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Tunneling commands

bandwidth

Use **bandwidth** to set the expected bandwidth for an interface.

Use **undo bandwidth** to restore the default.

Syntax

```
bandwidth bandwidth-value
```

```
undo bandwidth
```

Default

The expected bandwidth (in kbps) is the interface maximum rate divided by 1000.

Views

Tunnel interface view

Predefined user roles

network-admin

Parameters

bandwidth-value: Specifies the expected bandwidth, in the range of 1 to 400000000 kbps.

Usage guidelines

The expected bandwidth for an interface affects the link costs in OSPF, OSPFv3, and IS-IS. For more information, see *Layer 3—IP Routing Configuration Guide*.

Examples

```
# Set the expected bandwidth for Tunnel 1 to 100 kbps.  
<Sysname> system-view  
[Sysname] interface tunnel 1  
[Sysname-Tunnel1] bandwidth 100
```

default

Use **default** to restore the default settings for a tunnel interface.

Syntax

```
default
```

Views

Tunnel interface view

Predefined user roles

network-admin

Usage guidelines

CAUTION:

The **default** command might interrupt ongoing network services. Make sure you are fully aware of the impact of this command when you use it on a live network.

This command might fail to restore the default settings for some commands for reasons such as command dependencies or system restrictions. Use the **display this** command in interface view to identify these commands. Use their **undo** forms or follow the command reference to restore their default settings. If your restoration attempt still fails, follow the error message instructions to resolve the problem.

Examples

```
# Restore the default settings of Tunnel 1.
<Sysname> system-view
[Sysname] interface tunnel 1
[Sysname-Tunnel1] default
```

description

Use **description** to configure the description of an interface.

Use **undo description** to restore the default.

Syntax

```
description text
undo description
```

Default

The description of a tunnel interface is **Tunnelnumber Interface**, for example, **Tunnel1 Interface**.

Views

Tunnel interface view

Predefined user roles

network-admin

Parameters

text: Specifies a description, a case-sensitive string of 1 to 255 characters.

Usage guidelines

Configure descriptions for different interfaces for identification and management purposes.

You can use the **display interface** command to display the configured interface description.

Examples

```
# Configure the description of Tunnel 1 as tunnel1.
<Sysname> system-view
[Sysname] interface tunnel 1
[Sysname-Tunnel1] description tunnel1
```

Related commands

```
display interface tunnel
```

destination

Use **destination** to specify the destination address for a tunnel interface.

Use **undo destination** to restore the default.

Syntax

```
destination ipv4-address  
undo destination
```

Default

No tunnel destination address is configured.

Views

Tunnel interface view

Predefined user roles

network-admin

Parameters

ipv4-address: Specifies the tunnel destination IPv4 address.

Usage guidelines

The tunnel destination address must be the address of the receiving interface on the tunnel peer. It is used as the destination address of tunneled packets.

The destination address of the local tunnel interface must be the source address of the peer tunnel interface. The source address of the local tunnel interface must be the destination address of the peer tunnel interface.

Do not specify the same tunnel source and destination addresses for the tunnel interfaces on the same device.

Examples

```
# VLAN-interface 100 on Sysname 1 uses the IP address 193.101.1.1 and VLAN-interface 100 on  
Sysname 2 uses the IP address 192.100.1.1. Configure the source address 193.101.1.1 and  
destination address 192.100.1.1 for the tunnel interface on Sysname 1.
```

```
<Sysname1> system-view  
[Sysname1] interface tunnel 1 mode ipv6-ipv4  
[Sysname1-Tunnel1] source 193.101.1.1  
[Sysname1-Tunnel1] destination 192.100.1.1
```

```
# Configure the source address 192.100.1.1 and destination address 193.101.1.1 for the tunnel  
interface on Sysname 2.
```

```
<Sysname2> system-view  
[Sysname2] interface tunnel 1 mode ipv6-ipv4  
[Sysname2-Tunnel1] source 192.100.1.1  
[Sysname2-Tunnel1] destination 193.101.1.1
```

Related commands

```
display interface tunnel  
interface tunnel  
source
```

display interface tunnel

Use **display interface tunnel** to display tunnel interface information.

Syntax

```
display interface [ tunnel [ number ] ] [ brief [ description | down ] ]
```

Views

Any view

Predefined user roles

network-admin

network-operator

Parameters

tunnel [*number*]: Specifies a tunnel interface. The *number* argument specifies the tunnel interface number. The specified tunnel interface must have been created. If you do not specify the **tunnel** keyword, this command displays information about all interfaces on the device. If you specify the **tunnel** keyword without the *number* argument, this command displays information about all existing tunnel interfaces.

brief: Displays brief interface information. If you do not specify this keyword, the command displays detailed interface information.

description: Displays complete interface descriptions. If you do not specify this keyword, the command displays only the first 27 characters of interface descriptions.

down: Displays information about interfaces in the physical state of DOWN and the causes. If you do not specify this keyword, the command displays information about interfaces in all states.

Examples

Display detailed information about Tunnel 1.

```
<Sysname> display interface tunnel 1
Tunnel1
Current state: DOWN
Line protocol state: DOWN
Description: Tunnel1 Interface
Bandwidth: 64 kbps
Maximum transmission unit: 64000
Internet protocol processing: Disabled
Tunnel source 1.1.1.1, destination 2.2.2.2
Tunnel keepalive disabled
Tunnel TTL 255
Tunnel protocol/transport GRE/IP
    GRE key disabled
    Checksumming of GRE packets disabled
Last clearing of counters: Never
Last 300 seconds input rate: 0 bytes/sec, 0 bits/sec, 0 packets/sec
Last 300 seconds output rate: 0 bytes/sec, 0 bits/sec, 0 packets/sec
Input: 0 packets, 0 bytes, 0 drops
Output: 0 packets, 0 bytes, 0 drops
```

Table 1 Command output

Field	Description
Tunnel1	Information about the tunnel interface Tunnel 1.
Current state	Physical link state of the tunnel interface: <ul style="list-style-type: none">• Administratively DOWN—The interface has been shut down by using the shutdown command.• DOWN—The interface is administratively up, but its physical

Field	Description
	<p>state is down (possibly because no physical link exists or the link has failed).</p> <ul style="list-style-type: none"> • UP—The interface is both administratively and physically up.
Line protocol state	<p>Data link layer state of the interface. The state is determined through automatic parameter negotiation at the data link layer.</p> <ul style="list-style-type: none"> • UP—The data link layer protocol is up. • UP (spoofing)—The data link layer protocol is up, but the link is an on-demand link or does not exist. This attribute is typical of null interfaces and loopback interfaces. • DOWN—The data link layer protocol is down.
Description	Description of the tunnel interface.
Bandwidth	Expected bandwidth of the tunnel interface.
Maximum transmission unit	MTU of the tunnel interface.
Internet protocol processing: Disabled	The tunnel interface is not assigned an IP address and cannot process IP packets.
Internet address	IP address of the tunnel interface. The primary attribute indicates that the address is the primary IP address.
Tunnel source	Source address of the tunnel. If a source interface is specified for the tunnel interface, this field also displays the source interface in parentheses.
destination	Destination address of the tunnel.
Tunnel TOS	ToS of tunneled packets.
Tunnel TTL	TTL of tunneled packets.
Tunnel protocol/transport	<p>Tunnel mode and transport protocol:</p> <ul style="list-style-type: none"> • GRE/IP—GRE/IPv4 tunnel mode. • IP/IP—IPv4 over IPv4 tunnel mode. • IPv6/IP—IPv6 over IPv4 tunnel mode.
GRE key disabled	No GRE tunnel interface key is configured.
Checksumming of GRE packets disabled	The GRE packet checksum feature is disabled.
Last clearing of counters	Last time when counters were cleared.
Last 300 seconds input rate: 0 bytes/sec, 0 bits/sec, 0 packets/sec	Average input rate in the last 300 seconds.
Last 300 seconds output rate: 0 bytes/sec, 0 bits/sec, 0 packets/sec	Average output rate in the last 300 seconds.
Input: 0 packets, 0 bytes, 0 drops	<p>Total input packets, total input bytes, and total input packets dropped.</p> <p>Input packets are counted after they are de-encapsulated by software.</p>
Output: 0 packets, 0 bytes, 0 drops	<p>Total output packets, total output bytes, and total output packets dropped.</p> <p>Output packets are counted before they are encapsulated by software.</p>

Display brief information about Tunnel 1.

```
<Sysname> display interface tunnel 1 brief
Brief information on interfaces in route mode:
```

```

Link: ADM - administratively down; Stby - standby
Protocol: (s) - spoofing
Interface          Link Protocol Primary IP      Description
Tun1              UP    UP      1.1.1.1      aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa

# Display brief information about Tunnel 1, including the complete interface description.
<Sysname> display interface tunnel 1 brief description
Brief information on interfaces in route mode:
Link: ADM - administratively down; Stby - standby
Protocol: (s) - spoofing
Interface          Link Protocol Primary IP      Description
Tun1              UP    UP      1.1.1.1      aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
Aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa

# Display information about interfaces in DOWN state and the causes.
<Sysname> display interface tunnel brief down
Brief information on interfaces in route mode:
Link: ADM - administratively down; Stby - standby
Interface          Link Cause
Tun0              DOWN Not connected
Tun1              DOWN Not connected

```

Table 2 Command output

Field	Description
Interface	Abbreviated interface name.
Link	Physical link state of the interface: <ul style="list-style-type: none"> • UP—The interface is physically up. • DOWN—The interface is physically down. • ADM—The interface has been shut down by using the shutdown command. To restore the physical state of the interface, use the undo shutdown command. • Stby—The interface is a backup interface in standby state.
Protocol	Data link layer protocol state of the interface: <ul style="list-style-type: none"> • UP—The data link layer protocol of the interface is up. • DOWN—The data link layer protocol of the interface is down. • UP(s)—The data link layer protocol of the interface is up, but the link is an on-demand link or does not exist. The (s) attribute represents the spoofing flag. This value is typical of null interfaces and loopback interfaces.
Primary IP	Primary IP address of the interface. This field displays two hyphens (--) if the interface does not have an IP address.
Description	Description of the interface.
Cause	Cause for the physical link state of an interface to be DOWN : <ul style="list-style-type: none"> • Administratively—The interface has been manually shut down by using the shutdown command. To restore the physical state of the interface, use the undo shutdown command. • Not connected—The tunnel is not established.

Related commands

destination

```
interface tunnel
source
```

interface tunnel

Use **interface tunnel** to create a tunnel interface, specify the tunnel mode, and enter tunnel interface view, or enter the view of an existing tunnel interface.

Use **undo interface tunnel** to delete a tunnel interface.

Syntax

```
interface tunnel number [ mode { gre | ipv4-ipv4 | ipv6-ipv4 } ]
undo interface tunnel number
```

Default

No tunnel interfaces exist.

Views

System view

Predefined user roles

network-admin

Parameters

number: Specifies the number of the tunnel interface. The value range is 0 to 127. The number of tunnel interfaces that can be created is restricted by the total number of interfaces and the memory.

mode gre: Specifies the GRE/IPv4 tunnel mode.

mode ipv4-ipv4: Specifies the IPv4 over IPv4 tunnel mode.

mode ipv6-ipv4: Specifies the IPv6 over IPv4 tunnel mode.

Usage guidelines

To create a new tunnel interface, you must specify the tunnel mode in this command. To enter the view of an existing tunnel interface, you do not need to specify the tunnel mode.

A tunnel interface number is locally significant. The tunnel interfaces on the two ends of a tunnel can use the same or different interface numbers.

Examples

```
# Create GRE/IPv4 tunnel interface Tunnel 1 and enter tunnel interface view.
<Sysname> system-view
[Sysname] interface tunnel 1 mode gre
[Sysname-Tunnel1]
```

Related commands

```
destination
display interface tunnel
source
```

mtu

Use **mtu** to set the MTU on a tunnel interface.

Use **undo mtu** to restore the default.

Syntax

```
mtu size  
undo mtu
```

Default

If the tunnel interface has never been up, the MTU is 64000 bytes.

If the tunnel interface is up, its MTU is identical to the outgoing interface's MTU minus the length of the tunnel headers. The outgoing interface is automatically obtained through routing table lookup based on the tunnel destination address.

Views

Tunnel interface view

Predefined user roles

network-admin

Parameters

size: Specifies the MTU, in the range of 100 to 64000 bytes.

Usage guidelines

After you configure an MTU for a tunnel interface, the configured MTU applies regardless of the tunnel interface status (up/down) and the outgoing interface MTU.

To avoid fragmentation after tunnel encapsulation, set the tunnel interface MTU no greater than the value of the outgoing interface MTU minus the length of the tunnel headers.

Examples

```
# Set the MTU on Tunnel 1 to 10000 bytes.  
<Sysname> system-view  
[Sysname] interface tunnel 1  
[Sysname-Tunnel1] mtu 10000
```

Related commands

```
display interface tunnel
```

reset counters interface tunnel

Use `reset counters interface tunnel` to clear tunnel interface statistics.

Syntax

```
reset counters interface [ tunnel [ number ] ]
```

Views

User view

Predefined user roles

network-admin

Parameters

tunnel [*number*]: Specifies a tunnel interface. The *number* argument specifies the tunnel interface number. If you do not specify the **tunnel** keyword, this command clears statistics for all interfaces. If you specify the **tunnel** keyword without the *number* argument, this command clears statistics for all tunnel interfaces.

Usage guidelines

Use this command to clear old statistics so you can observe new traffic statistics on a tunnel interface.

Examples

```
# Clear statistics for Tunnel 1.  
<Sysname> reset counters interface tunnel 1
```

Related commands

```
display interface tunnel
```

service

Use **service** to specify a traffic processing slot for a tunnel interface.

Use **undo service** to restore the default.

Syntax

```
service slot slot-number  
undo service slot
```

Default

No traffic processing slot is specified for a tunnel interface.

Views

Tunnel interface view

Predefined user roles

network-admin

Parameters

slot *slot-number*: Specifies an IRF member device by its member ID.

Usage guidelines

Specify a traffic processing slot if a feature (for example, IPsec antireplay) requires that all traffic on a tunnel interface be processed on the same slot.

Make sure the specified traffic processing slot is available. If the specified traffic processing slot is unavailable, traffic on the tunnel interface cannot be forwarded, whether or not the tunnel interface is up. Traffic on the tunnel interface will not be forwarded until the traffic processing slot becomes available or until you respecify an available traffic processing slot.

Examples

```
# Specify a traffic processing slot for Tunnel 200.  
<Sysname> system-view  
[Sysname] interface tunnel 200  
[Sysname-Tunnel200] service slot 1
```

shutdown

Use **shutdown** to shut down a tunnel interface.

Use **undo shutdown** to bring up a tunnel interface.

Syntax

```
shutdown
undo shutdown
```

Default

A tunnel interface is not administratively down.

Views

Tunnel interface view

Predefined user roles

network-admin

Usage guidelines

This command disconnects all links set up on the interface. Make sure you fully understand the impact of the command on your network.

Examples

```
# Shut down Tunnel 1.
<Sysname> system-view
[Sysname] interface tunnel 1
[Sysname-Tunnel1] shutdown
```

Related commands

```
display interface tunnel
```

SOURCE

Use **source** to specify the source address or source interface for a tunnel interface.

Use **undo source** to restore the default.

Syntax

```
source { ipv4-address | interface-type interface-number }
undo source
```

Default

No source address or source interface is specified for a tunnel interface.

Views

Tunnel interface view

Predefined user roles

network-admin

Parameters

ipv4-address: Specifies the tunnel source IPv4 address.

interface-type interface-number: Specifies the source interface by its type and number. The interface must be up and must have an IP address.

Usage guidelines

The specified source address or the address of the specified source interface is used as the source address of tunneled packets. To display the configured tunnel source address, use the **display interface tunnel** command.

Do not specify the same tunnel source and destination addresses for the tunnel interfaces on the same device.

The destination address of the local tunnel interface must be the source address of the peer tunnel interface. The source address of the local tunnel interface must be the destination address of the peer tunnel interface.

If you execute this command multiple times, the most recent configuration takes effect.

Examples

Specify VLAN-interface 10 as the source interface of Tunnel 1.

```
<Sysname> system-view
[Sysname] interface tunnel 1 mode gre
[Sysname-Tunnel1] source vlan-interface 10
```

Specify 192.100.1.1 as the source address of Tunnel 1.

```
<Sysname> system-view
[Sysname] interface tunnel 1 mode gre
[Sysname-Tunnel1] source 192.100.1.1
```

Related commands

destination

display interface tunnel

interface tunnel

tunnel dfbit enable

Use **tunnel dfbit enable** to set the Don't Fragment (DF) bit for tunneled packets.

Use **undo tunnel dfbit enable** to restore the default.

Syntax

tunnel dfbit enable

undo tunnel dfbit enable

Default

The DF bit is not set for tunneled packets.

Views

Tunnel interface view

Predefined user roles

network-admin

Usage guidelines

To avoid fragmentation and delay, set the DF bit for tunneled packets. Make sure the path MTU is larger than the tunneled packet length. To avoid discarding tunneled packets whose length is larger than the path MTU, do not set the DF bit.

Examples

Set the DF bit for tunneled packets on Tunnel 1.

```
<Sysname> system-view
[Sysname] interface tunnel 1 mode gre
[Sysname-Tunnel1] tunnel dfbit enable
```

tunnel discard ipv4-compatible-packet

Use `tunnel discard ipv4-compatible-packet` to enable dropping IPv6 packets that use IPv4-compatible IPv6 addresses.

Use `undo tunnel discard ipv4-compatible-packet` to restore the default.

Syntax

```
tunnel discard ipv4-compatible-packet
undo tunnel discard ipv4-compatible-packet
```

Default

IPv6 packets that use IPv4-compatible IPv6 addresses are not dropped.

Views

System view

Predefined user roles

network-admin

Usage guidelines

This command enables the device to check the source and destination IPv6 addresses of the de-encapsulated IPv6 packets from a tunnel. If a packet uses an IPv4-compatible IPv6 address as the source or destination address, the device discards the packet.

Examples

```
# Enable dropping IPv6 packets that use IPv4-compatible IPv6 addresses.
<Sysname> system-view
[Sysname] tunnel discard ipv4-compatible-packet
```

tunnel tos

Use `tunnel tos` to set the ToS of tunneled packets.

Use `undo tunnel tos` to restore the default.

Syntax

```
tunnel tos tos-value
undo tunnel tos
```

Default

The ToS of tunneled packets is the same as the ToS of the original packets.

Views

Tunnel interface view

Predefined user roles

network-admin

Parameters

tos-value: Specifies the ToS of tunneled packets, in the range of 0 to 255.

Usage guidelines

After you configure this command, all the tunneled packets of different services sent on the tunnel interface will use the same configured ToS. For more information about ToS, see *ACL and QoS Configuration Guide*.

Examples

```
# Set the ToS of tunneled packets to 20 on Tunnel 1.
<Sysname> system-view
[Sysname] interface tunnel 1 mode gre
[Sysname-Tunnel1] tunnel tos 20
```

Related commands

```
display interface tunnel
```

tunnel ttl

Use **tunnel ttl** to set the Time to Live (TTL) of tunneled packets.

Use **undo tunnel ttl** to restore the default.

Syntax

```
tunnel ttl ttl-value
undo tunnel ttl
```

Default

The TTL of tunneled packets is 255.

Views

Tunnel interface view

Predefined user roles

network-admin

Parameters

ttl-value: Specifies the TTL of tunneled packets, in the range of 1 to 255.

Usage guidelines

The TTL determines the maximum number of hops that the tunneled packets can pass. When the TTL expires, the tunneled packets are discarded to avoid loops.

Examples

```
# Set the TTL of tunneled packets to 100 on Tunnel 1.
<Sysname> system-view
[Sysname] interface tunnel 1 mode gre
[Sysname-Tunnel1] tunnel ttl 100
```

Related commands

```
display interface tunnel
```

tunnel vpn-instance

Use **tunnel vpn-instance** to specify a VPN instance for the destination address of a tunnel interface.

Use `undo tunnel vpn-instance` to restore the default.

Syntax

```
tunnel vpn-instance vpn-instance-name
undo tunnel vpn-instance
```

Default

The destination address of a tunnel interface belongs to the public network.

Views

Tunnel interface view

Predefined user roles

network-admin

Parameters

vpn-instance-name: Specifies an MPLS L3VPN instance by its name, a case-sensitive string of 1 to 31 characters.

Usage guidelines

After this command is executed, the device looks up the routing table of the specified VPN instance to forward tunneled packets on the tunnel interface.

For a tunnel interface to come up, the tunnel source and destination must belong to the same VPN instance. To specify a VPN instance for the tunnel source, use the `ip binding vpn-instance` command on the tunnel source interface.

Examples

Specify VPN instance **vpn10** for the tunnel destination on Tunnel 1.

```
<Sysname> system-view
[Sysname] ip vpn-instance vpn10
[Sysname-vpn-instance-vpn10] route-distinguisher 1:1
[Sysname-vpn-instance-vpn10] vpn-target 1:1
[Sysname-vpn-instance-vpn10] quit
[Sysname] interface vlan-interface 10
[Sysname-Vlan-interface10] ip binding vpn-instance vpn10
[Sysname-Vlan-interface10] ip address 1.1.1.1 24
[Sysname-Vlan-interface10] quit
[Sysname] interface tunnel 1 mode gre
[Sysname-Tunnel1] source vlan-interface 10
[Sysname-Tunnel1] destination 1.1.1.2
[Sysname-Tunnel1] tunnel vpn-instance vpn10
```

Related commands

`ip binding vpn-instance` (*MCE Command Reference*)