

L2TP Tunnel Preservation of IP TOS

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Feature Overview

When Layer 2 Tunneling Protocol (L2TP) data packets are created, they have a Type of Service (TOS) field of zero, which indicates normal service. This ignores the TOS field of the encapsulated IP packets that are being tunneled. The L2TP Tunnel Preservation of IP TOS feature preserves quality of service for tunneled packets by copying the IP packets' TOS field onto the L2TP data packets when they are created at the L2TP Network Server's (LNS) virtual-access interface.

Benefits

- Preserves quality of service for L2TP-tunneled packets
- Maintains L2TP tunnel transparency

Restrictions

- L2TP is the only tunneling protocol that is supported.
- The tunneled link must carry IP for the TOS field to be preserved.
- Proxy PPP dialin is not supported.
- Only LNSs can be configured to preserve IP TOS.

Related Documents

For more information about Cisco VPDN, see the following documents:

- The *Layer 2 Tunnel Protocol* feature module, which is located under *New Features in Release 12.0(1)T* from CCO.
- The *Large Scale Dialout* feature module, which is located under *New Features in Release 12.0(3)T* from CCO.
- The *L2TP Dialout, Resource Pool Management, VPDN Group Reorganization, and VPDN Per-User Configuration* feature modules, which are located under *New Features in Release 12.0(5)T* from CCO.
- The “Virtual Private Dialup Network” chapter in the *Dial Solutions Configuration Guide*.
- The *Access VPN Solutions Using Tunneling Technology* solutions guide, which is located under the *Internetworking Solutions Guides* index on CCO’s documentation home page.

Supported Platforms

- Cisco 1600 series
- Cisco 1720 VPN Access Router
- Cisco 2500 series
- Cisco 2600
- Cisco 3600 series
- Cisco 4000-M series (Cisco 4000-M, 4500-M, 4700-M)
- Cisco 7000 series
- Cisco 7100 series
- Cisco 7200 series
- Cisco 7500 series

Supported Standards, MIBs, and RFCs

MIBs

- CISCO-VPDN-MGMT-MIB.my
- CISCO-VPDN-MGMT-MIB-V1SML.my

For descriptions of supported MIBs and how to use MIBs, see the Cisco MIB web site on CCO at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

RFCs

L2TP RFC

Standards

None

Configuration Tasks

See the following sections for configuration tasks for the L2TP Tunnel Preservation of IP TOS feature. Each task in the list indicates if the task is optional or required.

- Configuring an Accept-Dialin Group to Preserve IP TOS (Required)
- Configuring a Request-Dialout Group to Preserve IP TOS (Required)

Configuring an Accept-Dialin Group to Preserve IP TOS

Step	Command	Purpose
1	Router(config)# vpdn-group 1	Creates VPDN group 1.
2	Router(config- <i>vpdn</i>)# accept dialin	Enables the LNS to accept dialin requests.
3	Router(config- <i>acc-in</i>)# protocol l2tp	Specifies L2TP as the tunneling protocol. Note L2TP is the only protocol that supports dialout and IP TOS preservation.
4	Router(config- <i>acc-in</i>)# virtual-template <i>template-number</i>	Specifies the number of the virtual template that is used to clone virtual-access interfaces.
5	Router(config- <i>acc-in</i>)# terminate-from hostname <i>hostname</i>	Accepts tunnels that have this hostname configured as the hostname or as a localname.
6	Router(config- <i>acc-in</i>)# l2tp ip tos reflect	Preserves the TOS field of the encapsulated IP packets.

Configuring a Request-Dialout Group to Preserve IP TOS

Step	Command	Purpose
1	Router(config)# vpdn-group 1	Creates VPDN group 1.
2	Router(config- <i>vpdn</i>)# request dialout	Enables the LNS to send L2TP dialout requests.
3	Router(config- <i>req-out</i>)# protocol l2tp	Specifies L2TP as the tunneling protocol. Note L2TP is the only protocol that supports dialout and IP TOS preservation.
4	dupree(config- <i>vpdn-req-out</i>)# pool-member <i>pool-number</i> or dupree(config- <i>vpdn-req-out</i>)# rotary-group <i>group-number</i>	Specifies the dialer profile pool that will be used to dial out. Specifies the dialer rotary group that will be used to dial out. You can only configure one dialer profile pool or dialer rotary group. Attempting to configure a second dialer resource will remove the first from the configuration.
5	dupree(config- <i>vpdn-req-out</i>)# exit dupree(config- <i>vpdn</i>)# initiate-to ip <i>ip-address</i> [<i>limit limit-number</i>] [priority <i>priority-number</i>]	Specifies the IP address that will be dialed out. Optionally, you can configure a maximum number of connections that this VPDN group will support and the priority of this VPDN group.
6	dupree(config- <i>vpdn</i>)# local name <i>hostname</i>	Specifies that the L2TP tunnel will identify itself with this hostname.
7	dupree(config- <i>vpdn</i>)# l2tp ip tos reflect	Preserves the TOS field of the encapsulated IP packets.

Configuration Examples

This section provides the following configuration examples:

- LNS Configured for L2TP Dial-in Tunnel Preservation of IP TOS
- LNS Configured for L2TP Dialout Tunnel Preservation of IP TOS

LNS Configured for L2TP Dial-in Tunnel Preservation of IP TOS

```
vpdn-group 1
  accept-dialin
  protocol l2tp
  virtual-template 1
  terminate-from hostname althea
  local name berthia
  l2tp ip tos reflect
```

LNS Configured for L2TP Dialout Tunnel Preservation of IP TOS

```
vpdn-group 1
  request-dialout
  protocol l2tp
  pool-member 1
  initiate-to ip 172.29.49.94
  l2tp ip tos reflect
```

Command Reference

This section documents new or modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.0 command reference publications.

- **l2tp ip tos reflect**

I2tp ip tos reflect

To configure a VPDN group to preserve the TOS field of L2TP-tunneled IP packets, use the **l2tp ip tos reflect** VPDN group command. To specify a TOS field of zero for tunneled packets, use the **no** form of this command.

```
l2tp ip tos reflect
no l2tp ip tos reflect
```

Syntax Description

This command has no keywords nor arguments.

Defaults

Disabled

Command Modes

VPDN group mode

Command History

Release	Modification
12.0(5)T	This command was introduced.

Usage Guidelines

The **l2tp ip tos reflect** command can only be configured on LNS VPDN groups (VPDN groups that are configured to accept dial-in and/or request dialout sessions).

Examples

The following example shows an LNS configured to preserve IP TOS for L2TP dial-in sessions:

```
vpdn-group 1
  accept-dialin
  protocol l2tp
  virtual-template 1
  terminate-from hostname althea
  local name berthia
  l2tp ip tos reflect
```

The following examples shows an LNS configured to preserve IP TOS for L2TP dialout sessions:

```
vpdn-group 1
  request-dialout
  protocol l2tp
  pool-member 1
  initiate-to ip 172.29.49.94
  l2tp ip tos reflect
```

Related Commands

Command	Description
request dialin	Enables a LAC to request either L2F or L2TP tunnels for dial-in.
request dialout	Enables an LNS to request L2TP tunnels for dialout calls.