

1 VRF Commands

Command	Function
address-family	Enable the IPv4 or IPv6 protocol in a multiprotocol VPN Routing and Forwarding Table (VRF) and enter the corresponding address family configuration mode.
alloc-label	Configure the label allocation mode.
description	Configure the description of the VRF.
exit-address-family	Exit the address family configuration mode of the multiprotocol VRF.
export map	Configure a policy for exporting the extended community attributes of VPN routes from the local VRF to the remote device.
import map	Configure a policy for importing VPN routes from a remote device to the local VRF.
ip vrf	Configure a single-protocol VRF.
ip vrf forwarding	Add an interface to a single-protocol VRF.
ip vrf receive	Import the direct route and host route of an interface to a specified VRF.
maximum routes	Configure the maximum number of routes in a VRF.
rd	Configure the RD value of a VRF.
route-target	Configure the RT value of a VRF.
vrf definition	Configure a multiprotocol VRF.
vrf forwarding	Add an interface to a multiprotocol VRF.
vrf global-vrf	Enter the global VRF configuration mode.
vrf receive	Import the IPv4 or IPv6 local host routes and direct routes of an interface to a specified VRF.
show global-vrf	Display the global VRF information.
show ip vrf	Display the VRF information.
show vrf	Display the VRF information.

1.1 address-family

Function

Run the **address-family** command to enable the IPv4 or IPv6 protocol in a multiprotocol VPN Routing and Forwarding Table (VRF) and enter the corresponding address family configuration mode.

Run the **no** form of this command to disable the IPv4 or IPv6 protocol for the multiprotocol VRF.

Run the **default** form of this command to restore the default configuration.

No IPv4 or IPv6 protocol is enabled for the multiprotocol VRF by default.

Syntax

```
address-family { ipv4 | ipv6 }
```

```
no address-family { ipv4 | ipv6 }
```

```
default address-family { ipv4 | ipv6 }
```

Parameter Description

ipv4: Enables the IPv4 protocol and enters the IPv4 address family configuration mode.

ipv6: Enables the IPv6 protocol and enters the IPv6 address family configuration mode.

Command Modes

Multiprotocol VRF configuration mode

Global VRF configuration mode

Default Level

14

Usage Guidelines

This command applies to only multiprotocol VRFs.

Examples

The following example configures a multiprotocol VRF named **vrf1**, enables the IPv4 protocol, and enters the IPv4 address family configuration mode.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# vrf definition vrf1
Hostname(config-vrf)# address-family ipv4
Hostname(config-vrf-af)#
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [exit-address-family](#)
- [vrf definition](#)
- [vrf receive](#)

1.2 alloc-label

Function

Run the **alloc-label** command to configure the label allocation mode.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No label allocation mode is configured by default.

Syntax

```
alloc-label { per-route | per-vrf }
```

```
no alloc-label
```

```
default alloc-label
```

Parameter Description

per-route: Configures the label allocation mode based on each VPN route.

per-vrf: Configures the label allocation mode based on each VRF.

Command Modes

Single-protocol VRF configuration mode

Configuration mode of multiprotocol VRF IPv4 address family

Configuration mode of multiprotocol VRF IPv6 address family

Configuration mode of global VRF IPv4 address family

Configuration mode of global VRF IPv6 address family

Default Level

14

Usage Guidelines

RFC4364 describes two label allocation modes in L3VPN applications:

- Route-based label allocation mode:
 - One route corresponds to one label. The advantage is that the system can look up the ILM table based on the label value and quickly forward packets to the next hop. The disadvantage is that the capacity of the ILM table must be large.
- VRF-based label allocation mode:

One VRF corresponds to one label. The advantage is that all routes in the VRF share this label, which reduces the capacity of the ILM table. The disadvantage is that packet forwarding is slower than that in route-based label allocation mode. This is because the system needs to look up the table twice in the forwarding process. It first looks up the ILM table to find the VRF where the packet is located, and then forwards the packet based on the destination IP address in the routing table of the VRF.

Examples

The following example configures the route-based label allocation mode for the single-protocol VRF.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ip vrf VPNA
Hostname(config-vrf)# alloc-label per-route
```

The following example configures the route-based label allocation mode for the IPv4 address family of the multiprotocol VRF.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# vrf definition VPNA
Hostname(config-vrf)# address-family ipv4
Hostname(config-vrf-af)# alloc-label per-route
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [ip vrf](#)
- [address-family](#)
- [vrf forwarding](#)

1.3 description

Function

Run the **description** command to configure the description of the VRF.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No VRF description is configured by default.

Syntax

description *description*

Parameter Description

description: Description of a configured VRF. It is a case-sensitive string of 1 to 244 characters.

Command Modes

Single-protocol VRF configuration mode

Multiprotocol VRF configuration mode

Global VRF configuration mode

Default Level

14

Usage Guidelines

This command is applicable to both the single-protocol and multiprotocol VRFs.

Examples

The following command configures a single-protocol VRF named **vrf1** and sets its description to **vpn-a**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ip vrf vrf1
Hostname(config-vrf)# description vpn-a
```

The following command configures a multiprotocol VRF named **vrf2** and sets its description to **vpn-b**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# vrf definition vrf2
Hostname(config-vrf)# description vpn-b
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [ip vrf](#)
- [vrf definition](#)

1.4 exit-address-family

Function

Run the **exit-address-family** command to exit the address family configuration mode of the multiprotocol VRF.

Syntax

exit-address-family

Parameter Description

N/A

Command Modes

Configuration mode of multiprotocol VRF IPv4 address family

Configuration mode of multiprotocol VRF IPv6 address family

Configuration mode of global VRF IPv4 address family

Configuration mode of global VRF IPv6 address family

Default Level

14

Usage Guidelines

N/A

Examples

The following example exits the IPv4 address family configuration mode of the multiprotocol VRF.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# vrf definition vrf1
Hostname(config-vrf)# address-family ipv4
Hostname(config-vrf-af)# exit-address-family
Hostname(config-vrf)#
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [address-family](#)
- [vrf definition](#)
- [vrf receive](#)

1.5 export map

Function

Run the **export map** command to configure a policy for exporting the extended community attributes of VPN routes from the local VRF to the remote device.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No policy for exporting the extended community attributes associated with the VRF is configured by default.

Syntax

export map *route-map-name*

no export map

default export map

Parameter Description

map *route-map-name*: Configures the name of the associated route map.

Command Modes

Single-protocol VRF configuration mode

Configuration mode of multiprotocol VRF IPv4 address family

Configuration mode of multiprotocol VRF IPv6 address family

Configuration mode of global VRF IPv4 address family

Configuration mode of global VRF IPv6 address family

Default Level

14

Usage Guidelines

To more precisely control the extended community attributes of exported routes, you can define a precise rule as needed in the associated route map. You can run this command to add or modify the extended community attributes defined by the **route-target export** command. You can only run the **match ip address** and **set extcommunity** commands to configure rules for a route map associated by this command.

Examples

The following example configures an associated export policy for the VRF **VPNA**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ip vrf VPNA
Hostname(config-vrf)# export map rma
```

Notifications

1. When unsupported commands, such as **set ip tos**, are configured in the route map associated by this command, the following notification will be displayed:

```
% bgp export map not support set ip tos
```

2. When the associated route map such as **imp_map** does not exist, the following notification will be displayed:

```
% route-map imp_map not exist
```

Common Errors

N/A

Platform Description

N/A

Related Commands

- [ip vrf](#)
- [address-family](#)
- [vrf forwarding](#)

1.6 import map

Function

Run the **import map** command to configure a policy for importing VPN routes from a remote device to the local VRF.

Run the **no** form of this command to remove the import policy associated with the VRF.

Run the **default** form of this command to restore the default configuration.

No import policy associated with the VRF is configured by default.

Syntax

```
import map route-map-name
```

```
no import map
```

```
default import map
```

Parameter Description

map *route-map-name*: Configures the name of the associated route map.

Command Modes

Single-protocol VRF configuration mode

Configuration mode of multiprotocol VRF IPv4 address family

Configuration mode of multiprotocol VRF IPv6 address family

Configuration mode of global VRF IPv4 address family

Configuration mode of global VRF IPv6 address family

Default Level

14

Usage Guidelines

To more precisely filter routes imported to the local VRF, you can define a precise rule as needed in the associated route map. The rule defined by the **import map** command takes effect after the **Import** extended community attributes defined in the VRF. That is, only after these routes match the extended community attributes defined by the **route-target import** command in the VRF, the VPN routes received from the remote device can be filtered again by rules defined the **import map** command. You can only run the **match ip address** and **match extcommunity** commands to configure rules for a route map associated by the **import map** command.

Examples

The following example configures an import policy associated with the VRF **VPNA**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ip vrf VPNA
Hostname(config-vrf)# import map rma
```

Notifications

1. When unsupported commands, such as **set ip tos**, are configured in the route map associated by this command, the following notification will be displayed:

```
% bgp export map not support set ip tos
```

2. When the associated route map such as **exp_map** does not exist, the following notification will be displayed:

```
% route-map exp_map not exist
```

Common Errors

N/A

Platform Description

N/A

Related Commands

- [ip vrf](#)
- [address-family](#)
- [vrf forwarding](#)

1.7 ip vrf

Function

Run the **ip vrf** command to configure a single-protocol VRF.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No single-protocol VRF is configured by default.

Syntax

ip vrf *vrf-name*

no ip vrf *vrf-name*

default ip vrf *vrf-name*

Parameter Description

vrf-name: Name of the single-protocol VRF. It is a case-sensitive string of 1 to 31 characters.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

N/A

Examples

The following example configures a single-protocol VRF **redvrf**, and enters the VRF configuration mode.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ip vrf redvrf
Hostname(config-vrf)#
```

The following example deletes the single-protocol VRF **redvrf**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# no ip vrf redvrf
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [ip vrf forwarding](#)
- [ip vrf receive](#)
- [description](#)
- [show ip vrf](#)
- [show vrf](#)

1.8 ip vrf forwarding

Function

Run the **ip vrf forwarding** command to add an interface to a single-protocol VRF.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No interface is added to any single-protocol VRF by default.

Syntax

```
ip vrf forwarding vrf-name
```

```
no ip vrf forwarding vrf-name
```

```
default ip vrf forwarding vrf-name
```

Parameter Description

vrf-name: Name of a configured VRF. This VRF must be a single-protocol VRF.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

On a VRF-enabled device, if you add an interface to a single-protocol VRF and enable IPv6 on the interface, the device does not forward the IPv6 packets received on this interface. Therefore, to add an interface to a VRF and enable IPv6 on the interface, run the **vrf forwarding** command.

Examples

The following example adds the interface GigabitEthernet 0/1 to a single-protocol VRF.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ip vrf forwarding redvrf
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [ip vrf](#)

1.9 ip vrf receive

Function

Run the **ip vrf receive** command to import the direct route and host route of an interface to a specified VRF.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No direct route and host route of an interface are imported to any specified VRF by default.

Syntax

```
ip vrf receive vrf-name
```

```
no ip vrf receive vrf-name
```

```
default ip vrf receive vrf-name
```

Parameter Description

vrf-name: Name of a configured VRF. This VRF must be a single-protocol VRF.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

The **ip vrf receive** command is used to select a VRF based on policy-based routing (PBR). This command imports the host route and direct route of the primary and secondary addresses of an interface to a specified VRF. To import the host route and direct route of an interface to multiple VRFs, run this command multiple times. Unlike the **ip vrf forwarding** command, this command does not add the interface to a VRF, and the interface is still global.

The **ip vrf forwarding** and **ip vrf receive** commands are mutually exclusive on a specified interface. If you configure the two commands one after another, an error prompt is displayed.

If you configure **ip vrf forwarding** and then **ip vrf receive**, the following notification will be displayed:

```
% Cannot configure 'ip vrf receive' if interface is under a VRF
```

If you configure **ip vrf receive** and then **ip vrf forwarding**, the following notification will be displayed:

```
% Cannot configure 'ip vrf forwarding VRF_1' on this interface, please
unconfigure 'ip vrf receive' and 'vrf receive' first
```

Examples

The following example imports the host route and direct route in the network segment for the interface GigabitEthernet 0/1 to **VRF_1** and **VRF_2**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ip address 192.168.1.2 255.255.255.0
```

```
Hostname(config-if-GigabitEthernet 0/1)# ip vrf receive VRF_1
Hostname(config-if-GigabitEthernet 0/1)# ip vrf receive VRF_2
Hostname(config-if-GigabitEthernet 0/1)# end
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [ip vrf](#)

1.10 maximum routes

Function

Run the **maximum routes** command to configure the maximum number of routes in a VRF.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

The maximum number of routes is not configured by default.

Syntax

maximum routes *limit* { *warning-threshold* | **warning-only** }

no maximum routes

default maximum routes

Parameter Description

limit: Maximum number of routes in a VRF. Beyond this limit, no more routes are written into the core routing table. The value range is from 1 to 4294967295.

warning-threshold: Warning log threshold, in percentage. Once this threshold is reached, the warning log is displayed. The value range is from 1 to 100.

warning-only: Specifies that when the maximum number of routes is reached, warnings are displayed, but routes can still be added to the core routing table.

Command Modes

Single-protocol VRF configuration mode

Configuration mode of multiprotocol VRF IPv4 address family

Configuration mode of multiprotocol VRF IPv6 address family

Configuration mode of global VRF IPv4 address family

Configuration mode of global VRF IPv6 address family

Default Level

14

Usage Guidelines

This command is used to limit the number of routes in a VRF. To receive warnings only, specify *warning-only*.

Examples

The following example sets the maximum number of routes in the single-protocol VRF **vrf1** to 1,000, and displays warnings when the number of such routes exceeds 1,000.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ip vrf vrf1
Hostname(config-vrf)# maximum routes 1000 warning-only
```

The following example sets the maximum number of routes in the single-protocol VRF **vrf2** to 10,000, and displays warnings when the number of such routes exceeds 10,000.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# vrf definition vrf1
Hostname(config-vrf)# address-family ipv4
Hostname(config-vrf-af)# maximum routes 10000 warning-only
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [ip vrf](#)

1.11 rd

Function

Run the **rd** command to configure the RD value of a VRF.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No RD value is configured for a VRF by default.

Syntax

rd *rd-value*

no rd

default rd

Parameter Description

rd-value: RD value of the VRF. The following RD formats are supported:

as-num: *nn*, where *as-num* is the 2-byte public AS number, and *nn* is defined by the user, and ranges from 0 to 4294967295.

ip-addr: *nn*, where *ip-addr* must be a global IP address, and *nn* is defined by the user, and ranges from 0 to 65535.

as4-num: *nn*, where *as4-num* is a 4-byte public AS number and ranges from 1 to 4294967295 (1.0 to 65535.65535 in dot mode), and *nn* is defined by the user, and ranges from 1 to 65535.

Command Modes

Single-protocol VRF configuration mode

Multiprotocol VRF configuration mode

Global VRF configuration mode

Default Level

14

Usage Guidelines

The existing RD value of a VRF cannot be modified. To modify an existing RD value, you must first delete the VRF, reconfigure the VRF, and then configure the RD value. A VRF has only one RD value.

The RD value of the 4-byte AS is in the format of AS4:NN. AS4 can be expressed in decimal or dot mode. AS4 range is from 1 to 4294967295, which is from 1.0 to 65535.65535 in dot mode. NN ranges from 1 to 65535.

The AS number in the range of 1 to 65535 is displayed in both decimal mode and dot mode. Therefore, save the AS number in the range from 1 to 65535 as a 2-byte AS number.

Examples

The following example sets the RD value of **vrf1** to **100:1**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ip vrf vrf1
Hostname(config-vrf)# rd 100:1
```

Notifications

1. If the configuration modifies an existing RD, the following error prompt will be displayed:

```
% Configuration can't be changed
```

2. If the configuration deletes an existing RD, the following error prompt will be displayed:

```
% Can not delete an exist rd value!
```

3. If the configured RD value is used by another VRF, for example, the RD of **vrf2** is set to **100:1**, the following error prompt will be displayed:

```
% "rd" 100:1 already in use by VRF vrf1
```

Common Errors

N/A

Platform Description

N/A

Related Commands

- [ip vrf](#)
- [address-family](#)
- [vrf forwarding](#)

1.12 route-target

Function

Run the **route-target** command to configure the RT value of a VRF.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No RT value is configured for a VRF by default.

Syntax

route-target { **both** | **export** | **import** } *route-value*

no route-target { **both** | **export** | **import** } *route-value*

default route-target { **both** | **export** | **import** } *route-value*

Parameter Description

both: Configures both the **Import** and **Export** RT attributes.

export: Configures the **Export** RT attribute.

import: Configures the **Import** RT attribute.

route-value: Value of the RT. The following RD formats are supported:

as-num: *nn*, where *as-num* is the 2-byte public AS number, and *nn* is defined by the user, and ranges from 0 to 4294967295.

ip-addr: *nn*, where *ip-addr* must be a global IP address, and *nn* is defined by the user, and ranges from 0 to 65535.

as4-num: *nn*, where *as4-num* is a 4-byte public AS number and ranges from 1 to 4294967295 (1.0 to 65535.65535 in dot mode), and *nn* is defined by the user, and ranges from 1 to 65535.

Command Modes

Single-protocol VRF configuration mode

Multiprotocol VRF configuration mode

Configuration mode of multiprotocol VRF IPv4 address family

Configuration mode of multiprotocol VRF IPv6 address family

Global VRF configuration mode
Configuration mode of global VRF IPv4 address family
Configuration mode of global VRF IPv6 address family

Default Level

14

Usage Guidelines

You can configure multiple **Import** or **Export** RT values for a VRF.

Examples

The following example configures the RT for **vrf1**. Set the **Import** RT values to **100:1** and **100:4**, and the **Export** RT values to **100:2** and **100:4**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# ip vrf vrf1
Hostname(config-vrf)# route-target import 100:1
Hostname(config-vrf)# route-target export 100:2
Hostname(config-vrf)# route-target both 100:4
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [ip vrf](#)
- [address-family](#)
- [vrf forwarding](#)

1.13 vrf definition

Function

Run the **vrf definition** command to configure a multiprotocol VRF.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No multiprotocol VRF is configured by default.

Syntax

vrf definition *vrf-name*

no vrf definition *vrf-name*

default vrf definition *vrf-name*

Parameter Description

vrf name: Name of the multiprotocol VRF. It is a case-sensitive string of 1 to 31 characters.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

You are not allowed to run the **ip vrf** command to edit a multiprotocol VRF, or run the **vrf definition** command to edit a single-protocol VRF.

Examples

The following example configures a multiprotocol VRF **vrf1**, and enters the VRF configuration mode.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)#vrf definition vrf1
Hostname(config-vrf)#
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [address-family](#)
- [exit-address-family](#)
- [vrf forwarding](#)
- [show vrf](#)

1.14 vrf forwarding

Function

Run the **vrf forwarding** command to add an interface to a multiprotocol VRF.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No interface is added to any multiprotocol VRF by default.

Syntax

vrf forwarding *vrf-name*

no vrf forwarding *vrf-name*

default vrf forwarding *vrf-name*

Parameter Description

vrf-name: Name of a configured VRF. This VRF must be a multiprotocol VRF.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

You are not allowed to run the **ip vrf forwarding** command to add an interface to a multiprotocol VRF, or run the **vrf forwarding** command to add an interface to a single-protocol VRF.

You are not allowed to add an interface to a multiprotocol VRF not configured with any address family.

When you add an interface to a multiprotocol VRF, existing IPv4/IPv6 or VRRP IPv4/IPv6 addresses on the interface are deleted, and the IPv6 protocol is disabled on the interface.

When you add an interface to a multiprotocol VRF not configured with any IPv4 address family, you are not allowed to configure the IPv4 and VRRP IPv4 addresses on this interface. You must configure the IPv4 address family for the multiprotocol VRF before configuring the IPv4 and VRRP IPv4 addresses on this interface.

When you add an interface to a multiprotocol VRF without any IPv6 address family, you are not allowed to configure the IPv6 and VRRP IPv6 addresses on this interface. You must configure the IPv6 address family for the multiprotocol VRF before configuring the IPv6 or VRRP IPv6 addresses on this interface.

If the IPv4 address family is deleted from the multiprotocol VRF, the IPv4 and VRRP IPv4 addresses of all interfaces added to this VRF are deleted, and the IPv4 static routes in the VRF or the IPv4 static routes with this VRF as their next-hop VRF are also deleted. If the IPv6 address family is deleted from the multiprotocol VRF, the IPv6 and VRRP IPv6 addresses of all interfaces added to the VRF are deleted. When the IPv6 protocol is disabled on the interface, the IPv6 static routes in the VRF or the IPv6 static routes with this VRF as their next-hop VRF are also deleted.

Examples

The following example adds the interface GigabitEthernet 0/1 to the multiprotocol VRF **vrf1**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# vrf definition vrf1
Hostname(config-vrf)# address-family ipv4
Hostname(config-vrf-af)# exit-address-family
Hostname(config-vrf)# address-family ipv6
Hostname(config-vrf-af)# exit-address-family
```

```
Hostname(config-vrf)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# vrf forwarding vrf1
Hostname(config-if-GigabitEthernet 0/1)# ip address 1.1.1.1 255.255.255.0
Hostname(config-if-GigabitEthernet 0/1)# ipv6 address 1000::1/64
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [address-family](#)
- [exit-address-family](#)
- [vrf receive](#)

1.15 vrf global-vrf

Function

Run the **vrf global-vrf** command to enter the global VRF configuration mode.

By default, a global VRF exists, and the IPv4 and IPv6 address families are enabled for this global VRF.

Syntax

```
vrf global-vrf
```

Parameter Description

N/A

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

N/A

Examples

The following example enters the global VRF configuration mode.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# vrf global-vrf
Hostname(config-global-vrf)#
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.16 vrf receive

Function

Run the **vrf receive** command to import the IPv4 or IPv6 local host routes and direct routes of an interface to a specified VRF.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

By default, no IPv4 or IPv6 local host route and direct route of an interface are imported to a specified VRF.

Syntax

vrf receive *vrf-name*

no vrf receive *vrf-name*

default vrf receive *vrf-name*

Parameter Description

vrf-name: Name of a configured VRF. This VRF must be a multiprotocol VRF.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

This command does not add the interface to the specified VRF, and the interface is still a global interface.

If you need to use PBR to select a VRF, run the **vrf receive** command on the interface to which PBR is applied to import the direct route and host route on the interface to each VRF available for choice.

When you configure the IPv4 address family for a multiprotocol VRF, the IPv4 local host route and direct route of the interface are added to the IPv4 routing table of the specified VRF, and the IPv4 local host route in the VRRP group on this interface in Master state is also added to the IPv4 routing table of the specified VRF, When you configure the IPv6 address family for a multiprotocol VRF, the IPv6 local host route and direct route

of the interface are added to the IPv6 routing table of the specified VRF, and the IPv6 local host route in Master state in the VRRP group on this interface is also added to the IPv6 routing table of the specified VRF,

On a specified interface, **ip vrf forwarding** and **vrf receive** are mutually exclusive, so are **vrf forwarding** and **vrf receive**. If you configure any of the above pairs of commands for an interface one after another, an error prompt is displayed.

If you configure **ip vrf forwarding** or **vrf forwarding** and then **vrf receive**, the following notification will be displayed:

```
% Cannot configure 'vrf receive' if interface is under a VRF
```

If you run **vrf receive**, and then **ip vrf forwarding** or **vrf forwarding**, the following notification will be displayed:

```
% Cannot configure 'vrf forwarding vrf2' on this interface, please delete 'ip vrf receive' and 'vrf receive' first.
```

Examples

The following example enables the interface GigabitEthernet 0/1 to select a VRF based on IPv6 PBR.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# vrf definition vrf1
Hostname(config-vrf)# address-family ipv6
Hostname(config-vrf-af)# exit-address-family
Hostname(config-vrf)# vrf definition vrf2
Hostname(config-vrf)# address-family ipv6
Hostname(config-vrf-af)# exit-address-family
Hostname(config-route-map)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# ipv6 policy route-map pbr-vrf-selection
Hostname(config-if-GigabitEthernet 0/1)# ipv6 address 1000::1/64
Hostname(config-if-GigabitEthernet 0/1)# vrf receive vrf1
Hostname(config-if-GigabitEthernet 0/1)# vrf receive vrf2
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- [address-family](#)
- [exit-address-family](#)
- [vrf definition](#)

1.17 show global-vrf

Function

Run the **show global-vrf** command to display the global VRF information.

Syntax

```
show global-vrf [ count | brief | detail | ipv4 | ipv6 ]
```

Parameter Description

count: Displays the VRF capacity and the current number of configured VRFs.

brief: Displays the brief information of the single-protocol and multiprotocol VRFs.

detail: Displays the detailed information of the single-protocol and multiprotocol VRFs.

ipv4: Displays the brief information of the single-protocol and multiprotocol VRFs for which the IPv4 address family is configured.

ipv6: Displays the brief information of the multiprotocol VRFs for which the IPv6 address family is configured.

Command Modes

All modes except the user EXEC mode

Default Level

1

Usage Guidelines

N/A

Examples

The following example displays the brief information of all VRFs.

```

Hostname> enable
Hostname# show global-vrf
Name                Default RD          Protocol(s)         Interface
@#global-vrf        <not set>          ipv4,ipv6          GigabitEthernet 0/1

```

Table 1-1Output Fields of the show global-vrf Command

Field	Description
Name	Name of the VRF
Default RD	Default RD of the VRF
Interfaces	Interface list of the VRF

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.18 show ip vrf**Function**

Run the **show ip vrf** command to display the VRF information.

Syntax

```
show ip vrf [ brief | count | detail | interfaces ] [ vrf-name ]
```

Parameter Description

brief: Displays the brief information of the VRF and its interfaces.

count: Displays the VRF capacity and the current number of configured VRFs.

detail: Displays the detailed information of the VRF.

interfaces: Displays the detailed information of the interfaces to which the VRF applies.

vrf-name: Name of a configured VRF.

Command Modes

All modes except the user EXEC mode

Default Level

1

Usage Guidelines

N/A

Examples

The following example displays the information of a single-protocol VRF.

```

Hostname> enable
Hostname# show ip vrf
Name                               Interfaces
aaa                                 GigabitEthernet 0/0
                                   GigabitEthernet 0/1

```

Table 1-1 Output Fields of the show ip vrf Command

Field	Description
Name	Name of the VRF.

Interfaces	Interface list of the VRF.
------------	----------------------------

The following example displays the brief information of a single-protocol VRF.

```

Hostname> enable
Hostname# show ip vrf brief
Name                Default RD          Interfaces
refvrf              <not set>
vrf1                <not set>

```

Table 1-2Output Fields of the show ip vrf brief Command

Field	Description
Name	Name of the VRF
Default RD	Default RD of the VRF
Interfaces	Interface list of the VRF

The following example displays the VRF capacity and the current number of configured VRFs.

```

Hostname> enable
Hostname# show ip vrf count
VRF Limit:          512
Count of in use instances: 3
Count of remaining instances: 509

```

Table 1-3Output Fields of the show ip vrf count Command

Field	Description
VRF Limit	VRF capacity limit.
Count of in use instances	Number of configured VRFs.
Count of remaining instances	Number of VRFs that can be configured.

The following example displays the detailed information of a single-protocol VRF.

```

Hostname> enable
Hostname# show ip vrf detail
VRF refvrf (VRF ID = 1); default RD <not set>
  No interfaces
VRF Table ID = 1
  No Export VPN route-target communities
  No Import VPN route-target communities
  No import route-map
  No export route-map
  Alloc-label per-vrf: -/aggregate(refvrf)

```

```
Route warning limit 1000, current count 4
```

Table 1-4Output Fields of the show ip vrf detail Command

Field	Description
VRF	Name of the VRF
VRF ID	VRF ID associated with the VRF name
default RD	Default RD of the VRF
VRF Table ID	ID of the VRF table.
Export VPN route-target communities	VPN RT community attributes to be exported
Import VPN route-target communities	VPN RT community attributes to be imported.
import route-map	Route map information to be imported
export route-map	Route map information to be exported
Alloc-label per-vrf	Label value allocated to each VRF

The following example displays the interface information of a VRF.

```
Hostname> enable
Hostname# show ip vrf interfaces
Interface          IP-Address      VRF             Protocol
```

Table 1-5Output Fields of the show ip vrf interface Command

Field	Description
Interface	Interface list of the VRF.
IP-Address	IP address of the interface
VRF	Name of the VRF
Protocol	Protocol ID

Notifications

N/A

Platform Description

N/A

Related Commands

- [ip vrf](#)

1.19 show vrf

Function

Run the **show vrf** command to display the VRF information.

Syntax

```
show vrf [ brief | count | detail | ipv4 | ipv6 ] [ vrf-name ]
```

Parameter Description

brief: Displays the brief information of VRFs.

count: Displays the VRF capacity and the current number of configured VRFs.

detail: Displays the detailed information of VRFs.

ipv4: Displays the information of VRFs configured with an IPv4 address family.

ipv6: Displays the information of VRFs configured with an IPv6 address family.

vrf-name: Specifies the name of the VRF to be displayed.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

You can run this command to display single-protocol and multiprotocol VRFs.

Examples

The following example displays all VRFs.

```

Hostname> enable
Hostname# show vrf
  Name          Default RD          Protocols   Interfaces
  ---          -
  aaa           <not set>          ipv4
  aab           <not set>
  bbb           <not set>          ipv6
  ccc           <not set>          ipv4,ipv6   V11

```

Table 1-1Output Fields of the show vrf Command

Field	Description
Name	Name of the VRF
Default RD	Default RD of the VRF
Protocol	Address family enabled for the VRF. <ul style="list-style-type: none"> ● IPv4 indicates that the IPv4 address family is enabled. ● IPv6 Indicates that the IPv6 address family is enabled.
Interfaces	Interface list under the VRF, that is, the list of interfaces configured with the vrf forwarding

or ip vrf forwarding command.

The following example displays the information of VRFs for which the IPv4 address family is configured.

```

Hostname> enable
Hostname# show vrf ipv4
Name                Default RD          Protocol(s)         Interface
refvrf              <not set>          ipv4                <none>
vrf1                 <not set>          ipv4                <none>

```

Table 1-2Output Fields of the show vrf ipv4 Command

Field	Description
Name	Name of the VRF
Default RD	Default RD of the VRF
Protocol	Address family enabled for the VRF <ul style="list-style-type: none"> ● IPv4 indicates that the IPv4 address family is enabled. ● IPv6 Indicates that the IPv6 address family is enabled.
Interfaces	Interface list under the VRF, that is, the list of interfaces for which the vrf forwarding or ip vrf forwarding command is configured.

The following example displays the information of VRFs for which the IPv6 address family is configured.

```

Hostname> enable
Hostname# show vrf ipv6
Name                Default RD          Protocol(s)         Interface
mvrf                <not set>          ipv6                <none>

```

Table 1-3Output Fields of the show vrf ipv6 Command

Field	Description
Name	Name of the VRF
Default RD	Default RD of the VRF
Protocol	Address family enabled for the VRF <ul style="list-style-type: none"> ● IPv4 indicates that the IPv4 address family is enabled. ● IPv6 Indicates that the IPv6 address family is enabled.
Interfaces	Interface list under the VRF, that is, the list of interfaces for which the vrf forwarding or ip vrf forwarding command is configured.

The following example displays the brief information of a VRF.

```

Hostname> enable
Hostname# show vrf brief

```

Name	Default RD	Protocol(s)	Interface
mvrif	<not set>	ipv6	<none>
refvrf	<not set>	ipv4	<none>

Table 1-4Output Fields of the show vrf brief Command

Field	Description
Name	Name of the VRF
Default RD	Default RD of the VRF
Protocol	Address family enabled for the VRF <ul style="list-style-type: none"> ● IPv4 indicates that the IPv4 address family is enabled. ● IPv6 Indicates that the IPv6 address family is enabled.
Interfaces	Interface list under the VRF, that is, the list of interfaces for which the vrf forwarding or ip vrf forwarding command is configured.

The following example displays the VRF capacity and the current number of configured VRFs.

```

Hostname> enable
Hostname# show vrf count
VRF Limit:                512
  Count of in use instances:  3
  Count of remaining instances: 509

```

Table 1-5Output Fields of the show vrf count Command

Field	Description
VRF Limit	VRF capacity limit
Count of in use instances	Number of configured VRFs
Count of remaining instances	Number of VRFs that can be configured

The following example displays the detailed information of a VRF.

```

Hostname> enable
Hostname# show vrf detail
VRF mvrif (VRF ID = 4); default RD <not set>; default VPNID <not set>
  No interfaces
Address family ipv4 not active.
Address family ipv6:
  No import route-map
  No export route-map
  Alloc-label per-vrf: -/aggregate(mvrif)

VRF refvrf (VRF ID = 1); default RD <not set>
  No interfaces

```

```

VRF Table ID = 1
  No Export VPN route-target communities
  No Import VPN route-target communities
  No import route-map
  No export route-map
  Alloc-label per-vrf: -/aggregate(refvrf)
Route warning limit 1000, current count 4

```

Table 1-6Output Fields of the show vrf detail Command

Field	Description
VRF	Name of the VRF
default RD	Default RD of the VRF
default VPNID	Default VPN ID of the VRF
Address family ipv4	Information of the configured IPv4 address family
Address family ipv6	Information of the configured IPv6 address family
import route-map	Route map information to be imported
export route-map	Route map information to be exported
Export VPN route-target communities	VPN RT community attributes to be exported
Import VPN route-target communities	VPN RT community attributes to be imported
Alloc-label per-vrf	Label value allocated to each VRF

Notifications

N/A

Platform Description

N/A

Related Commands

- [ip vrf](#)
- [vrf definition](#)