

HP VSR1000 Virtual Services Router Interface Configuration Guide

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Bulk configuring interfaces

You can enter interface range view to bulk configure multiple interfaces with the same feature instead of configuring them one by one. For example, you can execute the **shutdown** command in interface range view to shut down a range of interfaces.

Failure to apply a command on one member interface does not affect the application of the command on the other member interfaces. If applying a command on one member interface fails, the system displays an error message and continues with the next member interface.

Configuration guidelines

When you bulk configure interfaces in interface range view, follow these restrictions and guidelines:

- In interface range view, only the commands supported by the first interface are available. The first interface is specified with the **interface range** command.
- You cannot enter the view of some interfaces by using the **interface interface-type** { *interface-number* | *interface-number.subnumber* } command, for example, Virtual-Access 0. Do not configure any of these interfaces as the first interface in the interface range.
- Do not assign both an aggregate interface and any of its member interfaces to an interface range. Some commands, after being executed on both an aggregate interface and its member interfaces, can break up the aggregation.
- No limit is set on the maximum number of interfaces in an interface range. The more interfaces in an interface range, the longer the command execution time.
- The maximum number of interface range names is only limited by the system resources. To guarantee bulk interface configuration performance, HP recommends that you configure fewer than 1000 interface range names.

Configuration procedure

To bulk configure interfaces:

Step	Command	Remarks
1. Enter system view.	system-view	N/A
2. Enter interface range view.	<ul style="list-style-type: none">• interface range { <i>interface-type</i> <i>interface-number</i> [to <i>interface-type</i> <i>interface-number</i>] } <1-5>• interface range name <i>name</i> [interface { <i>interface-type</i> <i>interface-number</i> [to <i>interface-type</i> <i>interface-number</i>] } <1-5>]	Use either command. By using the interface range name command, you assign a name to an interface range and can specify this name rather than the interface range to enter the interface range view.

Step	Command	Remarks
3. (Optional.) Display commands available for the first interface in the interface range.	Enter a question mark (?) at the interface range prompt.	N/A
4. Use available commands to configure the interfaces.	Available commands vary by interface.	N/A
5. (Optional.) Verify the configuration.	display this	N/A

Displaying and maintaining bulk interface configuration

Execute the **display** command in any view.

Task	Command
Display information about the interface ranges created by using the interface range name command.	display interface range [<i>name name</i>]

Configuring Ethernet interfaces

Your device supports the following types of Ethernet interfaces:

- **Layer 3 Ethernet interfaces**—Physical Ethernet interfaces operating at the network layer (Layer 3) to route packets. You can assign an IP address to a Layer 3 Ethernet interface.
- **Layer 3 Ethernet subinterfaces**—Logical interfaces operating at the network layer. You can assign an IP address to a Layer 3 Ethernet subinterface.

Configuring basic settings of an Ethernet interface or subinterface

Configuring an Ethernet interface

Step	Command	Remarks
1. Enter system view.	system-view	N/A
2. Enter Ethernet interface view.	interface <i>interface-type</i> <i>interface-number</i>	N/A
3. Set the interface description.	description <i>text</i>	The default setting is in the format of <i>interface-name</i> Interface . For example, GigabitEthernet1/0 Interface .
4. Configure the expected bandwidth of the interface.	bandwidth <i>bandwidth-value</i>	By default, the expected bandwidth (in kbps) is the interface baud rate divided by 1000.
5. Restore the default settings for the Ethernet interface.	default	N/A
6. Shut down the Ethernet interface.	shutdown	By default, Ethernet interfaces are in up state.

Configuring an Ethernet subinterface

Step	Command	Remarks
1. Enter system view.	system-view	N/A
2. Create an Ethernet subinterface.	interface <i>interface-type</i> <i>interface-number.subnumber</i>	N/A
3. Set the interface description.	description <i>text</i>	The default setting is <i>interface-name</i> Interface . For example, GigabitEthernet1/0.1 Interface .

Step	Command	Remarks
4. Restore the default settings for the Ethernet subinterface.	default	N/A
5. Configure the expected bandwidth of the interface.	bandwidth <i>bandwidth-value</i>	By default, the expected bandwidth (in kbps) is the interface baud rate divided by 1000.
6. Shut down the Ethernet subinterface.	shutdown	By default, Ethernet subinterfaces are in up state.

Configuring dampening on an Ethernet interface

The interface dampening feature uses an exponential decay mechanism to prevent excessive interface flapping events from adversely affecting routing protocols and routing tables in the network. Suppressing interface state change events protects the system resources.

If an interface is not dampened, its state changes are reported. For each state change, the system also generates an SNMP notification and log message.

After a flapping interface is dampened, it does not report its state changes to the CPU. For state change events, the interface only generates SNMP notifications and log messages.

Parameters

- **Penalty**—The interface has an initial penalty of 0. When the interface flaps, the penalty increases by 1000 for each down even, and does not increase for up events.
- **Ceiling**—The penalty stops increasing when it reaches the ceiling.
- **Suppress-limit**—The accumulated penalty that triggers the device to dampen the interface. In dampened state, the interface does not report its state changes to the CPU. For state change events, the interface only generates SNMP trap and log messages
- **Reuse-limit**—When the accumulated penalty decreases to this reuse threshold, the interface is not dampened. Interface state changes are reported to the upper layers. For each state change, the system also generates SNMP trap and log messages.
- **Decay**—The amount of time (in seconds) after which a penalty is decreased.
- **Max-suppress-time**—The maximum amount of time the interface can be dampened. If the penalty is still higher than the reuse threshold when this timer expires, the penalty stops increasing for down events.

The ceiling is equal to $2^{(\text{Max-suppress-time}/\text{Decay})} \times \text{reuse-limit}$. It is not user configurable.

Figure 1 shows the change rule of the penalty value. The lines t_0 and t_2 indicate the start time and end time of the suppression, respectively. The period from t_0 to t_2 indicates the suppression period, t_0 to t_1 indicates the max-suppress-time, and t_1 to t_2 indicates the complete decay period.

Figure 1 Change rule of the penalty value



Configuration restrictions and guidelines

The **dampening** command does not take effect on the administratively down events. When you execute the **shutdown** command, the penalty restores to 0, and the interface reports the down event to the upper layer protocols.

Configuration procedure

To configure dampening on an Ethernet interface:

Step	Command	Remarks
1. Enter system view.	system-view	N/A
2. Enter Ethernet interface view.	interface <i>interface-type</i> <i>interface-number</i>	N/A
3. Enable dampening on the interface.	dampening [<i>half-life reuse</i> <i>suppress max-suppress-time</i>]	By default, interface dampening is disabled on Ethernet interfaces.

Setting the MTU for an Ethernet interface or subinterface

The value of maximum transmission unit (MTU) affects the fragmentation and reassembly of IP packets. Generally, you do not need to modify the MTU of an interface.

To set the MTU for an Ethernet interface or subinterface:

Step	Command	Remarks
1. Enter system view.	system-view	N/A
2. Enter Ethernet interface or subinterface view.	interface <i>interface-type</i> { <i>interface-number</i> <i>interface-number.subnumber</i> }	N/A
3. Set the MTU.	mtu <i>size</i>	The default setting is 1500 bytes.

Configuring jumbo frame support

An Ethernet interface might receive frames larger than the standard Ethernet frame size during high-throughput data exchanges, such as file transfers. Such large frames are called "jumbo frames."

The Ethernet interface processes jumbo frames in the following ways:

- When the Ethernet interface is configured to deny jumbo frames, the Ethernet interface discards jumbo frames.
- When the Ethernet interface is configured with jumbo frame support, the Ethernet interface performs the following tasks:
 - Processes jumbo frames within the specified length.
 - Discards jumbo frames that exceed the specified length.

To configure jumbo frame support in interface view:

Step	Command	Remarks
1. Enter system view.	system-view	N/A
2. Enter Ethernet interface view.	interface <i>interface-type</i> <i>interface-number</i>	N/A
3. Configure jumbo frame support.	jumboframe enable [<i>value</i>]	By default, the device allows jumbo frames within the specified length to pass through the Ethernet interfaces. The maximum length of jumbo frames allowed varies by virtualization platform and vNIC type. The value range for the <i>value</i> argument varies by virtualization platform and vNIC type. If you set the <i>value</i> argument multiple times, the most recent configuration takes effect.

Displaying and maintaining an Ethernet interface or subinterface

Execute **display** commands in any view and **reset** commands in user view.

Task	Command
Display summary information about the specified interface or all interfaces.	display interface [<i>interface-type</i> [<i>interface-number</i> <i>interface-number.subnumber</i>]] brief [description down]
Display information about dropped packets on the specified interface or all interfaces.	display packet-drop { interface [<i>interface-type</i> [<i>interface-number</i>]] summary }
Display the Ethernet module statistics.	display ethernet statistics
Clear the interface or subinterface statistics.	reset counters interface [<i>interface-type</i> [<i>interface-number</i> <i>interface-number.subnumber</i>]]
Clear the statistics of dropped packets on the specified interfaces.	reset packet-drop interface [<i>interface-type</i> [<i>interface-number</i>]]
Clear the Ethernet module statistics.	reset ethernet statistics

Configuring loopback, null, and inloopback interfaces

This chapter describes how to configure a loopback interface, a null interface, and an inloopback interface.

Configuring a loopback interface

A loopback interface is a virtual interface. The physical layer state of a loopback interface is always up unless the loopback interface is manually shut down. Because of this benefit, loopback interfaces are widely used in the following scenarios:

- **Configuring a loopback interface address as the source address of the IP packets that the device generates**—Because loopback interface addresses are stable unicast addresses, they are usually used as device identifications.
 - When you configure a rule on an authentication or security server to permit or deny packets that a device generates, you can simplify the rule by configuring it to permit or deny packets carrying the loopback interface address that identifies the device.
 - When you use a loopback interface address as the source address of IP packets, make sure the route from the loopback interface to the peer is reachable by performing routing configuration. All data packets sent to the loopback interface are considered packets sent to the device itself, so the device does not forward these packets.
- **Using a loopback interface in dynamic routing protocols**—With no router ID configured for a dynamic routing protocol, the system selects highest loopback interface IP address selected as the router ID. In BGP, to avoid interruption of BGP sessions due to physical port failure, you can use a loopback interface as the source interface of BGP packets.

To configure a loopback interface:

Step	Command	Remarks
1. Enter system view.	system-view	N/A
2. Create a loopback interface and enter loopback interface view.	interface loopback <i>interface-number</i>	N/A
3. Set the interface description.	description <i>text</i>	The default setting is <i>interface name Interface</i> (for example, LoopBack 1 Interface).
4. Configure the expected bandwidth of the loopback interface.	bandwidth <i>bandwidth-value</i>	By default, the expected bandwidth of a loopback interface is 0 kbps.
5. Restore the default settings for the loopback interface.	default	N/A
6. Bring up the loopback interface.	undo shutdown	By default, a loopback interface is up.

Configuring a null interface

A null interface is a virtual interface and is always up, but you can neither use it to forward data packets nor can you configure it with an IP address or link layer protocol. The null interface provides a simpler way to filter packets than ACL. You can filter undesired traffic by transmitting it to a null interface instead of applying an ACL. For example, if you specify a null interface as the next hop of a static route to a specific network segment, any packets routed to the network segment are dropped.

To configure a null interface:

Step	Command	Remarks
1. Enter system view.	system-view	N/A
2. Enter null interface view.	interface null 0	Interface Null 0 is the default null interface on the device and cannot be manually created or removed. Only one null interface, Null 0, is supported on the device. The null interface number is fixed at 0.
3. Set the interface description.	description text	The default setting is NULL0 Interface.
4. Restore the default settings for the null interface.	default	N/A

Configuring an inloopback interface

An inloopback interface is a virtual interface created by the system, which cannot be configured or deleted. The physical layer and link layer protocol states of an inloopback interface are always up. All IP packets sent to an inloopback interface are considered packets sent to the device itself and are not further forwarded.

Displaying and maintaining loopback, null, and inloopback interfaces

Execute **display** commands in any view and **reset** commands in user view.

Task	Command
Display information about the specified or all loopback interfaces.	display interface [loopback [interface-number]] [brief [description]]
Display information about the null interface.	display interface [null [0]] [brief [description]]
Display information about the inloopback interface.	display interface [inloopback [0]] [brief [description]]
Clear the statistics on the specified or all loopback interfaces.	reset counters interface loopback [interface-number]
Clear the statistics on the null interface.	reset counters interface [null [0]]

Support and other resources

Contacting HP

For worldwide technical support information, see the HP support website:

<http://www.hp.com/support>

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website:

<http://www.hp.com/go/wwalerts>

After registering, you will receive email notification of product enhancements, new driver versions, firmware updates, and other product resources.

Related information

Documents

To find related documents, browse to the Manuals page of the HP Business Support Center website:

<http://www.hp.com/support/manuals>

- For related documentation, navigate to the Networking section, and select a networking category.
- For a complete list of acronyms and their definitions, see *HP FlexNetwork Technology Acronyms*.

Websites

- HP.com <http://www.hp.com>
- HP Networking <http://www.hp.com/go/networking>
- HP manuals <http://www.hp.com/support/manuals>
- HP download drivers and software <http://www.hp.com/support/downloads>
- HP software depot <http://www.software.hp.com>
- HP Education <http://www.hp.com/learn>

Conventions

This section describes the conventions used in this documentation set.

Command conventions

Convention	Description
Boldface	Bold text represents commands and keywords that you enter literally as shown.
<i>Italic</i>	<i>Italic</i> text represents arguments that you replace with actual values.
[]	Square brackets enclose syntax choices (keywords or arguments) that are optional.
{ x y ... }	Braces enclose a set of required syntax choices separated by vertical bars, from which you select one.
[x y ...]	Square brackets enclose a set of optional syntax choices separated by vertical bars, from which you select one or none.
{ x y ... } *	Asterisk-marked braces enclose a set of required syntax choices separated by vertical bars, from which you select at least one.
[x y ...] *	Asterisk-marked square brackets enclose optional syntax choices separated by vertical bars, from which you select one choice, multiple choices, or none.
&<1-n>	The argument or keyword and argument combination before the ampersand (&) sign can be entered 1 to n times.
#	A line that starts with a pound (#) sign is comments.

GUI conventions

Convention	Description
Boldface	Window names, button names, field names, and menu items are in bold text. For example, the New User window appears; click OK .
>	Multi-level menus are separated by angle brackets. For example, File > Create > Folder .

Symbols

Convention	Description
 WARNING	An alert that calls attention to important information that if not understood or followed can result in personal injury.
 CAUTION	An alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software.
 IMPORTANT	An alert that calls attention to essential information.
NOTE	An alert that contains additional or supplementary information.
 TIP	An alert that provides helpful information.

Network topology icons

	Represents a generic network device, such as a router, switch, or firewall.
	Represents a routing-capable device, such as a router or Layer 3 switch.
	Represents a generic switch, such as a Layer 2 or Layer 3 switch, or a router that supports Layer 2 forwarding and other Layer 2 features.
	Represents an access controller, a unified wired-WLAN module, or the switching engine on a unified wired-WLAN switch.
	Represents an access point.
	Represents a mesh access point.
	Represents omnidirectional signals.
	Represents directional signals.
	Represents a security product, such as a firewall, UTM, multiservice security gateway, or load-balancing device.
	Represents a security card, such as a firewall, load-balancing, NetStream, SSL VPN, IPS, or ACG card.

Port numbering in examples

The port numbers in this document are for illustration only and might be unavailable on your device.

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