Timer and Retry Enhancements for L2TP and L2F

The Timer and Retry Enhancements for L2TP and L2F feature introduces configurable control packet timers and retry counters for Layer 2 Transport Protocol (L2TP) and Layer 2 Forwarding (L2F) virtual private dialup network (VPDN) tunnels. Adjustments to these timers and counters allows you to configure the following parameters:

- The amount of time that a router will wait for a reply while establishing a VPDN tunnel.
- The number of times a router will try to contact a peer.
- The amount of time that a router will wait before trying to contact an alternate VPDN peer.

These customizable timers and counters allow fine-tuning of router performance to suit the particular needs of the VPDN deployment.

Configuration Information

Configuration information is included in the "VPDN Tunnel Management" module in the *Cisco IOS VPDN Configuration Guide*, Release 12.4T, at the following URL:

- http://www.cisco.com/univercd/cc/td/doc/product/software/ios124/124tcg/tvpdn_c/vpc7tmht.htm

Command Reference

This section documents modified commands.

- **l2f tunnel busy timeout**
- **l2f tunnel retransmit initial retries**
- **l2f tunnel retransmit retries**
- **l2f tunnel timeout setup**
- **l2tp tunnel busy timeout**
- **l2tp tunnel retransmit initial retries**
- **l2tp tunnel retransmit initial timeout**

l2f tunnel busy timeout

To configure the amount of time that the router will wait before attempting to recontact a Layer 2 Forwarding (L2F) peer that was previously busy, use the **l2f tunnel busy timeout** command in VPDN group or VPDN template configuration mode. To restore the default value, use the **no** form of this command.

l2f tunnel busy timeout *seconds*

no l2f tunnel busy timeout

Syntax Description

seconds	Time, in seconds, to wait before checking for router availability. This value can range from 60 to 6000. The default value is 300.

Command Default

The router will wait 300 seconds before attempting to recontact a previously busy peer.

Command Modes

VPDN group configuration
VPDN template configuration

Command History

Release	Modification
12.2(4)T	This command was introduced.
12.2(11)T	This command was implemented on the Cisco 1760, Cisco AS5300, Cisco AS5400, and Cisco AS5800 platforms.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.

Examples

The following example configures the router to leave an L2F peer on the busy list for 90 seconds. This configuration affects only tunnels associated with the virtual private dialup network (VPDN) group named group1.

```
vpdn-group group1
 l2f tunnel busy timeout 90
```

Related Commands

Command	Description
l2f tunnel retransmit initial retries	Configures the number of times that the router will attempt to send the initial control packet for tunnel establishment before considering an L2F peer busy.
l2f tunnel retransmit retries	Configures the number of times the router will attempt to resend an L2F tunnel control packet before tearing the tunnel down.
l2f tunnel timeout setup	Configures the amount of time that the router will wait for a confirmation message after sending out the initial L2F control packet before considering a peer busy.

Command	Description
vpdn-group	Creates a VPDN group and enters VPDN group configuration mode.
vpdn-template	Creates a VPDN template and enters VPDN template configuration mode.

l2f tunnel retransmit initial retries

To configure the number of times that the router will attempt to send the initial control packet for tunnel establishment before considering a Layer 2 Forwarding (L2F) peer busy, use the **l2f tunnel retransmit initial retries** command in VPDN group or VPDN template configuration mode. To restore the default value, use the **no** form of this command.

l2f tunnel retransmit initial retries *number*

no l2f tunnel retransmit initial retries

Syntax Description

number	The number of retries that will be attempted, ranging from 1 to 1000. The default value is 2.

Command Default

The router will send the initial control packet twice.

Command Modes

VPDN group configuration
VPDN template configuration

Command History

Release	Modification
12.2(4)T	This command was introduced.
12.2(11)T	This command was implemented on the Cisco 1760, Cisco AS5300, Cisco AS5400, and Cisco AS5800 platforms.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.

Usage Guidelines

This command can be used only if load sharing is enabled.

Examples

The following example configures a dial-in VPDN group on a network access server (NAS) to load balance calls between two tunnel servers, and to attempt to send the initial L2F control packet five times:

```
vpdn-group 1
 request-dialin
  protocol l2f
  domain cisco.com
!
 initiate-to ip 172.16.0.1 priority 1
 initiate-to ip 172.16.1.1 priority 2
 l2f tunnel retransmit initial retries 5
```

Related Commands

Command	Description
l2f tunnel busy timeout	Configures the amount of time that the router will wait before attempting to recontact an L2F peer that was previously busy.
l2f tunnel retransmit retries	Configures the number of times the router will attempt to resend an L2F tunnel control packet before tearing the tunnel down.
l2f tunnel timeout setup	Configures the amount of time that the router will wait for a confirmation message after sending out the initial L2F control packet before considering a peer busy.
vpdn-group	Creates a VPDN group and enters VPDN group configuration mode.
vpdn-template	Creates a VPDN template and enters VPDN template configuration mode.

l2f tunnel retransmit retries

To configure the number of times the router will attempt to resend a Layer 2 Forwarding (L2F) tunnel control packet before tearing the tunnel down, use the **l2f tunnel retransmit retries** command in VPDN group or VPDN template configuration mode. To restore the default value, use the **no** form of this command.

l2f tunnel retransmit retries *number*

no l2f tunnel retransmit retries

Syntax Description

number	The number of retries that will be attempted, ranging from 5 to 1000. The default value is 6.

Command Default

The router will resend control packets six times.

Command Modes

VPDN group configuration
VPDN template configuration

Command History

Release	Modification
12.2(4)T	This command was introduced.
12.2(11)T	This command was implemented on the Cisco 1760, Cisco AS5300, Cisco AS5400, and Cisco AS5800 platforms.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.

Usage Guidelines

This command does not affect the initial tunnel setup message or session control packets.

Examples

The following example configures the router to resend L2F tunnel control packets ten times before tearing the tunnel down. This configuration affects only tunnels associated with the virtual private dialup network (VPDN) group named group1.

```
vpdn-group group1
 l2f tunnel retransmit retries 10
```

Related Commands

Command	Description
l2f tunnel busy timeout	Configures the amount of time that the router will wait before attempting to recontact an L2F peer that was previously busy.
l2f tunnel retransmit initial retries	Configures the number of times that the router will attempt to send the initial control packet for tunnel establishment before considering an L2F peer busy.

Command	Description
l2f tunnel timeout setup	Configures the amount of time that the router will wait for a confirmation message after sending out the initial L2F control packet before considering a peer busy.
vpdn-group	Creates a VPDN group and enters VPDN group configuration mode.
vpdn-template	Creates a VPDN template and enters VPDN template configuration mode.

l2f tunnel timeout setup

To configure the amount of time that the router will wait for a confirmation message after sending out the initial Layer 2 Forwarding (L2F) control packet before considering a peer busy, use the **l2f tunnel timeout setup** command in VPDN group or VPDN template configuration mode. To restore the default value, use the **no** form of this command.

l2f tunnel timeout setup *seconds*

no l2f tunnel timeout setup

Syntax Description

seconds	Time, in seconds, that the router will wait for a return message. This value can range from 5 to 6000. The default value is 10.

Command Default

The router will wait 10 seconds for a confirmation message.

Command Modes

VPDN group configuration
VPDN template configuration

Command History

Release	Modification
12.2(4)T	This command was introduced.
12.2(11)T	This command was implemented on the Cisco 1760, Cisco AS5300, Cisco AS5400, and Cisco AS5800 platforms.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.

Usage Guidelines

If the router has not received a confirmation message from the peer device before the tunnel timeout setup timer expires, the peer will be placed on the busy list.

Examples

The following example configures a router to wait 25 seconds for confirmation that the initial L2F control packet was received by the peer. This configuration will affect only tunnels associated with the virtual private dialup network (VPDN) group named group1.

```
vpdn-group group1
 l2f tunnel timeout setup 25
```

Related Commands

Command	Description
l2f tunnel busy timeout	Configures the amount of time that the router will wait before attempting to recontact an L2F peer that was previously busy.
l2f tunnel retransmit initial retries	Configures the number of times that the router will attempt to send the initial control packet for tunnel establishment before considering an L2F peer busy.

Command	Description
l2f tunnel retransmit retries	Configures the number of times the router will attempt to resend an L2F tunnel control packet before tearing the tunnel down.
vpdn-group	Creates a VPDN group and enters VPDN group configuration mode.
vpdn-template	Creates a VPDN template and enters VPDN template configuration mode.

l2tp tunnel busy timeout

To configure the amount of time that the router will wait before attempting to recontact a Layer 2 Transport Protocol (L2TP) peer that was previously busy, use the **l2tp tunnel busy timeout** command in VPDN group or VPDN template configuration mode. To restore the default value, use the **no** form of this command.

l2tp tunnel busy timeout *seconds*

no l2tp tunnel busy timeout

Syntax Description

seconds	Time, in seconds, to wait before checking for router availability. This value can range from 60 to 6000. The default value is 300.

Command Default

The router will wait 300 seconds before attempting to recontact a previously busy peer.

Command Modes

VPDN group configuration
VPDN template configuration

Command History

Release	Modification
12.2(4)T	This command was introduced.
12.2(11)T	This command was implemented on the Cisco 1760, Cisco AS5300, Cisco AS5400, and Cisco AS5800 platforms.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.

Examples

The following example configures tunnels associated with the virtual private dialup network (VPDN) group named group1 to leave an L2TP destination router on the busy list for 90 seconds:

```
vpdn-group group1
 l2tp tunnel busy timeout 90
```

Related Commands

Command	Description
l2tp tunnel retransmit initial retries	Sets the number of times that the router will attempt to send out the initial control packet for tunnel establishment before considering a router busy.
l2tp tunnel retransmit initial timeout	Sets the amount of time that the router will wait before resending an initial packet out to establish a tunnel.
vpdn-group	Creates a VPDN group and enters VPDN group configuration mode.
vpdn-template	Creates a VPDN template and enters VPDN template configuration mode.

l2tp tunnel retransmit initial retries

To configure the number of times that the router will attempt to send out the initial Layer 2 Tunnel Protocol (L2TP) control packet for tunnel establishment before considering a peer busy, use the **l2tp tunnel retransmit initial retries** command in VPDN group or VPDN template configuration mode. To restore the default value, use the **no** form of this command.

l2tp tunnel retransmit initial retries *number*

no l2tp tunnel retransmit initial retries

Syntax Description

number	Number of retransmission attempts. Valid values range from 1 to 1000. The default value is 2.

Command Default

The router will resend the initial L2TP control packet twice.

Command Modes

VPDN group configuration
VPDN template configuration

Command History

Release	Modification
12.2(4)T	This command was introduced.
12.2(11)T	This command was implemented on the Cisco 1760, Cisco AS5300, Cisco AS5400, and Cisco AS5800 platforms.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.

Usage Guidelines

Use the **l2tp tunnel retransmist initial retries** command to configure the number of times a device will attempt to resend the initial control packet used to establish an L2TP tunnel.

Examples

The following example configures the router to attempt to send the initial L2TP control packet five times for tunnels associated with the virtual private dialup network (VPDN) group named group1:

```
vpdn-group group1
 l2tp tunnel retransmit initial retries 5
```

Related Commands

Command	Description
l2tp tunnel busy timeout	Configures the amount of time that the router will wait before attempting to recontact a router that was previously busy.
l2tp tunnel retransmit initial timeout	Configures the amount of time that the router will wait before resending an initial L2TP control packet out to establish a tunnel.
l2tp tunnel retransmit retries	Configures the number of retransmission attempts made for a L2TP control packet.

Command	Description
l2tp tunnel retransmit timeout	Configures the amount of time that the router will wait before resending an L2TP control packet.
vpdn-group	Creates a VPDN group and enters VPDN group configuration mode.
vpdn-template	Creates a VPDN template and enters VPDN template configuration mode.

l2tp tunnel retransmit initial timeout

To configure the amount of time that the router will wait before resending an initial Layer 2 Tunnel Protocol (L2TP) control packet out to establish a tunnel, use the **l2tp tunnel retransmit initial timeout** command in VPDN group or VPDN template configuration mode. To restore the default value, use the **no** form of this command.

l2tp tunnel retransmit initial timeout {**min** | **max**} *seconds*

no l2tp tunnel retransmit initial timeout {**min** | **max**}

Syntax Description

min	Specifies the minimum time that the router will wait before resending an initial packet.
max	Specifies the maximum time that the router will wait before resending an initial packet.
seconds	Timeout length, in seconds, the router will wait before resending an initial packet. Valid values range from 1 to 8. The default minimum value is 1. The default maximum value is 8.

Command Default

The minimum timeout is one second.
The maximum timeout is eight seconds.

Command Modes

VPDN group configuration
VPDN template configuration

Command History

Release	Modification
12.2(4)T	This command was introduced.
12.2(11)T	This command was implemented on the Cisco 1760, Cisco AS5300, Cisco AS5400, and Cisco AS5800 platforms.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.

Usage Guidelines

This command will take effect only when load balancing is enabled.

Control channel retransmissions follow an exponential backoff, starting at the minimum retransmit timeout length specified by the **min** *seconds* keyword and argument combination. After each packet that is not acknowledged, the timeout exponentially increases until it reaches the value specified by the **max** *seconds* keyword and argument combination. For example, if the minimum timeout length is set to one second, the next retransmission attempt occurs two seconds later. The following attempt occurs four seconds later, and all additional attempts occur in eight second intervals.

Examples

The following example configures a network access server (NAS) virtual private dialup network (VPDN) group to establish L2TP tunnels that are load balanced across two tunnel servers. The NAS is configured to attempt to recontact a peer with an initial control packet five times before considering it busy. The timers are set so that the first attempt to recontact the peer will occur two seconds after the initial failure, and the final attempt will occur seven seconds after the previous failure.

```
vpdn-group 1
 request-dialin
  protocol l2tp
  domain cisco.com
!
 initiate-to ip 172.16.0.1 priority 1
 initiate-to ip 172.16.1.1 priority 2
 l2tp tunnel retransmit initial retries 5
 l2tp tunnel retransmit initial timeout min 2
 l2tp tunnel retransmit initial timeout max 7
```

Related Commands

Command	Description
l2tp tunnel busy timeout	Configures the amount of time that the router will wait before attempting to recontact a router that was previously busy.
l2tp tunnel retransmit initial retries	Configures the number of times that the router will attempt to send out the initial L2TP control packet for tunnel establishment before considering a peer busy.
l2tp tunnel retransmit retries	Configures the number of retransmission attempts made for an L2TP control packet.
l2tp tunnel retransmit timeout	Configures the amount of time that the router will wait before resending an L2TP control packet.
vpdn-group	Creates a VPDN group and enters VPDN group configuration mode.
vpdn-template	Creates a VPDN template and enters VPDN template configuration mode.