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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.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on February 12, 2016.

Table of Contents

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 [RFC7117] and MVPN [RFC6513, RFC6514].

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. Summary of MIB Module

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

4. 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

    SnmpAdminString
       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

    "
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    "

    DESCRIPTION
     "This MIB contains common managed object definitions for
      multicast in Layer 2 and Layer 3 VPNs, defined by
      RFC 7117 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

  -- Texual 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
```

5. Security Considerations

N/A

6. 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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7. References

7.1. Normative References

[RFC2578] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Structure of Management Information Version 2 (SMIv2)", STD 58, RFC 2578, DOI 10.17487/RFC2578, April 1999, <http://www.rfc-editor.org/info/rfc2578>.

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[RFC2580] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Conformance Statements for SMIv2", STD 58, RFC 2580, DOI 10.17487/RFC2580, April 1999, <http://www.rfc-editor.org/info/rfc2580>.

[RFC6513] Rosen, E., Ed. and R. Aggarwal, Ed., "Multicast in MPLS/ BGP IP VPNs", RFC 6513, DOI 10.17487/RFC6513, February 2012, <http://www.rfc-editor.org/info/rfc6513>.

[RFC6514] Aggarwal, R., Rosen, E., Morin, T., and Y. Rekhter, "BGP Encodings and Procedures for Multicast in MPLS/BGP IP VPNs", RFC 6514, DOI 10.17487/RFC6514, February 2012, <http://www.rfc-editor.org/info/rfc6514>.

[RFC7117] Aggarwal, R., Ed., Kamite, Y., Fang, L., Rekhter, Y., and C. Kodeboniya, "Multicast in Virtual Private LAN Service (VPLS)", RFC 7117, DOI 10.17487/RFC7117, February 2014, <http://www.rfc-editor.org/info/rfc7117>.

7.2. Informative References

[RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Management Framework", RFC 3410, DOI 10.17487/RFC3410, December 2002, <http://www.rfc-editor.org/info/rfc3410>.

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