MVPN BGP Auto Discovery

The MVPN BGP Auto Discovery feature enables automated discovery of Provider Edge (PE) routers in an MVPN network using Border Gateway Protocol (BGP) for obtaining multicast VPN (MVPN) controlled information.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Prerequisites for MVPN BGP Auto Discovery

- You must configure BGP and MVPN SAFI before configuring MVPN BGP Auto Discovery.

Information about MVPN BGP Auto Discovery

Border Gateway Protocol (BGP)

BGP is an Exterior Gateway Protocol (EGP) that allows you to set up an interdomain routing system that automatically guarantees the loop-free exchange of routing information between autonomous systems. Border Gateway Protocol (BGP) facilitates communication, discovery, and maintenance of the MVPN membership.

MVPN BGP Auto Discovery

Provider Edge (PE) routers in a Multicast Virtual Private Networks (MVPN) need to communicate with each other to obtain MVPN controlled information. MVPN BGP auto discovery refers to each PE router discovering all the other routers in MVPN network. PE routers use the MVPN BGP auto discovery feature to advertise its MVPN membership to other routers.

Auto Discovery (A-D) routes

MVPN BGP auto discovery uses different kinds of routes known as MVPN Subaddress Family Identifier Information (MVPN-SAFI) or Auto Discovery (A-D) routes. A-D routes that are implemented in configuring MVPN BGP Auto Discovery are Intra Autonomous System Inclusive Provider Multicast Service Interface (Intra-AS I-PMSI) A-D route and Selective Provider Multicast Service Interface (S-PMSI).

The Intra-AS I-PMSI A-D route starts from the Provider Edge routers (PEs) that are directly connected to an MVPN site and then the router information is distributed to other PEs that are attached to MVPN sites. S-PMSI is used to bind customer multicast flows to tunnels through a service provider's network.

How to Configure MVPN BGP Auto Discovery

Enabling MVPN BGP Auto Discovery

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **vrf definition** *vrf-name*
4. **address-family ipv4**
5. **mdt auto-discovery pim**
6. **mdt default** *group-address*
7. **end**
8. **show bgp ipv4 mvpn vrf** *vrf-name*

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**vrf definition** *vrf-name* **Example:** `Device(config)# vrf definition vrf1`	Configures a VPN routing and forwarding (VRF) routing-table instance and enters VRF configuration mode.
Step 4	**address-family ipv4** **Example:** `Device(config-vrf)# address-family ipv4`	Configures a routing session using IPv4 address prefixes and enters address family configuration mode.
Step 5	**mdt auto-discovery pim** **Example:** `Device(config-vrf-af)# mdt auto-discovery pim`	Enables BGP MVPN discovery for GRE in multicast code.
Step 6	**mdt default** *group-address* **Example:** `Device(config-vrf-af)# mdt default 239.0.0.1`	Configures a default multicast distribution tree (MDT) group for a VRF instance.
Step 7	**end** **Example:** `Device(config-vrf-af)# end`	Exits address family configuration mode and enters privileged EXEC mode.
Step 8	**show bgp ipv4 mvpn vrf** *vrf-name* **Example:** `Device# show bgp ipv4 mvpn vrf vrf1`	Displays entries in the BGP routing table for MVPN.

Configuration Examples for MVPN BGP Auto Discovery

Example: MVPN BGP Auto Discovery

The following example shows how to enable a PE router in an MVPN network to communicate with each other using BGP:

```
enable
configure terminal
vrf definition vrf1
 rd 103:1
 vpn id 1:1
 route-target export 1:1
 route-target import 1:1
 !
 address-family ipv4
  mdt auto-discovery pim
  mdt default 239.0.0.1
 exit-address-family
 !
router bgp 100
 neighbor 11.11.11.11 remote-as 100
 neighbor 11.11.11.11 update-source Loopback0  !
 address-family ipv4
  neighbor 11.11.11.11 activate
 exit-address-family
 !
 address-family ipv4 mvpn
  neighbor 11.11.11.11 activate
  neighbor 11.11.11.11 send-community extended  exit-address-family  !
 address-family vpnv4
  neighbor 11.11.11.11 activate
  neighbor 11.11.11.11 send-community extended  exit-address-family  !
```

The following example displays BGP routing table of a PE router in an MVPN network:

```
Device# show bgp ipv4 mvpn vrf vrf1
BGP table version is 35, local router ID is 33.33.33.33 Status codes: s suppressed, d damped,
 h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
              x best-external, a additional-path, c RIB-compressed, Origin codes: i - IGP,
 e - EGP, ? - incomplete RPKI validation codes: V valid, I invalid, N Not found

     Network          Next Hop            Metric LocPrf Weight Path
Route Distinguisher: 103:1 (default for vrf vrf1)  *>i [1][103:1][11.11.11.11]/12
                       11.11.11.11              0    100      0 ?
 *>i [1][103:1][22.22.22.22]/12
                       22.22.22.22              0    100      0 ?
 *>  [1][103:1][33.33.33.33]/12
                       0.0.0.0                       32768 ?
 *>i [1][103:1][44.44.44.44]/12
                       44.44.44.44              0    100      0 ?
 *>i [5][103:1][1.1.1.1][232.0.0.1]/18
                       22.22.22.22              0    100      0 ?
```

Additional References for MVPN BGP Auto Discovery

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases
IP multicast commands	Cisco IOS IP Multicast Command Reference

Standards and RFCs

Standard/RFC	Title
RFC 6514	*BGP Encodings and Procedures for Multicast in MPLS/BGP IP VPNs*
RFC 6513	*Multicast in MPLS/BGP IP VPNs*

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for MVPN BGP Auto Discovery

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for MVPN BGP Auto Discovery

Feature Name	Releases	Feature Information
MVPN BGP Auto Discovery	15.2(2)S	This feature enables automated discovering of Provider Edge (PE) routers in an MVPN network using Border Gateway Protocol (BGP) for obtaining multicast VPN (MVPN) controlled information. The following commands were modified: **mdt auto-discovery pim**, **show bgp ipv4 mvpn vrf**, **vrf definition**.