Abstract

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

In particular, it describes common managed objects used to configure and/or monitor both L2 and L3 VPN Multicast.

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1. Introduction

Multicast in BGP/MPLS Layer 3 (L3) and Layer 2 (L2) VPN (referred to MVPN and L2 VPN Multicast respectively) can be achieved by using provider tunnels to deliver to all or a subset of Provider Edges (PEs). An example of L2 VPN is Virtual Private LAN Service (VPLS). The signaling of provider tunnel choice is very similar for both cases, and this memo describes managed objects common to both VPLS Multicast [RFC7117] and MVPN [RFC6513, RFC6514].

1.1. Terminology

This document adopts the definitions, acronyms and mechanisms described in [RFC6513, RFC6514, RFC7117] and other documents that they refer to. Familiarity with Multicast, MPLS, L3VPN, MVPN concepts and/or mechanisms is assumed. Some of the terms are listed below.

- **PMSI**: P-Multicast Service Interface - a conceptual interface for a PE to send customer multicast traffic to all or some PEs in the same VPN.

- **I-PMSI**: Inclusive PMSI - to all PEs in the same VPN.

- **S-PMSI**: Selective PMSI - to some of the PEs in the same VPN.

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. The table is for PMSI Tunnel Attributes (PTAs) advertised/received in I/S-PSMI Auto-Discovery routes. Other MIB objects (e.g., mvpnMIB in [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, experimental
 FROM SNMPv2-SMI -- [RFC2578]

 MODULE-COMPLIANCE, OBJECT-GROUP
 FROM SNMPv2-CONF -- [RFC2580]

 TEXTUAL-CONVENTION, RowPointer
 FROM SNMPv2-TC -- [RFC2579]

 MplsLabel
 FROM MPLS-TC-STD-MIB; -- [RFC3811]

L2L3VpnMcastMIB MODULE-IDENTITY
 LAST-UPDATED "201310141200Z" -- 14 October 2013 12:00:00 GMT
 ORGANIZATION "IETF BESS Working Group."
 CONTACT-INFO
 
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 Comments and discussion to bess@ietf.org"

DESCRIPTION

 "This MIB contains common managed object definitions for multicast in Layer 2 and Layer 3 VPNs, defined by [RFC7117] and [RFC6513, RFC6514]."
L2L3VpnMcastProviderTunnelType ::= TEXTUAL-CONVENTION
STATUS       current
DESCRIPTION   "Types of provider tunnels used for multicast in
BGP/MPLS L2 or L3 VPN, as defined in Section 5,
[RFC6514]. Additional types may be defined
in future RFCs, and those will be allowed as
valid types for L2L3VpnMcastProviderTunnelType."
SYNTAX       INTEGER { unconfigured (0),
rsvpP2mp (1),
lspP2mp (2),
pimAsm (3),
pimSsm (4),
pimBidir (5),
ingressReplication (6),
ldpMp2mp (7)
}
l2L3VpnMcastPmsiTunnelAttributeTable OBJECT-TYPE
SYNTAX        SEQUENCE OF L2L3VpnMcastPmsiTunnelAttributeEntry
MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION
"This table is for PMSI Tunnel Attributes (PTAs, Section 5, [RFC6514]) advertised/received in I/S-PMSI Auto-Discovery routes. The entries may be referred to by I-PMSI or S-PMSI table entries defined in other MIBs, e.g. mvpnMIB in [I-D.ietf-bess-mvpn-mib]."
::= {l2L3VpnMcastStates 1 }

l2L3VpnMcastPmsiTunnelAttributeEntry OBJECT-TYPE
SYNTAX        L2L3VpnMcastPmsiTunnelAttributeEntry
MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION
"An entry in this table corresponds to a PTA 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 ([RFC6514] section 5, ‘PMSI Tunnel Attribute’). For UDP-based S-PMSI signaling for PIM-MVPN, they’re derived from S-PMSI Join Message ([RFC6513] 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))
For UDP-based S-PMSI signaling for PIM-MVPN, this is 0.
For BGP-based I/S-PMSI signaling, this is the Flags field in PMSI Tunnel Attribute of the corresponding I/S-PMSI A-D route, as defined in Section 5, [RFC6514]."
::= { l2L3VpnMcastPmsiTunnelAttributeEntry 1 }

l2L3VpnMcastPmsiTunnelAttributeType OBJECT-TYPE
SYNTAX        L2L3VpnMcastProviderTunnelType
MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION
"As defined for L2L3VpnMcastProviderTunnelType.
For UDP-based S-PMSI signaling for PIM-MVPN, this is pim-asm (3), pim-ssm (4), or pim-bidir (5).
For BGP-based I/S-PMSI signaling, this is the Tunnel Type field in PMSI Tunnel Attribute of the corresponding I/S-PMSI A-D or Leaf A-D route, as defined in Section 5, [RFC6514]."
::= { l2L3VpnMcastPmsiTunnelAttributeEntry 2 }

l2L3VpnMcastPmsiTunnelAttributeLabel OBJECT-TYPE
SYNTAX        MplsLabel
MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION
"For UDP-based I/S-PMSI signaling for PIM-MVPN, this is 0.
For BGP-based I/S-PMSI signaling, this is the MPLS Label field in PMSI Tunnel Attribute of the corresponding I/S-PMSI A-D route, as defined in Section 5, [RFC6514]."
::= { l2L3VpnMcastPmsiTunnelAttributeEntry 3 }

l2L3VpnMcastPmsiTunnelAttributeId OBJECT-TYPE
SYNTAX        OCTET STRING ( SIZE (0..50) )
MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION
"Different tunnel types will have different sizes for this object.
For UDP-based S-PMSI signaling for PIM-MVPN, the first four or sixteen octets of this attribute are filled with the provider tunnel group address (IPv4 or IPv6).
For BGP-based I/S-PMSI signaling, this is the Tunnel Identifier field in PMSI Tunnel Attribute of the corresponding I/S-PMSI A-D route, as defined in Section 5, [RFC6514]."
::= { l2L3VpnMcastPmsiTunnelAttributeEntry 4 }

l2L3VpnMcastPmsiTunnelPointer OBJECT-TYPE
SYNTAX RowPointer
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"If the tunnel exists in some MIB table, e.g. mplsTunnelTable
[RFC3812], this is the row pointer to it. Otherwise, the
pointer is null."
::= { 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. Otherwise, the pointer
is null."
::= { 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"

GROUP l2L3VpnMcastOptionalGroup
DESCRIPTION
"This group is optional."
::= { 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

This MIB contains some read-only objects that may be deemed sensitive by some though perhaps not all operators. Appropriate security procedures related to SNMP in general but not specific to this MIB need to be implemented by concerned operators.

6. IANA Considerations

IANA is requested to root MIB objects in the MIB module contained in this document under the mib-2 subtree.

7. References

7.1. Normative References

            Schoenwaelder, Ed., "Structure of Management Information
            Version 2 (SMIv2)", STD 58, RFC 2578,
            DOI 10.17487/RFC2578, April 1999,

            Schoenwaelder, Ed., "Textual Conventions for SMIv2",
            STD 58, RFC 2579, DOI 10.17487/RFC2579, April 1999,

            Schoenwaelder, Ed., "Conformance Statements for SMIv2",
            STD 58, RFC 2580, DOI 10.17487/RFC2580, April 1999,

            Textual Conventions (TCs) for Multiprotocol Label
            Switching (MPLS) Management", RFC 3811,
            DOI 10.17487/RFC3811, June 2004,


7.2. Informative References


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