



# 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.

## Feature Specifications for the PPPoE Client DDR Idle Timer Feature

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### Feature History

Release	Modification
12.2(13)T	This feature was introduced.
12.2(27)SBA	This feature was integrated into Cisco IOS Release 12.2(27)SBA.

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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 9](#) 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** | **memory** | **network** }
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	<b>enable</b>  <b>Example:</b> Router> enable	Enables higher privilege levels, such as privileged EXEC mode.  • Enter your password if prompted.
Step 2	<b>configure</b> { <b>terminal</b>   <b>memory</b>   <b>network</b> }  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
Step 3	<b>interface atm</b> <i>atm-interface-number</i>  <b>Example:</b> Router# interface atm 2/0	Configures an ATM interface type and enters interface configuration mode.
Step 4	<b>pvc</b> <i>vpi/vci</i>  <b>Example:</b> 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><b>Example:</b> 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"> <li>The optional <b>dial-on-demand</b> keyword enables DDR functionality on the PPPoE connection.</li> </ul>
Step 6	<pre>exit</pre> <p><b>Example:</b> Router(config-if-atm-vc)# exit</p>	<p>Exits the configuration mode.</p> <ul style="list-style-type: none"> <li>Enter the <b>exit</b> command at each configuration mode to leave that mode.</li> </ul>

## 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

- enable**
- configure {terminal | memory | network}**
- interface ethernet** *ethernet-number*
- pppoe enable**
- pppoe-client dial-pool-number** *number* [**dial-on-demand**]

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<pre>enable</pre> <p><b>Example:</b> Router&gt; enable</p>	<p>Enables higher privilege levels, such as privileged EXEC mode.</p> <ul style="list-style-type: none"> <li>Enter your password if prompted.</li> </ul>
Step 2	<pre>configure {terminal   memory   network}</pre> <p><b>Example:</b> Router# configure terminal</p>	<p>Enters global configuration mode.</p>
Step 3	<pre>interface ethernet <i>ethernet-number</i></pre> <p><b>Example:</b> Router# interface ethernet 1</p>	<p>Configures an Ethernet interface and enters interface configuration mode.</p>

	Command or Action	Purpose
Step 4	<code>pppoe enable</code>  <b>Example:</b> Router(config-if)# pppoe enable	Enables PPPoE sessions on an Ethernet interface.
Step 5	<code>pppoe-client dial-pool-number number</code> <code>[dial-on-demand]</code>  <b>Example:</b> 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"> <li>The optional <b>dial-on-demand</b> keyword enables DDR functionality on the PPPoE connection.</li> </ul>
Step 6	<code>exit</code>  <b>Example:</b> Router(config-if-atm-vc)# exit	Exits the configuration mode. <ul style="list-style-type: none"> <li>Enter the <b>exit</b> command at each configuration mode to leave that mode.</li> </ul>

## 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

1. `enable`
2. `configure {terminal | memory | network}`
3. `interface dialer dialer-rotary-group-number`
4. `dialer idle-timeout seconds [inbound | either]`
5. `dialer hold-queue packets [timeout seconds]`
6. `dialer-group group-number`
7. `exit`
8. `dialer-list dialer-group protocol protocol-name {permit | deny | list access-list-number | access-group}`

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  <b>Example:</b> Router> enable	Enables higher privilege levels, such as privileged EXEC mode.  • Enter your password if prompted.
Step 2	<b>configure</b> { <b>terminal</b>   <b>memory</b>   <b>network</b> }  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
Step 3	<b>interface dialer</b> <i>dialer-rotary-group-number</i>  <b>Example:</b> Router# interface dialer 1	Defines a dialer rotary group and enters interface configuration mode.
Step 4	<b>dialer idle-timeout</b> <i>seconds</i> [ <b>inbound</b>   <b>either</b> ]  <b>Example:</b> Router(config-if)# dialer idle-timeout 180 either	Specifies the duration of idle time before a line is disconnected.  • <b>inbound</b> —Only inbound traffic will reset the idle timeout. • <b>either</b> —Both inbound and outbound traffic will reset the idle timeout.
Step 5	<b>dialer hold-queue</b> <i>packets</i> [ <b>timeout</b> <i>seconds</i> ]  <b>Example:</b> Router(config-if)# dialer hold-queue 100	Allows interesting outgoing packets to be queued until a modem connection is established.  • <b>timeout</b> —Amount of time, in seconds, to queue the packets.
Step 6	<b>dialer-group</b> <i>group-number</i>  <b>Example:</b> Router(config-if)# dialer-group 1	Controls access by configuring an interface to belong to a specific dialing group.
Step 7	<b>exit</b>  <b>Example:</b> Router(config-if)# exit	Leaves interface configuration mode and returns to global configuration mode.
Step 8	<b>dialer-list</b> <i>dialer-group</i> <b>protocol</b> <i>protocol-name</i> { <b>permit</b>   <b>deny</b>   <b>list</b> <i>access-list-number</i>   <i>access-group</i> }  <b>Example:</b> 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.  • <b>permit</b> and <b>deny</b> —Configure access permissions. • <b>list</b> —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	<i>Cisco IOS Dial Technologies Configuration Guide</i> , 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	<i>Cisco IOS Dial Technologies Command Reference</i> , Release 12.2.
PPPoE Stage Protocols	<i>Cisco IOS Wide-Area Networking Configuration Guide</i> , 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	<i>Cisco IOS Wide-Area Networking Command Reference</i> , 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:  <a href="http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml">http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml</a>

To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:

<http://tools.cisco.com/ITDIT/MIBS/servlet/index>

If Cisco MIB Locator does not support the MIB information that you need, you can also obtain a list of supported MIBs and download MIBs from the Cisco MIBs page at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

To access Cisco MIB Locator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to [cco-locksmith@cisco.com](mailto:cco-locksmith@cisco.com). An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<http://www.cisco.com/register>

## RFCs

RFCs	Title
None	—

## Technical Assistance

Description	Link
Technical Assistance Center (TAC) home page, containing 30,000 pages of searchable technical content, including links to products, technologies, solutions, technical tips, tools, and lots more. Registered Cisco.com users can log in from this page to access even more content.	<a href="http://www.cisco.com/public/support/tac/home.shtml">http://www.cisco.com/public/support/tac/home.shtml</a>

## Command Reference

This section documents one modified command only.

- [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**]

<b>Syntax Description</b>	<i>number</i>	Unique number of a dial group configured with the <b>dialer-group</b> dialer interface command.
	<b>dial-on-demand</b>	(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

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	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 <b>dial-on-demand</b> keyword was added to allow the configuration of DDR interesting traffic control list functionality.
	12.2(27)SBA	This command was integrated into Cisco IOS Release 12.2(27)SBA.

**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
	<b>debug vpdn pppoe-data</b>	Displays PPPoE session data packets.
	<b>debug vpdn pppoe-errors</b>	Displays PPPoE protocol errors that prevent a session from being established or errors that cause an established session to be terminated.
	<b>debug vpdn pppoe-events</b>	Displays PPPoE protocol messages about events that are part of normal session establishment or shutdown.
	<b>debug vpdn pppoe-packets</b>	Displays each PPPoE protocol packet exchanged.
	<b>dialer-group</b>	Controls access by configuring a virtual access interface to belong to a specific dialing group.
	<b>dialer hold-queue</b>	Allows interesting outgoing packets to be queued until a modem connection is established.
	<b>dialer idle-timeout</b>	Specifies the idle time before the line is disconnected.
	<b>dialer-list</b>	Defines a DDR dialer list to control dialing by protocol or by a combination of protocol and an access list.
	<b>ip address negotiated</b>	Specifies the IP address for a particular interface is obtained via PPP/IPCP.
	<b>ip route</b>	Establishes a static route.

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