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L2L3 VPN Multicast MIB
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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 common to both VPLS and VPN Multicast.

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1. Introduction

Multicast in VPLS and VPN can be achieved by using provider tunnels to deliver to all or a subset of PEs. The signaling of provider tunnel choice is very similar for both VPLS and VPN multicast (aka MVPN), and this memo describes managed objects common to both VPLS Multicast [[I-D.ietf-l2vpn-vpls-mcast](#)] and MVPN [RFC 6513/6514].

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. Summary of MIB Module

L2L3-VPN-MCAST-MIB contains a Textual Convention, L2L3VpnMcastProviderTunnelType, and a l2L3VpnMcastPmsiTunnelAttributeTable. Other MIB objects ([[I-D.ietf-l2vpn-vpls-mcast](#)], [[I-D.ietf-l3vpn-mvpn-mib](#)]) may point to entries in the l2L3VpnMcastPmsiTunnelAttributeTable.

5. Definitions

```
L2L3-VPN-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

TEXTUAL-CONVENTION, TruthValue, RowPointer, RowStatus,
TimeStamp, TimeInterval
FROM SNMPv2-TC

SnmAdminString
FROM SNMP-FRAMEWORK-MIB

InetAddress, InetAddressType
FROM INET-ADDRESS-MIB

MplsLabel
FROM MPLS-TC-STD-MIB;

l2L3VpnMcastMIB MODULE-IDENTITY
    LAST-UPDATED "201310141200Z" -- 14 October 2013 12:00:00 GMT
    ORGANIZATION "IETF Layer-3 Virtual Private Networks Working Group."
    CONTACT-INFO

        "
        Comments and discussion to l3vpn@ietf.org
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        10 Technology Park Drive
        Westford, MA 01886
        USA
        Email: zzhang@juniper.net
        "

    DESCRIPTION
        "This MIB contains common managed object definitions for
        multicast in Layer 2 and Layer 3 VPNs, defined by
        [I-D.ietf-l2vpn-vpls-mcast] and RFC 6513/6514.
        Copyright (C) The Internet Society (2013)."
```

-- Revision history.

```
REVISION "201310141200Z" -- 14 October 2013 12:00:00 GMT
DESCRIPTION
    "Initial version of the draft."
    ::= { experimental 99 } -- number to be assigned

-- Textual convention

L2L3VpnMcastProviderTunnelType ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
```



```
"Types of provider tunnels used for multicast in a l2/l3vpn."
SYNTAX      INTEGER { unconfigured (0),
                      rsvp-p2mp (1),
                      ldp-p2mp (2),
                      pim-asm (3),
                      pim-ssm (4),
                      pim-bidir (5),
                      ingress-replication (6),
                      ldp-mp2mp (7)
                    }

-- Top level components of this MIB.
-- tables, scalars, conformance information

l2L3VpnMcastObjects      OBJECT IDENTIFIER ::= { l2L3VpnMcastMIB 1 }
l2L3VpnMcastConformance OBJECT IDENTIFIER ::= { l2L3VpnMcastMIB 2 }

l2L3VpnMcastStates      OBJECT IDENTIFIER ::= { l2L3VpnMcastObjects 1 }

-- Table of PMSI attributes

l2L3VpnMcastPmsiTunnelAttributeTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF L2L3VpnMcastPmsiTunnelAttributeEntry
    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"
        ::= { l2L3VpnMcastStates 1 }

l2L3VpnMcastPmsiTunnelAttributeEntry OBJECT-TYPE
    SYNTAX      L2L3VpnMcastPmsiTunnelAttributeEntry
    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 (RFC 6514 section 5,
         'PMSI Tunnel attribute').
         For UDP-based S-PMSI signaling for PIM-MVPN,
         they're derived from S-PMSI Join Message
         (RFC 6513 section 7.4.2, 'UDP-based Protocol')..

         Note that BGP-based signaling may be used for
         PIM-MVPN as well."
    INDEX {
```



```

        l2L3VpnMcastPmsiTunnelAttributeFlags,
        l2L3VpnMcastPmsiTunnelAttributeType,
        l2L3VpnMcastPmsiTunnelAttributeLabel,
        l2L3VpnMcastPmsiTunnelAttributeId
    }
    ::= { l2L3VpnMcastPmsiTunnelAttributeTable 1 }

```

```

l2L3VpnMcastPmsiTunnelAttributeEntry ::= SEQUENCE {
    l2L3VpnMcastPmsiTunnelAttributeFlags OCTET STRING,
    l2L3VpnMcastPmsiTunnelAttributeType  L2L3VpnMcastProviderTunnelType,
    l2L3VpnMcastPmsiTunnelAttributeLabel MplsLabel,
    l2L3VpnMcastPmsiTunnelAttributeId   OCTET STRING,
    l2L3VpnMcastPmsiTunnelPointer       RowPointer,
    l2L3VpnMcastPmsiTunnelIf            RowPointer
}

```

l2L3VpnMcastPmsiTunnelAttributeFlags OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (1))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"For UDP-based S-PMSI signaling for PIM-MVPN, this is 0.
 For BGP-based I/S-PMSI signaling,
 per [RFC 6514 section 5](#), 'PMSI Tunnel Attribute':

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)"
    ::= { l2L3VpnMcastPmsiTunnelAttributeEntry 1 }

```

l2L3VpnMcastPmsiTunnelAttributeType OBJECT-TYPE

SYNTAX L2L3VpnMcastProviderTunnelType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"For BGP-based I/S-PMSI signaling for either PIM or BGP-MVPN,
 per [RFC 6514 section 5](#), 'PMSI Tunnel Attribute':

The Tunnel Type identifies the type of the tunneling technology used to establish the PMSI tunnel. The type determines the syntax and semantics of the Tunnel Identifier field. This document defines the

following Tunnel Types:

- 0 - No tunnel information present
- 1 - RSVP-TE P2MP LSP
- 2 - mLDP P2MP LSP
- 3 - PIM-SSM Tree
- 4 - PIM-SM Tree
- 5 - PIM-Bidir Tree
- 6 - Ingress Replication
- 7 - mLDP MP2MP LSP

For UDP-based S-PMSI signaling for PIM-MVPN, [RFC 6513](#) does not specify if a PIM provider tunnel is SSM, SM or Bidir, and an agent can use either type 3, 4, or 5 based on its best knowledge."

::= { l2L3VpnMcastPmsiTunnelAttributeEntry 2 }

l2L3VpnMcastPmsiTunnelAttributeLabel OBJECT-TYPE

SYNTAX MplsLabel
MAX-ACCESS not-accessible
STATUS current

DESCRIPTION

"For BGP-based I/S-PMSI signaling,
per [RFC 6514 section 5](#), 'PMSI Tunnel Attribute':

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 label value. Absence of MPLS Label is indicated by setting the MPLS Label field to zero.

For UDP-based S-PMSI signaling for PIM-MVPN, this is not applicable for now, as [RFC 6513](#) does not specify mpls encapsulation and tunnel aggregation with UDP-based signaling."

::= { l2L3VpnMcastPmsiTunnelAttributeEntry 3 }

l2L3VpnMcastPmsiTunnelAttributeId OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (0..37))
MAX-ACCESS not-accessible
STATUS current

DESCRIPTION

"For BGP-based signaling, as defined in [RFC 6514 section 5](#),
'PMSI Tunnel Attribute'.

For UDP-based S-PMSI signaling for PIM-MVPN, [RFC 6513](#) only specifies the 'P-Group' address, and that is filled into the first four octets of this field."

::= { l2L3VpnMcastPmsiTunnelAttributeEntry 4 }

l2L3VpnMcastPmsiTunnelPointer 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."

::= { l2L3VpnMcastPmsiTunnelAttributeEntry 5 }

l2L3VpnMcastPmsiTunnelIf OBJECT-TYPE

SYNTAX RowPointer

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If the tunnel has a corresponding interface, this is the row pointer to the ifName table."

::= { l2L3VpnMcastPmsiTunnelAttributeEntry 6 }

-- Conformance Information

l2L3VpnMcastGroups OBJECT IDENTIFIER ::= { l2L3VpnMcastConformance 1}

l2L3VpnMcastCompliances OBJECT IDENTIFIER ::= { l2L3VpnMcastConformance 2}

-- Compliance Statements

l2L3VpnMcastCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement: no mandatory groups "

MODULE -- this module

::= { l2L3VpnMcastCompliances 1 }

-- units of conformance

l2L3VpnMcastOptionalGroup OBJECT-GROUP

OBJECTS {

l2L3VpnMcastPmsiTunnelPointer,

l2L3VpnMcastPmsiTunnelIf

}

STATUS current

DESCRIPTION

"Support of these object is not required."

::= { l2L3VpnMcastGroups 1 }

END

6. Security Considerations

N/A

7. IANA Considerations

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

.

8. References

8.1. Normative References

- [RFC3418] Presuhn, R., "Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)", STD 62, [RFC 3418](#), December 2002.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2578] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Structure of Management Information Version 2 (SMIV2)", STD 58, [RFC 2578](#), April 1999.
- [RFC2579] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Textual Conventions for SMIV2", STD 58, [RFC 2579](#), April 1999.
- [RFC2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Conformance Statements for SMIV2", STD 58, [RFC 2580](#), April 1999.
- [RFC6513] Rosen, E. and R. Aggarwal, "Multicast in MPLS/BGP IP VPNs", [RFC 6513](#), February 2012.
- [RFC6514] Aggarwal, R., Rosen, E., Morin, T., and Y. Rekhter, "BGP Encodings and Procedures for Multicast in MPLS/BGP IP VPNs", [RFC 6514](#), February 2012.

- [I-D.ietf-l2vpn-vpls-mcast] Aggarwal, R., Rekhter, Y., Kamite, Y., and L. Fang, "Multicast in VPLS", [draft-ietf-l2vpn-vpls-mcast-11](#) (work in progress), July 2012.
- [I-D.ietf-l2vpn-vpls-mib] Nadeau, T., Koushik, K., and R. Mediratta, "Virtual Private Lan Services (VPLS) Management Information Base", [draft-ietf-l2vpn-vpls-mib-07](#) (work in progress), September 2012.

8.2. Informative References

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

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