOnlyCompliance MODULE-COMPLIANCE
```

```
STATUS current
```

```
DESCRIPTION
```

```
"Compliance requirement for implementations that only  
provide read-only support for VPLS-LDP-MIB.  
Such devices can then be monitored but cannot be  
configured using this MIB modules."
```

```
MODULE -- this module
```

```
MANDATORY-GROUPS {  
    vplsLdpGroup,  
    vplsLdpNotificationGroup  
}
```

```
OBJECT          vplsLdpConfigMacAddrWithdraw
```

```

MIN-ACCESS      read-only
DESCRIPTION
    "Write access is not required."

OBJECT          vplsLdpPwBindMacAddressLimit
MIN-ACCESS      read-only
DESCRIPTION
    "Write access is not required."

```

```

::= { vplsLdpCompliances 2 }

```

```

-- Units of conformance.

```

```

vplsLdpGroups
  OBJECT IDENTIFIER ::= { vplsLdpConformance 2 }

```

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```

vplsLdpGroup OBJECT-GROUP
  OBJECTS {
    vplsLdpConfigMacAddrWithdraw,
    vplsLdpPwBindMacAddressLimit
  }
  STATUS      current
  DESCRIPTION
    "The group of objects supporting
    management of L2VPN VPLS services using LDP."
  ::= { vplsLdpGroups 1 }

vplsLdpNotificationGroup NOTIFICATION-GROUP
  NOTIFICATIONS {
    vplsLdpPwBindMacTableFull
  }
  STATUS      current
  DESCRIPTION
    "The group of notifications supporting
    the Notifications generated for
    VPLS Ldp Service"
  ::= { vplsLdpGroups 2 }

```

END

[6.3.](#) VPLS-BGP-MIB Object definitions

VPLS-BGP-MIB DEFINITIONS ::= BEGIN

IMPORTS

MODULE-IDENTITY, OBJECT-TYPE,
Unsigned32, transmission
FROM SNMPv2-SMI

-- [RFC2578](#)

MODULE-COMPLIANCE, OBJECT-GROUP
FROM SNMPv2-CONF

-- [RFC2580](#)

RowStatus, StorageType
FROM SNMPv2-TC

-- [RFC2579](#)

SnmpAdminString
FROM SNMP-FRAMEWORK-MIB

-- [RFC3411](#)

pwIndex
FROM PW-STD-MIB

-- [RFC5601](#)

vpIsConfigIndex

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FROM VPLS-GENERIC-MIB

;

vpIsBgpDraft01MIB MODULE-IDENTITY

-- RFC Editor: Please replace vpIsBgpDraft01MIB with
-- vpIsBgpMIB throughout the MIB and remove
-- this note.

LAST-UPDATED "201401301200Z" -- 30 Jan 2014 12:00:00 GMT
ORGANIZATION "Layer 2 Virtual Private Networks (L2VPN)
Working Group"

CONTACT-INFO

"

V. J. Shah
Email: vshah@juniper.net

The L2VPN Working Group (email distribution l2vpn@ietf.org,
<http://www.ietf.org/html.charters/l2vpn-charter.html>)
"

DESCRIPTION

"Copyright (C) The IETF Trust (2014). The initial
version of this MIB module was published in RFC XXXX.
-- RFC Editor: Please replace XXXX with RFC number & remove
-- this note.

For full legal notices see the RFC itself or see:
<http://www.ietf.org/copyrights/ianamib.html>

This MIB module contains managed object definitions for
BGP signaled Virtual Private LAN Services as in
[RFC4761](#)

This MIB module enables the use of any underlying
pseudowire network. "

-- Revision history.

REVISION

"201401301200Z" -- 30 Jan 2014 12:00:00 GMT
DESCRIPTION "Initial version published as part of RFC YYYY."
-- RFC Editor: please replace YYYY with IANA assigned value, and
-- delete this note.
 ::= { transmission CCC }
-- RFC Editor: please replace CCC with IANA assigned value, and
-- delete this note.

-- Top-level components of this MIB.

-- Tables, Scalars

vplsBgpObjects OBJECT IDENTIFIER
 ::= { vplsBgpDraft01MIB 1 }

-- Conformance

vplsBgpConformance OBJECT IDENTIFIER
 ::= { vplsBgpDraft01MIB 2 }

-- Vpls Bgp Config Table

```

vplsBgpConfigTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF VplsBgpConfigEntry
    MAX-ACCESS      not-accessible
    STATUS           current
    DESCRIPTION
        "This table specifies information for configuring
        and monitoring BGP specific parameters for
        Virtual Private LAN Services (VPLS)."
```

::= { vplsBgpObjects 1 }

```

vplsBgpConfigEntry OBJECT-TYPE
    SYNTAX          VplsBgpConfigEntry
    MAX-ACCESS      not-accessible
    STATUS           current
    DESCRIPTION
        "A row in this table represents BGP specific information
        for Virtual Private LAN Services (VPLS) in a packet
        network. It is indexed by vplsConfigIndex, which uniquely
        identifies a single instance of a VPLS service.

        A row is automatically created when a VPLS service is
        created that is configured to use BGP signaling.
        All of the writable objects values can be
        changed when vplsConfigRowStatus is in the active(1)
        state.
        "
    INDEX            { vplsConfigIndex }
    ::= { vplsBgpConfigTable 1 }
```

VplsBgpConfigEntry ::=

```

SEQUENCE {
    vplsBgpConfigVERangeSize      Unsigned32
}
```

```

vplsBgpConfigVERangeSize OBJECT-TYPE
    SYNTAX          Unsigned32 (0..65535)
    MAX-ACCESS      read-write
    STATUS           current
```

DESCRIPTION

"Specifies the size of the range of VE ID in this VPLS service. This number controls the size of the label block advertised for this VE by the PE. A value of 0 indicates that the range is not configured and the PE derives the range value from received advertisements from other PEs.

The VE ID takes 2 octets in VPLS BGP NLRI according to [RFC 4761](#). Hence we have limited the the range of this object to 65535."

DEFVAL { 0 }
::= { vplsBgpConfigEntry 1 }

-- Vpls Edge Device (VE) Identifier Table

vplsBgpVETable OBJECT-TYPE

SYNTAX SEQUENCE OF VplsBgpVEEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table associates VPLS Edge devices to a VPLS service"

::= { vplsBgpObjects 2 }

vplsBgpVEEntry OBJECT-TYPE

SYNTAX VplsBgpVEEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry in this table is created for each VE Id configured on a PE for a particular VPLS service instance.

Entries in this table may be created or deleted through SNMP, as side-effects of console or other non-SNMP management commands, or upon learning via autodiscovery.

It is optional for the agent to allow entries to be created that point to non-existent entries in vplsConfigTable."

INDEX { vplsConfigIndex, vplsBgpVEId }

::= { vplsBgpVETable 1 }

```
VplsBgpVEEntry ::= SEQUENCE {
    vplsBgpVEId      Unsigned32,
    vplsBgpVEName    SnmpAdminString,
    vplsBgpVEPreference Unsigned32,
    vplsBgpVERowStatus RowStatus,
    vplsBgpVEStorageType StorageType
}
```

vplsBgpVEId OBJECT-TYPE

```
SYNTAX      Unsigned32 (1..65535)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "A secondary index identifying a VE within an
    instance of a VPLS service.
    The VE ID takes 2 octets in VPLS BGP NLRI according
    to RFC 4761. Hence we have limited the the range of
    this object to 65535."
::= { vplsBgpVEEntry 1 }
```

vplsBgpVEName OBJECT-TYPE

```
SYNTAX      SnmpAdminString
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Descriptive name for the site or u-PE associated with
    this VE Id."
DEFVAL { "" }
::= { vplsBgpVEEntry 2 }
```

vplsBgpVEPreference OBJECT-TYPE

```
SYNTAX      Unsigned32 (0..65535)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Specifies the preference of the VE Id on this PE
    if the site is multi-homed and VE Id is re-used."
DEFVAL      { 0 }
::= { vplsBgpVEEntry 3 }
```

vplsBgpVERowStatus OBJECT-TYPE

```
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "This variable is used to create, modify, and/or
    delete a row in this table.
```

All other objects in this row must be set to valid

values before this object can be set to active(1).

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When a row in this table is in active(1) state, no objects in that row can be modified except vplsBgpSiteRowStatus."

::= { vplsBgpVEEntry 5 }

vplsBgpVEStorageType OBJECT-TYPE

SYNTAX StorageType

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This variable indicates the storage type for this row."

DEFVAL { volatile }

::= { vplsBgpVEEntry 6 }

-- VPLS BGP PW Binding Table

vplsBgpPwBindTable OBJECT-TYPE

SYNTAX SEQUENCE OF VplsBgpPwBindEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table provides BGP specific information for an association between a VPLS service and the corresponding pseudowires. A service can have more than one pseudowire association. Pseudowires are defined in the pwTable."

::= { vplsBgpObjects 3 }

vplsBgpPwBindEntry OBJECT-TYPE

SYNTAX VplsBgpPwBindEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each row represents an association between a VPLS instance and one or more Pseudowires defined in the pwTable. Each index is unique in describing an entry in this table. However both indexes are required to define the one

to many association of service to pseudowire.

An entry in this table is instantiated only when BGP signaling is used to configure VPLS service.

Each entry in this table provides BGP specific information for the VPLS represented by vplsConfigIndex."

```
INDEX { vplsConfigIndex, pwIndex }  
::= { vplsBgpPwBindTable 1 }
```

```
VplsBgpPwBindEntry ::=
    SEQUENCE {
        vplsBgpPwBindLocalVEId      Unsigned32,
        vplsBgpPwBindRemoteVEId     Unsigned32
    }
vplsBgpPwBindLocalVEId  OBJECT-TYPE
    SYNTAX                Unsigned32 (1..65535)
    MAX-ACCESS             read-only
    STATUS                 current
    DESCRIPTION
        "Identifies the local VE that this pseudowire
         is associated with.
         The VE ID takes 2 octets in VPLS BGP NLRI according
         to RFC 4761. Hence we have limited the the range of
         this object to 65535."
    ::= { vplsBgpPwBindEntry 1 }

vplsBgpPwBindRemoteVEId  OBJECT-TYPE
    SYNTAX                Unsigned32 (1..65535)
    MAX-ACCESS             read-only
    STATUS                 current
    DESCRIPTION
        "Identifies the remote VE that this pseudowire
         is associated with.
         The VE ID takes 2 octets in VPLS BGP NLRI according
         to RFC 4761. Hence we have limited the the range of
         this object to 65535."
    ::= { vplsBgpPwBindEntry 2 }
```

-- Compliance requirement for fully compliant implementations

vpplsBgpCompliances

OBJECT IDENTIFIER ::= { vpplsBgpConformance 1 }

vpplsBgpModuleFullCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"Compliance requirement for implementations that
provide full support for VPLS-BGP-MIB.
Such devices can then be monitored and configured using
this MIB module."

MODULE -- this module

MANDATORY-GROUPS {
vpplsBgpConfigGroup,
vpplsBgpVEGroup,
vpplsBgpPwBindGroup

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}
::= { vpplsBgpCompliances 1 }

-- Compliance requirement for read-only implementations.

vpplsBgpModuleReadOnlyCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"Compliance requirement for implementations that only
provide read-only support for VPLS-BGP-MIB.
Such devices can then be monitored but cannot be
configured using this MIB modules."

MODULE -- this module

MANDATORY-GROUPS {
vpplsBgpConfigGroup,
vpplsBgpVEGroup,
vpplsBgpPwBindGroup
}

OBJECT vplsBgpConfigVERangeSize
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT vplsBgpVEName
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT vplsBgpVEPreference
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT vplsBgpVERowStatus
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

::= { vplsBgpCompliances 2 }

-- Units of conformance.

vplsBgpGroups

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OBJECT IDENTIFIER ::= { vplsBgpConformance 2 }

vplsBgpConfigGroup OBJECT-GROUP
 OBJECTS {
 vplsBgpConfigVERangeSize
 }
 STATUS current
 DESCRIPTION
 "The group of objects supporting configuration
 of L2VPN VPLS services using BGP"
 ::= { vplsBgpGroups 1 }

vplsBgpVEGroup OBJECT-GROUP


```

OBJECTS {
    vplsBgpVename,
    vplsBgpVEPreference,
    vplsBgpVERowStatus,
    vplsBgpVEStorageType
}
STATUS          current
DESCRIPTION
    "The group of objects supporting management of VPLS
    Edge devices for L2VPN VPLS services using BGP"
::= { vplsBgpGroups 2 }

vplsBgpPwBindGroup OBJECT-GROUP
OBJECTS {
    vplsBgpPwBindLocalVEId,
    vplsBgpPwBindRemoteVEId
}
STATUS          current
DESCRIPTION
    "The group of objects supporting management of
    Pseudo Wires for L2VPN VPLS services using BGP"
::= { vplsBgpGroups 3 }

END

```

7. 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 their sensitivity/vulnerability:

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- o vplsConfigTable:
- o vplsPwBindTable:
- o vplsBgpADConfigTable:
- o vplsBgpRteTargetTable:
- o vplsLdpPwBindTable:
- o vplsLdpConfigTable:
- o vplsBgpConfigTable:
- o vplsBgpVETable:

These tables contain read-create/read-write objects which can be used to configure or modify a LDP/BGP VPLS service.

Any improper configuration or modification of objects in these tables can disrupt VPLS services.
The use of stronger mechanisms such as SNMPv3 security should be considered where possible for configuring these objects. Specifically, SNMPv3 VACM and USM MUST be used with any v3 agent which provides SET access to these tables.

- o vplsNotificationMaxRate

Setting of a very high value to this object can cause a notification storm which may disrupt network service.

Most 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), 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.

Implementations SHOULD provide the security features described by the SNMPv3 framework (see [\[RFC3410\]](#)), and implementations claiming compliance to the SNMPv3 standard MUST include full support for authentication and privacy via the User-based Security Model (USM) [\[RFC3414\]](#) with the AES cipher algorithm [\[RFC3826\]](#). Implementations MAY also provide support for the Transport Security Model (TSM) [\[RFC5591\]](#) in combination with a secure transport such as SSH [\[RFC5592\]](#) or TLS/DTLS [\[RFC6353\]](#).

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.

[8.](#) IANA Considerations

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

[8.1.](#) IANA Considerations for VPLS-GENERIC-MIB

The IANA is requested to assign { transmission AAA } to the VPLS-GENERIC-MIB module specified in this document.

[8.2.](#) IANA Considerations for VPLS-LDP-MIB

The IANA is requested to assign { transmission BBB } to the VPLS-LDP-MIB module specified in this document.

[8.3.](#) IANA Considerations for VPLS-BGP-MIB

The IANA is requested to assign { transmission CCC } to the VPLS-BGP-MIB MIB module specified in this document.

-- Editor's Note (to be removed prior to publication): the IANA is
-- requested to assign a value for "AAA", "BBB" and "CCC" under
-- the transmission subtree and to record the assignments in the
-- SMI Numbers registry. When the assignments have been made, the
-- RFC Editor is asked to replace "AAA", "BBB" and "CCC" (here and
-- in the MIB modules) with the assigned values and to remove this
-- note.

[9.](#) References

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[10](#). Acknowledgments

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