MPLS VPN—Per VRF Label

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The MPLS VPN—Per VRF Label feature (hereafter, in this document, referred to as the Per VRF Label feature or the Per VRF feature) allows you to configure a single virtual private network (VPN) label for all local routes in the entire VPN routing and forwarding (VRF) domain on supported routers. Prior to this Cisco IOS Release 12.4(6)T, a VPN label allocation was required for each VPN prefix. This new feature incorporates a single (per VRF) VPN label that includes *all* local routes in the VRF table.

You can enable (or disable) the MPLS VPN—Per VRF Label feature at the router global configuration level by using a new, hidden, CLI command.

History for the MPLS VPN—Per VRF Label Feature

Release	Modification
12.4(6)T	This feature was introduced

Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at http://www.cisco.com/go/fn. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

Contents

This document includes the following topics:

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Prerequisites for the Per VRF Label Feature

- If your VRF domain has the external/internal Border Gateway Protocol (EIBGP) multipath feature or the Carrier Supporting Carrier (CSC) feature enabled, disable those features before you configure the Per VRF Label feature.
- Before configuring Multiprotocol Label Switching (MPLS) Layer 3 VPNs, you must have MPLS, Label Distribution Protocol (LDP), and Cisco Express Forwarding (CEF) installed in your network. All routers in the core, including the Provider Edge (PE) routers, must be able to support CEF and MPLS forwarding.

Restrictions for the Per VRF Label Feature

- Enabling the Per VRF Label feature causes BGP reconvergence, which can result in data loss for traffic coming from the MPLS VPN core.

Note You can minimize network disruption by enabling this feature during a scheduled MPLS maintenance window. Also, if possible, avoid enabling this feature on a live router.

- Per-prefix MPLS counters for VPN prefixes are lost when you enable the Per VRF Label feature.
- You cannot use this feature with CSC and EIBGP multipath features.
- When you configure the Per VRF Label feature, the system displays the following message:

  % This command is an unreleased and unsupported feature

  This is normal and does not affect the operation of the feature. This feature is supported through the Technical Assistance Center (TAC) for authorized customers.

Information About the Per VRF Label Feature

Prior to this Cisco IOS Release 12.4(6)T, Cisco IOS routers advertised a Per Prefix label for all local routes (the default setting).

The PE stores both local and remote routes and includes a label entry for each route. For distributed platforms, the per-prefix labels consume memory. When there are many VRFs and routes, the amount of memory that the per-prefix labels consume can become an issue.

This new Per VRF Label feature allows the advertisement of a single VPN label for local routes throughout the entire VRF. The router uses a new VPN label for the VRF decoding and IP-based lookup to learn where to forward packets for the PE or CE interfaces.

The following conditions apply when you configure the Per VRF Label feature:

- The VRF uses one label for all local routes.
- When you *enable* the Per VRF Label feature, a new Per VRF label is created and all local routes will experience some data loss.
- When you *disable* the Per VRF Label feature, the configuration reverts to the default configuration (Per prefix label).

How to Configure the Per VRF Label Feature

This section describes the following required task:

- Configuring the Per VRF Label Feature, page 4

Configuring the Per VRF Label Feature

To configure the Per VRF Label feature, perform the following task.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **mpls label mode** {**vrf** *vrf-name* | **all-vrfs**} **protocol bgp-vpnv4** {**per-prefix** | **per-vrf**}
4. **end**
5. **show ip vrf detail**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**mpls label mode** {**vrf** *vrf-name* | **all-vrfs**} **protocol bgp-vpnv4** {**per-prefix** | **per-vrf**} **Example:** `Router(config)# mpls label mode all-vrfs protocol bgp-vpnv4 per-vrf`	Configures the Per VRF Label feature.
Step 4	**end** **Example:** `Router(config)# end`	Returns to privileged EXEC mode.
Step 5	**show ip vrf detail** **Example:** `Router# show ip vrf detail`	Displays the VRF label mode.

Examples

The following command example shows how to verify the Per VRF Label configuration:

In this example output, the **bold** text indicates the label modes:

```
Router# show ip vrf detail

VRF vpn1; default RD 1:1; default VPNID <not set>
VRF Table ID = 1
  Interfaces:
    Ethernet0/0              Serial5/0                Loopback1
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:1:1
  Import VPN route-target communities
    RT:1:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-vrf (Label 33)
VRF vpn2; default RD 2:1; default VPNID <not set>
VRF Table ID = 2
  Interfaces:
    Ethernet2/0              Loopback2
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:2:1
  Import VPN route-target communities
    RT:2:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-vrf (Label 20)
VRF vpn3; default RD 3:1; default VPNID <not set>
VRF Table ID = 3
  Interfaces:
    Ethernet3/0              Loopback3
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:3:1
  Import VPN route-target communities
    RT:3:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-vrf (Label 19)

Router# show ip bgp vpnv4 all labels
   Network          Next Hop      In label/Out label
Route Distinguisher: 1:1 (vpn1)
   127.0.0.1/32     192.168.1.1     per-VRF:33/nolabel
   127.0.0.5/32     127.0.0.4       nolabel/19
   192.168.1.0/24   0.0.0.0         per-VRF:33/aggregate(vpn1)
                    192.168.1.1     per-VRF:33/nolabel
   192.168.4.0/24   127.0.0.4       nolabel/20
   172.16.0.0/16    0.0.0.0         per-VRF:33/aggregate(vpn1)
   172.16.128.0/32  192.168.1.1     per-VRF:33/nolabel
Route Distinguisher: 2:1 (vpn2)
   127.0.2.2/32     0.0.0.0         per-VRF:20/aggregate(vpn2)
   127.0.0.6/32     192.168.5.1     per-VRF:20/nolabel
   192.168.5.0/24   0.0.0.0         per-VRF:20/aggregate(vpn2)
   172.17.128.0/32  192.168.5.1     per-VRF:20/nolabel
Route Distinguisher: 3:1 (vpn3)
```

```
   127.0.3.2/32     0.0.0.0         per-VRF:19/aggregate(vpn3)
   127.0.0.8/32     192.168.7.1     per-VRF:19/nolabel
   192.168.7.0/24   0.0.0.0         per-VRF:19/aggregate(vpn3)
   172.16.128.0/32  192.168.7.1     per-VRF:19/nolabel


Router# show mpls forwarding-table

Local  Outgoing    Prefix              Bytes tag  Outgoing   Next Hop
tag    tag or VC   or Tunnel Id        switched   interface
16     Pop tag     192.168.3.0/24    0          Et1/0      192.168.2.3
17     Pop tag     127.0.0.3/32      0          Et1/0      192.168.2.3
18     17          127.0.0.4/32      0          Et1/0      192.168.2.3
19     Aggregate   vrf:vpn3          0
20     Aggregate   vrf:vpn2          0
33     Aggregate   vrf:vpn1          0
Router#
```

Configuration Examples for the Per VRF Label feature

This section shows examples for three different configurations:

No Label Mode: Example

The following example shows the default label mode configuration (no label mode).

In this example output, the **bold** text indicates the label modes:

```
Router# show ip vrf detail

VRF vpn1; default RD 1:1; default VPNID <not set>
VRF Table ID = 1
  Interfaces:
    Ethernet0/0              Serial5/0                Loopback1
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:1:1
  Import VPN route-target communities
    RT:1:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-prefix
VRF vpn2; default RD 2:1; default VPNID <not set>
VRF Table ID = 2
  Interfaces:
    Ethernet2/0              Loopback2
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:2:1
  Import VPN route-target communities
    RT:2:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-prefix
VRF vpn3; default RD 3:1; default VPNID <not set>
VRF Table ID = 3
  Interfaces:
    Ethernet3/0              Loopback3
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:3:1
  Import VPN route-target communities
    RT:3:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-prefix
```

```
Router# show ip bgp vpnv4 all labels

   Network          Next Hop      In label/Out label
Route Distinguisher: 1:1 (vpn1)
   127.0.0.1/32     192.168.1.1     19/nolabel
   127.0.0.5/32     127.0.0.4       nolabel/19
   192.168.1.0/24   192.168.1.1     20/nolabel
                    0.0.0.0         20/aggregate(vpn1)
   192.168.4.0/24   127.0.0.4       nolabel/20
   172.16.0.0/16    0.0.0.0         32/aggregate(vpn1)
   172.16.128.0/32  192.168.1.1     22/nolabel
Route Distinguisher: 2:1 (vpn2)
   127.0.2.2/32     0.0.0.0         23/aggregate(vpn2)
   127.0.0.6/32     192.168.5.1     24/nolabel
   192.168.5.0/24   0.0.0.0         25/aggregate(vpn2)
   172.17.128.0/32  192.168.5.1     26/nolabel
Route Distinguisher: 3:1 (vpn3)
   127.0.3.2/32     0.0.0.0         27/aggregate(vpn3)
   127.0.0.8/32     192.168.7.1     28/nolabel
   192.168.7.0/24   0.0.0.0         29/aggregate(vpn3)
   172.16.128.0/32  192.168.7.1     30/nolabel

Router# show mpls forwarding-table

Local  Outgoing    Prefix              Bytes tag  Outgoing   Next Hop
tag    tag or VC   or Tunnel Id        switched   interface
16     Pop tag     192.168.3.0/24    0          Et1/0      192.168.2.3
17     Pop tag     127.0.0.3/32      0          Et1/0      192.168.2.3
18     17          127.0.0.4/32      0          Et1/0      192.168.2.3
19     Untagged    127.0.0.1/32[V]   0          Et0/0      192.168.1.1
20     Aggregate   192.168.1.0/24[V] 0
22     Untagged    172.16.128.0/32[V]0          Et0/0      192.168.1.1
23     Aggregate   127.0.2.2/32[V]   0
24     Untagged    127.0.0.6/32[V]   0          Et2/0      192.168.5.1
25     Aggregate   192.168.5.0/24[V] 0
26     Untagged    172.17.128.0/32[V]0          Et2/0      192.168.5.1
27     Aggregate   127.0.3.2/32[V]   0
28     Untagged    127.0.0.8/32[V]   0          Et3/0      192.168.7.1
29     Aggregate   192.168.7.0/24[V] 0
30     Untagged    172.16.128.0/32[V]0          Et3/0      192.168.7.1
32     Aggregate   172.16.0.0/16[V]  0
Router#
```

Mixed Mode (with Global Per-Prefix): Example

For this example, the following commands set VPN 1 for per-vrf label mode, VPN 2 for per-prefix label mode, and all remaining VPNs for per-prefix (globally).

In this example output, the **bold** text indicates the label modes:

```
Router# mpls label mode vrf vpn1 protocol bgp-vpnv4 per-vrf
Router# mpls label mode vrf vpn2 protocol bgp-vpnv4 per-prefix
```

Use the following show commands to display the label mode settings:

```
Router# show ip vrf detail

VRF vpn1; default RD 1:1; default VPNID <not set>
VRF Table ID = 1
  Interfaces:
    Ethernet0/0             Serial5/0               Loopback1
```

```
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:1:1
  Import VPN route-target communities
    RT:1:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-vrf (Label 33)
VRF vpn2; default RD 2:1; default VPNID <not set>
VRF Table ID = 2
  Interfaces:
    Ethernet2/0             Loopback2
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:2:1
  Import VPN route-target communities
    RT:2:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-prefix
VRF vpn3; default RD 3:1; default VPNID <not set>
VRF Table ID = 3
  Interfaces:
    Ethernet3/0             Loopback3
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:3:1
  Import VPN route-target communities
    RT:3:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-prefix


Router# show ip bgp vpnv4 all label

   Network          Next Hop      In label/Out label
Route Distinguisher: 1:1 (vpn1)
   127.0.0.1/32     192.168.1.1     per-VRF:33/nolabel
   127.0.0.5/32     127.0.0.4       nolabel/19
   192.168.1.0/24   0.0.0.0         per-VRF:33/aggregate(vpn1)
                    192.168.1.1     per-VRF:33/nolabel
   192.168.4.0/24   127.0.0.4       nolabel/20
   172.16.0.0/16    0.0.0.0         per-VRF:33/aggregate(vpn1)
   172.16.128.0/32  192.168.1.1     per-VRF:33/nolabel
Route Distinguisher: 2:1 (vpn2)
   127.0.2.2/32     0.0.0.0         23/aggregate(vpn2)
   127.0.0.6/32     192.168.5.1     24/nolabel
   192.168.5.0/24   0.0.0.0         25/aggregate(vpn2)
   172.17.128.0/32  192.168.5.1     26/nolabel
Route Distinguisher: 3:1 (vpn3)
   127.0.3.2/32     0.0.0.0         27/aggregate(vpn3)
   127.0.0.8/32     192.168.7.1     28/nolabel
   192.168.7.0/24   0.0.0.0         29/aggregate(vpn3)
   172.16.128.0/32  192.168.7.1     30/nolabel

Router# show mpls forwarding-table

Local  Outgoing    Prefix              Bytes tag  Outgoing   Next Hop
tag    tag or VC   or Tunnel Id        switched   interface
16     Pop tag     192.168.3.0/24    0          Et1/0      192.168.2.3
```

```
17     Pop tag     127.0.0.3/32      0          Et1/0      192.168.2.3
18     17          127.0.0.4/32      0          Et1/0      192.168.2.3
23     Aggregate   127.0.2.2/32[V]   0
24     Untagged    127.0.0.6/32[V]   0          Et2/0      192.168.5.1
25     Aggregate   192.168.5.0/24[V] 0
26     Untagged    172.17.128.0/32[V]0          Et2/0      192.168.5.1
27     Aggregate   127.0.3.2/32[V]   0
28     Untagged    127.0.0.8/32[V]   0          Et3/0      192.168.7.1
29     Aggregate   192.168.7.0/24[V] 0
30     Untagged    172.16.128.0/32[V]0          Et3/0      192.168.7.1
33     Aggregate   vrf:vpn1          0
Router#
```

Mixed Mode (with Global Per-VRF): Example

For this example, the following commands set VPN 1 for per-vrf label mode, VPN 2 for per-prefix label mode, and all remaining VPNs for per-vrf (globally).

In this example output, the **bold** text indicates the label modes:

```
Router# mpls label mode vrf vpn1 protocol bgp-vpnv4 per-vrf
Router# mpls label mode vrf vpn2 protocol bgp-vpnv4 per-prefix
Router# mpls label mode all-vrfs protocol bgp-vpnv4 per-vrf

Router# show ip vrf detail

VRF vpn1; default RD 1:1; default VPNID <not set>
VRF Table ID = 1
  Interfaces:
    Ethernet0/0              Serial5/0                Loopback1
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:1:1
  Import VPN route-target communities
    RT:1:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-vrf (Label 33)
VRF vpn2; default RD 2:1; default VPNID <not set>
VRF Table ID = 2
  Interfaces:
    Ethernet2/0              Loopback2
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:2:1
  Import VPN route-target communities
    RT:2:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-prefix
VRF vpn3; default RD 3:1; default VPNID <not set>
VRF Table ID = 3
  Interfaces:
    Ethernet3/0              Loopback3
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:3:1
  Import VPN route-target communities
    RT:3:1
  No import route-map
```

```
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-vrf (Label 19)


Router# show ip bgp vpnv4 all label

Network          Next Hop      In label/Out label
Route Distinguisher: 1:1 (vpn1)
   127.0.0.1/32     192.168.1.1     per-VRF:33/nolabel
   127.0.0.5/32     127.0.0.4       nolabel/19
   192.168.1.0/24   0.0.0.0         per-VRF:33/aggregate(vpn1)
                    192.168.1.1     per-VRF:33/nolabel
   192.168.4.0/24   127.0.0.4       nolabel/20
   172.16.0.0/16    0.0.0.0         per-VRF:33/aggregate(vpn1)
   172.16.128.0/32  192.168.1.1     per-VRF:33/nolabel
Route Distinguisher: 2:1 (vpn2)
   127.0.2.2/32     0.0.0.0         23/aggregate(vpn2)
   127.0.0.6/32     192.168.5.1     24/nolabel
   192.168.5.0/24   0.0.0.0         25/aggregate(vpn2)
   172.17.128.0/32  192.168.5.1     26/nolabel
Route Distinguisher: 3:1 (vpn3)
   127.0.3.2/32     0.0.0.0         per-VRF:19/aggregate(vpn3)
   127.0.0.8/32     192.168.7.1     per-VRF:19/nolabel
   192.168.7.0/24   0.0.0.0         per-VRF:19/aggregate(vpn3)
   172.16.128.0/32  192.168.7.1     per-VRF:19/nolabel


Router# show mpls forwarding-table

Local  Outgoing    Prefix              Bytes tag  Outgoing   Next Hop
tag    tag or VC   or Tunnel Id        switched   interface
16     Pop tag     192.168.3.0/24       0        Et1/0      192.168.2.3
17     Pop tag     127.0.0.3/32      0           Et1/0      192.168.2.3
18     17          127.0.0.4/32      0           Et1/0      192.168.2.3
19     Aggregate   vrf:vpn3          0
23     Aggregate   127.0.2.2/32[V]   0
24     Untagged    127.0.0.6/32[V]   0           Et2/0      192.168.5.1
25     Aggregate   192.168.5.0/24[V] 0
26     Untagged    172.17.128.0/32[V]0           Et2/0      192.168.5.1
33     Aggregate   vrf:vpn1          0
Router#
```

Additional References

The following sections provide references related to the Per VRF Label feature.

Related Documents

Related Topic	Document Title
MPLS VPNs	*Cisco IOS Multiprotocol Label Switching Configuration Guide, Release 12.4* *Part 4: MPLS Virtual Private Networks*

Standards

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

MIBs

MIB	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

RFC	Title
RFC 2547	*BGP/MPLS*

Technical Assistance

Description	Link
The Cisco Technical Support website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/techsupport

Command Reference

This section documents new and modified commands only.

- **debug ip bgp vpnv4 unicast**
- **mpls label mode**

debug ip bgp vpnv4 unicast

To display debugging messages for Virtual Private Network version 4 (VPNv4) unicast routes, use the **debug ip bgp vpnv4 unicast** command in privileged EXEC mode. To disable debugging output, use the **no** form of this command.

debug ip bgp vpnv4 unicast {**checkpoint | csc | import | keepalives | labelmode | nsf**}

no debug ip bgp vpnv4 unicast {**checkpoint | csc | import | keepalives | labelmode | nsf**}

Syntax Description

csc	Displays VRF processing messages for a Carrier Supporting Carrier (CSC) VPN.
import	Displays VRF import processing messages.
keepalives	Displays Border Gateway Protocol (BGP) keepalives.
labelmode	Displays VRF label mode processing.
updates	Displays BGP updates processing for Unicast VPNv4 address family.

Command Default

Debugging of VPNv4 unicast routes is not enabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.4(6)T	The **labelmode** keyword was added

Examples

The following example enables debugging of MPLS VPN label mode processing:

```
Router# debug ip bgp vpnv4 unicast labelmode
MPLS VPN Label mode processing debugging is on
Router# config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# mpls label mode all-vrfs protocol bgp-vpnv4 per-vrf
% This command is an unreleased and unsupported feature
Router(config)#
*Feb 17 13:45:27.727: vpn: changing the label mode (Enable: per-vrf) for all-vrfs
*Feb 17 13:45:28.355: vpn: pervrf, free local label 19, remove mpls forw entry for
vpn1:127.0.0.1/255.255.255.255
*Feb 17 13:45:28.355: vpn: create per-vrf mpls forw entry for vrf vpn1, label 33
*Feb 17 13:45:28.355: TFIB AGGR Label: add aggregate label 33 for vrf vpn1
*Feb 17 13:45:28.355: vpn: set pervrf label 33 for vpn1:127.0.0.1/255.255.255.255
*Feb 17 13:45:28.355: vpn: pervrf, free local label 20, remove mpls forw entry for
vpn1:192.168.1.0/255.255.255.0
*Feb 17 13:45:28.355: vpn: set pervrf label 33 for vpn1:192.168.1.0/255.255.255.0
*Feb 17 13:45:28.355: vpn: pervrf, free local label 32, remove mpls forw entry for
vpn1:172.16.0.0/255.255.0.0
*Feb 17 13:45:28.355: vpn: set pervrf label 33 for vpn1:172.16.0.0/255.255.0.0
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*Feb 17 13:45:28.355: vpn: set pervrf label 20 for vpn3:172.16.128.0/255.255.255.255
*Feb 17 13:45:28.355: vpn: label mode change, bnet walk complete.
*Feb 17 13:45:28.355: BGP: VPNv4 Unicast label mode changed^Z
Router#
*Feb 17 13:45:38.455: %SYS-5-CONFIG_I: Configured from console by console
Router# show debug
Tag VPN:
  MPLS VPN Label mode processing debugging is on
Router#
```

Related Commands

Command	Description
show ip vrf detail	Displays assigned label mode for the VRF.

mpls label mode

To configure the Per VRF Labels, use the **mpls label mode** command in global configuration mode. To disable the Per VRF Label feature, use the **no** form of this command.

mpls label mode {**vrf** *vrf-name* | **all-vrfs**} **protocol bgp-vpnv4** {**per-prefix | per-vrf**}

no mpls label mode {**vrf** *vrf-name* | **all-vrfs**} **protocol bgp-vpnv4** {**per-prefix | per-vrf**}

Syntax Description

vrf	Specifies a single VPN routing and forwarding (VRF) domain you want to configure.
vrf-name	Specifies the name of the single VRF you want to configure.
all-vrfs	Specifies all VRFs you want to configure.
protocol bgp-vpnv4	Assigns the label to the specified protocol.
per-prefix	Assigns the label as per-prefix mode.
per-vrf	Displays the assigned label mode for the VRF.

Command Default

Per-prefix label mode is the default for all local routes.

Command Modes

Global configuration

Command History

Release	Modification
12.4(6)T	This command was introduced.

Usage Guidelines

When you configure the Per VRF Label feature, you will receive the following system message:

% This command is an unreleased and unsupported feature

This is normal and does not affect the operation of the feature. This feature is supported through the Technical Assistance Center (TAC) for authorized customers.

Examples

The following command example configures all VRFs to per-vrf mode:

```
Router(config)# mpls label mode all-vrfs protocol bgp-vpnv4 per-vrf
```

Related Commands

Command	Description
debug ip bgp vpnv4 unicast	Displays debugging messages for VPNv4 unicast routes.
show ip vrf detail	Displays the assigned label mode for the VRF.

Feature Information for MPLS VPN—Per VRF Label

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.

Cisco IOS software images are specific to a Cisco IOS software release, a feature set, and a platform. Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at http://www.cisco.com/go/fn. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

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 <Phrase Based on Module Title>

Feature Name	Releases	Feature Information
MPLS VPN—Per VRF Label	12.4(6)T	The MPLS VPN—Per VRF Label feature allows you to configure a single virtual private network (VPN) label for all local routes in the entire VPN routing and forwarding (VRF) domain on supported routers. In 12.4(6)T, this feature was introduced. The following sections provide information about this feature: • Prerequisites for the Per VRF Label Feature, page 2 • Restrictions for the Per VRF Label Feature, page 2 • Information About the Per VRF Label Feature, page 3 • How to Configure the Per VRF Label Feature, page 4 • Configuration Examples for the Per VRF Label feature, page 7 • Additional References, page 12 • Command Reference, page 13