MPLS VPN—Show Running VRF

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The MPLS VPN—Show Running VRF feature provides a Cisco IOS command-line interface (CLI) option to display a subset of the running configuration on a router that is linked to a Virtual Private Network (VPN) routing and forwarding (VRF) instance. You can display the configuration of a specific VRF or of all VRFs configured on a router.

On heavily loaded routers, the display of the configuration file might require several pages or screens. As the configuration increases in size and complexity, the possibility of misconfiguration also increases. You might find it difficult to trace a problem on a router where you have several VRFs configured. A command that displays all the elements of the configuration linked to a VRF allows for easier troubleshooting on a per-VRF basis and facilitates comparisons among configurations of different VRFs on the same router.

Finding Feature Information in This Module

Your Cisco IOS software release may not support all of the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To reach links to specific feature documentation in this module and to see a list of the releases in which each feature is supported, use the "Feature Information for MPLS VPN—Show Running VRF" section on page 6.

Finding Support Information for Platforms and Cisco IOS and Catalyst OS Software Images

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

Contents

Prerequisites for MPLS VPN—Show Running VRF

- A Cisco IOS image that supports VRFs installed on the router
- At least one VRF configured on the router
- Cisco Express Forwarding for MPLS VPN routing and forwarding

Restrictions for MPLS VPN—Show Running VRF

Any element of the running configuration of the router that is not linked directly to a VRF is not displayed. For example, a route map associated with a Border Gateway Protocol (BGP) neighbor in a VRF address-family configuration is not displayed. The VRF address-family configuration under BGP is displayed, but the route-map configuration is not. An exception to this general rule is the display of a controller configuration (for more information, see the "Display of Configuration Not Directly Linked to a VRF" section on page 4).

Information About MPLS VPN—Show Running VRF

Before using the MPLS VPN—Show Running VRF feature, you should understand the following information:

- Configuration Elements Displayed for the MPLS VPN—Show Running VRF Feature, page 2
- Display of VRF Routing Protocol Configuration, page 3
- Display of Configuration Not Directly Linked to a VRF, page 4

Configuration Elements Displayed for the MPLS VPN—Show Running VRF Feature

You can display the running configuration associated with a specific VRF or all VRFs on the router by entering the **show running-config vrf** command. To display the running configuration of a specific VRF, enter the name of the VRF as an argument to the **show running-config vrf** command. For example, for a VRF named vpn3, you enter:

```
Router# show running-config vrf vpn3
```

The **show running-config vrf** command displays the following elements of the running configuration on a router:

- The VRF configuration

  This includes any configuration that is applied in the VRF submode.

- The configuration of each interface in the VRF

  Entering a **show run vrf** *vpn-name* command is the same as executing a **show running-config interface** *type number* for each interface that you display by use of the **show ip vrf** *vpn-name* command. The interfaces display in the same sorted order that you would expect from the **show ip interface** command.

  For a channelized interface, the configuration of the controller is displayed (as shown by the **show run controller** *controller-name* command).

  For a subinterface, the configuration of the main interface is displayed.

- The configuration of routing-protocol address families or processes that are linked with the VRF, including static routing configuration (see the "Display of VRF Routing Protocol Configuration" section on page 3)

Display of VRF Routing Protocol Configuration

Open Shortest Path First (OSPF), Routing Information Protocol (RIP), Border Gateway Protocol (BGP), Enhanced Interior Gateway Routing Protocol (EIGRP), and static routing are routing protocols that support VRF configuration.

OSPF has one process per VRF. The **show running-config vrf** command display includes the complete configuration of any OSPF process associated with the VRF. For example, the following shows the sample display for OSPF process 101, which is associated with the VRF named vpn3:

```
router ospf 101 vrf vpn3
 log-adjacency-changes
 area 1 sham-link 10.43.43.43 10.23.23.23 cost 10
 network 172.17.0.0 0.255.255.255 area 1
```

RIP, BGP, and EIGRP support VRF address-family configuration. If a VRF address family for the VRF exists for any of these routing protocols, a configuration in the following format is displayed:

```
router protocol {AS | PID}
!
address-family ipv4 vrf vrf-name
.
.
.
```

Where the *protocol* argument is one of the following: **rip**, **bgp** or **eigrp**; the *AS* argument is an autonomous system number; the *PID* argument is a process identifier; and the *vrf-name* argument is the name of the associated VRF.

The following shows a sample display for a BGP with autonomous system number 100 associated with a VRF named vpn3:

```
!
router bgp 100
!
address-family ipv4 vrf vpn3
 redistribute connected
 redistribute ospf 101 match external 1 external 2
 no auto-summary
```

```
no synchronization
exit-address-family
!
```

The **show running-config vrf** command also includes the configuration of any static routes configured in the VRF. For example:

```
ip route vrf vpn1 10.1.1.0 255.255.255.0 10.30.1.1 global
ip route vrf vpn1 10.1.2.0 255.255.255.0 10.125.1.2
```

Display of Configuration Not Directly Linked to a VRF

Any element of a configuration that is not linked directly to a VRF is not displayed. In some instances, the display of the configuration of an element that is not directly linked to a VRF is required.

For example, the **show running-config vrf** command displays the configuration of an E1 controller whose serial subinterfaces are in a VRF. The command displays the controller configuration and the subinterface configuration.

How to Configure MPLS VPN—Show Running VRF

There are no tasks for the MPLS VPN—Show Running VRF feature.

Configuration Examples for MPLS VPN—Show Running VRF

There are no configuration examples for the MPLS VPN—Show Running VRF feature.

Additional References

The following sections provide references related to the MPLS VPN—Show Running VRF feature.

Related Documents

Related Topic	Document Title
MPLS command descriptions	*Cisco IOS Multiprotocol Label Switching Command Reference*

Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

MIBs

MIBs	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFCs	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/techsupport

Command Reference

The following commands are introduced or modified in the feature or features documented in this module. For information about these commands, see the *Cisco IOS Multiprotocol Label Switching Command Reference* at http://www.cisco.com/en/US/docs/ios/mpls/command/reference/mp_book.html. For information about all Cisco IOS commands, use the Command Lookup Tool at http://tools.cisco.com/Support/CLILookup or the *Cisco IOS Master Command List, All Releases*, at http://www.cisco.com/en/US/docs/ios/mcl/allreleasemcl/all_book.html.

- **show policy-map interface brief**
- **show running-config vrf**

Feature Information for MPLS VPN—Show Running VRF

Table 1 lists the release history for this feature.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

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Note Table 1 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 1   Feature Information for MPLS VPN—Show Running VRF

Feature Name	Releases	Feature Information
MPLS VPN—Show Running VRF	12.2(28)SB 12.0(32)SY 12.2(33)SRB 12.2(33)SXH 12.4(20)T	The MPLS VPN—Show Running VRF feature provides a CLI option to display a subset of the running configuration on a router that is linked to a VRF. You can display the configuration of a specific VRF or of all VRFs configured on a router. A command that displays all the elements of the configuration linked to a VRF allows for easier troubleshooting on a per-VRF basis and facilitates comparisons among configurations of different VRFs on the same router. In 12.2(28)SB, this feature was introduced. In 12.0(32)SY, support was added for a Cisco IOS 12.0SY release. In 12.2(33)SRB, support was added for a Cisco IOS 12.2SR release. In 122(33)SXH, support was added for a Cisco IOS 12.2SX release. In 12.4(20)T, support was added for a Cisco IOS 12.4T release. The following sections provide information about this feature: • Configuration Elements Displayed for the MPLS VPN—Show Running VRF Feature, page 2 • Display of VRF Routing Protocol Configuration, page 3 • Display of Configuration Not Directly Linked to a VRF, page 4

Table 1 *Feature Information for MPLS VPN—Show Running VRF (continued)*

Feature Name	Releases	Feature Information
		The following commands were introduced or modified: **show policy-map interface brief**, **show running-config vrf**.

Glossary

BGP—Border Gateway Protocol. An interdomain routing protocol that replaces External Gateway Protocol (EGP). BGP systems exchange reachability information with other BGP systems. BGP is defined by RFC 1163.

EGP—External Gateway Protocol. An internet protocol for exchanging routing information between autonomous systems. EGP is documented in RFC 904. Not to be confused with the general term exterior gateway protocol. EGP is an obsolete protocol that was replaced by Border Gateway Protocol (BGP).

EIGRP—Enhanced Interior Gateway Routing Protocol. Advanced version of Interior Gateway Routing Protocol (IGRP) developed by Cisco. Provides superior convergence properties and operating efficiency, and combines the advantages of link state protocols with those of distance vector protocols.

IGP—Interior Gateway Protocol. An internet protocol used to exchange routing information within an autonomous system. Examples of common Internet IGPs include Interior Gateway Routing Protocol (IGRP), Open Shortest Path First (OSPF), and Routing Information Protocol (RIP).

IGRP—Interior Gateway Routing Protocol. An Interior Gateway Protocol (IGP) developed by Cisco to address the issues associated with routing in large, heterogeneous networks.

MPLS—Multiprotocol Label Switching. A switching method that forwards IP traffic through the use of a label. This label instructs the routers and the switches in the network where to forward each packet based on preestablished IP routing information.

OSPF—Open Shortest Path First. A link-state, hierarchical, Interior Gateway Protocol (IGP) routing algorithm and routing protocol proposed as a successor to Routing Information Protocol (RIP) in the Internet community. OSPF features include least-cost routing, multipath routing, and load balancing. OSPF was derived from an early version of the Intermediate System-to-Intermediate System (IS-IS) protocol.

RIP—Routing Information Protocol. Internal Gateway Protocol (IGP) supplied with UNIX Berkeley Software Distribution (BSD) systems. RIP is the most common IGP in the Internet. It uses hop count as a routing metric.

VPN—Virtual Private Network. The result of a router configuration that enables IP traffic to use tunneling to travel securely over a public TCP/IP network.

VRF—A Virtual Private Network (VPN) routing and forwarding instance. A VRF consists of an IP routing table, a derived forwarding table, a set of interfaces that use the forwarding table, and a set of rules and routing protocols that determine what goes into the forwarding table. In general, a VRF includes the routing information that defines a customer VPN site that is attached to a provider edge (PE) router.