



PPPoE Client DDR Idle-Timer

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The PPPoE Client DDR Idle-Timer feature supports the dial-on-demand routing (DDR) interesting traffic control list functionality of the dialer interface with a PPP over Ethernet (PPPoE) client, but also keeps original functionality (PPPoE connection up and always on after configuration) for those PPPoE clients that require it.

History for the PPPoE Client DDR Idle-Timer Feature

Release	Modification
12.2(13)T	This feature was introduced.
12.2(28)SB	This feature was integrated into Cisco IOS Release 12.2(28)SB.

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Prerequisites for Using the PPPoE Client DDR Idle-Timer

Before configuring the PPPoE Client DDR Idle-Timer feature, you must understand the concept of DDR interesting packets and access control lists and PPPoE Stage Protocols. See the [“Additional References” section on page 8](#) for links to the documents describing these concepts.

Information About the PPPoE Client DDR Idle-Timer

To configure the PPPoE client DDR idle-timer, you need to understand the following concept:

- [DDR Functionality and the PPPoE Client, page 2](#)

DDR Functionality and the PPPoE Client

Before Cisco IOS Release 12.2(13)T, the DDR interesting traffic control list functionality of the dialer interface was not supported for PPPoE. However, the PPPoE Client DDR Idle-Timer feature, available as part of Cisco IOS Release 12.2(13)T, now supports this DDR functionality for a PPPoE client.

Protocol access lists and dialer access lists are central to the operation of DDR. Access lists are used as the screening criteria for determining when to initiate DDR calls. All packets are tested against the dialer access list. Packets that match a permit entry are deemed *interesting*. Packets that do not match a permit entry or that do match a deny entry are deemed uninteresting. When a packet is found to be interesting, either the dialer idle timer is reset (if the line is active) or a connection is attempted (assuming the line is available but not active). If a tested packet is deemed uninteresting, it will be forwarded if it is intended for a destination known to be on a specific interface and the link is active. However, such a packet will not initiate a DDR call and will not reset the idle timer. If dialer idle timer expires, the dialer interface calls a PPPoE function to tear down the connection.

A new command, **pppoe-client dial-pool-number**, allows configuring a DDR interesting traffic control list for PPPoE connections, but also keeps original connection functionality for those PPPoE clients that require it. If you do not require DDR, the PPPoE connection will be up and always on after configuration. If you do require DDR functionality, the connection will be brought up when interesting traffic comes in from the LAN interface and brought down after the dialer idle timer expires. Interesting traffic that comes from WAN interface will only reset the dialer idle timer.

Protocol access lists and dialer access lists have already been implemented in the dialer interface for the operation of DDR. For a PPPoE client, access lists are used as the screening criteria for determining if PPPoE Discovery initiation or a dialer idle timer reset is needed. But a protocol access list is not required for this feature; it depends on your network needs. An access-list can be configured and associated with dialer-list, or you can configure only the dialer list.

All packets destined to the dialer interface are tested against the dialer access list. Packets that match a permit entry are deemed interesting. Packets that do not match a permit entry or that do match a deny entry are deemed uninteresting. When a packet is found to be interesting, the dialer idle timer will be reset if the PPPoE session has already been set up, or a PPPoE Discovery will be attempted if there is no PPPoE session. If a tested packet is deemed uninteresting, it will not initiate PPPoE Discovery and will not reset the idle timer.

How to Configure the PPPoE Client DDR Idle-Timer

This section contains the following procedures. Each procedure is identified as either required or optional.

- [Configure the PPPoE Client DDR Idle-Timer on an ATM PVC Interface, page 3](#) (required)
- [Configure the PPPoE Client DDR Idle-Timer on an Ethernet Interface, page 4](#) (required)
- [Configure the Dialer Interface, page 5](#) (required)

Configure the PPPoE Client DDR Idle-Timer on an ATM PVC Interface

To configure the PPPoE client DDR idle-timer in interface-ATM-VC configuration mode, use the following commands.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface atm** *atm-interface-number*
4. **pvc** *vpi/vci*
5. **pppoe-client dial-pool-number** *number* [**dial-on-demand**]
6. **exit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables higher privilege levels, such as privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	interface atm <i>atm-interface-number</i> Example: Router(config)# interface atm 2/0	Configures an ATM interface type and enters interface configuration mode.
Step 4	pvc <i>vpi/vci</i> Example: Router(config-if)# pvc 2/100	Creates an ATM permanent virtual circuit (PVC) and enters interface-ATM-VC configuration mode.

	Command or Action	Purpose
Step 5	<pre>pppoe-client dial-pool-number <i>number</i> [dial-on-demand]</pre> <p>Example: Router(config-if-atm-vc)# pppoe-client dial-pool-number 1 dial-on-demand</p>	<p>Configures DDR interesting traffic control list functionality of the dialer interface with a PPPoE client.</p> <ul style="list-style-type: none"> The optional dial-on-demand keyword enables DDR functionality on the PPPoE connection.
Step 6	<pre>exit</pre> <p>Example: Router(config-if-atm-vc)# exit</p>	<p>Exits the configuration mode.</p> <ul style="list-style-type: none"> Enter the exit command at each configuration mode to leave that mode.

What to Do Next

To support DDR functionality for the PPPoE client, DDR functionality *must* be configured. See the [“Configure the Dialer Interface” section on page 5](#) for the steps to do this.

Configure the PPPoE Client DDR Idle-Timer on an Ethernet Interface

To configure the PPPoE client DDR idle-timer on an Ethernet interface, use the following commands.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface ethernet** *ethernet-number*
4. **pppoe enable**
5. **pppoe-client dial-pool-number** *number* [**dial-on-demand**]
6. **exit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	<pre>enable</pre> <p>Example: Router> enable</p>	<p>Enables higher privilege levels, such as privileged EXEC mode.</p> <ul style="list-style-type: none"> Enter your password if prompted.
Step 2	<pre>configure terminal</pre> <p>Example: Router# configure terminal</p>	<p>Enters global configuration mode.</p>

	Command or Action	Purpose
Step 3	interface ethernet <i>ethernet-number</i> Example: Router(config)# interface ethernet 1	Configures an Ethernet interface and enters interface configuration mode.
Step 4	pppoe enable Example: Router(config-if)# pppoe enable	Enables PPPoE sessions on an Ethernet interface.
Step 5	pppoe-client dial-pool-number <i>number</i> [dial-on-demand] Example: Router(config-if)# pppoe-client dial-pool-number 1 dial-on-demand	Configures DDR interesting traffic control list functionality of the dialer interface with a PPPoE client. <ul style="list-style-type: none"> The optional dial-on-demand keyword enables DDR functionality on the PPPoE connection.
Step 6	exit Example: Router(config-if-atm-vc)# exit	Exits the configuration mode. <ul style="list-style-type: none"> Enter the exit command at each configuration mode to leave that mode.

What to Do Next

To support DDR functionality for the PPPoE client, DDR functionality *must* be configured. See the [“Configure the Dialer Interface”](#) section for the steps to do this.

Configure the Dialer Interface

To configure the dialer interface (required when using the **pppoe-client dial-pool-number** command), you must also configure the following commands.

SUMMARY STEPS

- enable**
- configure terminal**
- interface dialer** *dialer-rotary-group-number*
- dialer idle-timeout** *seconds* [**inbound** | **either**]
- dialer hold-queue** *packets* [**timeout** *seconds*]
- dialer-group** *group-number*
- exit**
- dialer-list** *dialer-group* **protocol** *protocol-name* {**permit** | **deny** | **list** *access-list-number* | *access-group*}

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables higher privilege levels, such as privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	interface dialer dialer-rotary-group-number Example: Router# interface dialer 1	Defines a dialer rotary group and enters interface configuration mode.
Step 4	dialer idle-timeout seconds [inbound either] Example: Router(config-if)# dialer idle-timeout 180 either	Specifies the duration of idle time before a line is disconnected. • inbound —Only inbound traffic will reset the idle timeout. • either —Both inbound and outbound traffic will reset the idle timeout.
Step 5	dialer hold-queue packets [timeout seconds] Example: Router(config-if)# dialer hold-queue 100	Allows interesting outgoing packets to be queued until a modem connection is established. • timeout —Amount of time, in seconds, to queue the packets.
Step 6	dialer-group group-number Example: Router(config-if)# dialer-group 1	Controls access by configuring an interface to belong to a specific dialing group.
Step 7	exit Example: Router(config-if)# exit	Leaves interface configuration mode and returns to global configuration mode.
Step 8	dialer-list dialer-group protocol protocol-name {permit deny list access-list-number access-group} Example: Router(config)# dialer-list 1 protocol ip permit	Defines a DDR dialer list for dialing by protocol or by a combination of a protocol and a previously defined access list. • permit and deny —Configure access permissions. • list —Specifies that an access list will be used for defining a granularity finer than an entire protocol.

Configuration Examples for PPPoE Client DDR Idle-Timer

This section provides configuration examples to match the identified configuration tasks in the previous sections. The dialer interface configurations for each interface type required by the **pppoe-client dial-pool-number** command are included in the following client configuration examples:

- [PPPoEoA Client Configuration Example, page 7](#)
- [PPPoEoE Client Configuration Example, page 7](#)

PPPoEoA Client Configuration Example

The following example shows how to configure the PPPoE client DDR idle-timer on an ATM PVC interface:

```
!  
vpdn enable  
no vpdn logging  
!  
vpdn-group 1  
  request-dialin  
  protocol pppoe  
!  
interface ATM2/0  
  pvc 2/100  
    pppoe-client dial-pool-number 1 dial-on-demand  
!  
interface Dialer1  
  ip address negotiated  
  ip mtu 1492  
  encapsulation ppp  
  dialer pool 1  
  dialer idle-timeout 180 either  
  dialer hold-queue 100  
  dialer-group 1  
!  
dialer-list 1 protocol ip permit  
!  
ip route 0.0.0.0 0.0.0.0 Dialer1
```

PPPoEoE Client Configuration Example

The following example shows how to configure the PPPoE client DDR idle-timer on an Ethernet interface:

```
!  
vpdn enable  
no vpdn logging  
!  
vpdn-group 1  
  request-dialin  
  protocol pppoe  
!  
interface Ethernet1  
  pppoe enable  
  pppoe-client dial-pool-number 1 dial-on-demand  
!  
interface Dialer1  
  ip address negotiated
```

```

ip mtu 1492
encapsulation ppp
dialer pool 1
dialer idle-timeout 180 either
dialer hold-queue 100
dialer-group 1
!
dialer-list 1 protocol ip permit
!
ip route 0.0.0.0 0.0.0.0 Dialer1

```

Additional References

For additional information related to the PPPoE client DDR idle-timer, refer to the following references:

Related Documents

Related Topic	Document Title
DDR interesting packets and access control lists	Cisco IOS Dial Technologies Configuration Guide , Release 12.2. See the section “Configuring Access Control for Outgoing Calls” in the chapter “Configuring Legacy DDR Hubs.”
DDR and dialer commands: complete command syntax, command mode, defaults, usage guidelines, and examples	Cisco IOS Dial Technologies Command Reference , Release 12.2.
PPPoE Stage Protocols	Cisco IOS Wide-Area Networking Configuration Guide , Release 12.2. See the section “PPPoE Stage Protocols” in the chapter “Configuring Broadband Access: PPP and Routed Bridge Encapsulation.”
PPPoE configuration commands: complete command syntax, command mode, defaults, usage guidelines, and example	Cisco IOS Wide-Area Networking Command Reference , Release 12.2. See the chapter “Broadband Access: PPP and Routed Bridge Encapsulation Commands.”

Standards

Standards	Title
None	—

MIBs

MIBs	MIBs Link
None	To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at the following URL: http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml

RFCs

RFCs	Title
None	—

Technical Assistance

Description	Link
The Cisco Technical Support & Documentation website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/public/support/tac/home.shtml

Command Reference

This section documents one modified command.

- [pppoe-client dial-pool-number](#)

pppoe-client dial-pool-number

To configure a PPP over Ethernet (PPPoE) client and to specify dial-on-demand routing (DDR) functionality, use the **pppoe-client dial-pool-number** command in either interface configuration mode or ATM virtual circuit configuration mode. To disable any configured functionality, use the **no** form of this command.

pppoe-client dial-pool-number *number* [**dial-on-demand**]

no pppoe-client dial-pool-number *number* [**dial-on-demand**]

Syntax Description

<i>number</i>	Unique number of a dial group configured with the dialer-group dialer interface command.
dial-on-demand	(Optional) Enables DDR functionality for the PPPoE connection.

Defaults

A PPPoE client is not configured, and DDR functionality is disabled.

Command Modes

Interface configuration
ATM virtual circuit configuration

Command History

Release	Modification
12.1(3)XG	This command was introduced.
12.2(2)T	This command was integrated into Cisco IOS Release 12.2(2)T.
12.2(13)T	The dial-on-demand keyword was added to allow the configuration of DDR interesting traffic control list functionality.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB.

Usage Guidelines

One permanent virtual circuit (PVC) will support only one PPPoE client. Multiple PPPoE clients can run concurrently on different permanent virtual circuits (PVCs), but each PPPoE client must use a separate dialer interface and a separate dialer pool.

Use this command to configure dial-on-demand routing (DDR) interesting traffic control list functionality of the dialer interface with a PPP over Ethernet (PPPoE) client. When the DDR functionality is configured for this command, the following DDR commands must also be configured: **dialer-group**, **dialer hold-queue**, **dialer idle-timeout**, and **dialer-list**.

Tips for Configuring the Dialer Interface

If you are configuring a hard-coded IP address under the dialer interface, you can configure a default IP route using the **ip route** command as follows:

```
ip route 0.0.0.0 0.0.0.0 dialer1
```

But if you are configuring a negotiated IP address using the **ip address negotiated** command under the dialer interface, you must configure a default IP route using the **ip route** command as follows:

```
ip route 0.0.0.0 0.0.0.0 dialer1 permanent
```

The reason is that the dialer interface will lose its IP address when a PPPoE session is brought down (even if the dialer does not go down), and hence the route removal routine will take effect and remove all IP routes pointed at the dialer interface, even the default IP route. Although the default IP route will be added back about one minute later by IP background processes, you may risk losing incoming packets during the interval.

Examples

PPPoE Client DDR Idle-Timer on an Ethernet Interface

The following example shows how to configure the PPPoE client DDR idle-timer on an Ethernet interface and includes the required DDR commands:

```
!
vpdn enable
no vpdn logging
!
vpdn-group 1
 request-dialin
  protocol pppoe
!
interface Ethernet1
 pppoe enable
 pppoe-client dial-pool-number 1 dial-on-demand
!
interface Dialer1
 ip address negotiated
 ip mtu 1492
 encapsulation ppp
 dialer pool 1
 dialer idle-timeout 180 either
 dialer hold-queue 100
 dialer-group 1
!
dialer-list 1 protocol ip permit
!
ip route 0.0.0.0 0.0.0.0 Dialer1
```

PPPoE Client DDR Idle-Timer on an ATM PVC

The following example shows how to configure the PPPoE client DDR idle-timer on an ATM PVC interface and includes the required DDR commands:

```
!
vpdn enable
no vpdn logging
!
vpdn-group 1
 request-dialin
  protocol pppoe
!
interface ATM2/0
 pvc 2/100
 pppoe-client dial-pool-number 1 dial-on-demand
!
interface Dialer1
 ip address negotiated
 ip mtu 1492
 encapsulation ppp
 dialer pool 1
 dialer idle-timeout 180 either
 dialer hold-queue 100
```

```
dialer-group 1
!
dialer-list 1 protocol ip permit
!
ip route 0.0.0.0 0.0.0.0 Dialer1
```

Related Commands

Command	Description
debug vpdn pppoe-data	Displays PPPoE session data packets.
debug vpdn pppoe-errors	Displays PPPoE protocol errors that prevent a session from being established or errors that cause an established session to be terminated.
debug vpdn pppoe-events	Displays PPPoE protocol messages about events that are part of normal session establishment or shutdown.
debug vpdn pppoe-packets	Displays each PPPoE protocol packet exchanged.
dialer-group	Controls access by configuring a virtual access interface to belong to a specific dialing group.
dialer hold-queue	Allows interesting outgoing packets to be queued until a modem connection is established.
dialer idle-timeout	Specifies the idle time before the line is disconnected.
dialer-list	Defines a DDR dialer list to control dialing by protocol or by a combination of protocol and an access list.

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