



Configuring PPP over Ethernet Session Limit Support

First Published: May 4, 2005

Last Updated: November 17, 2010

This module provides information on how to limit the number of PPP over Ethernet (PPPoE) sessions that can be created on a router or on a Gigabit Ethernet interface for configuration.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the [“Feature Information for Configuring PPP over Ethernet Session Limit Support”](#) section on page 10.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.

Contents

- [Information About Configuring PPP over Ethernet Session Limit Support, page 2](#)
- [How to Configure PPP over Ethernet Session Limit Support, page 2](#)
- [Configuration Examples for PPP over Ethernet Session Limit Support, page 7](#)
- [Additional References, page 8](#)
- [Feature Information for Configuring PPP over Ethernet Session Limit Support, page 10](#)



Americas Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

Information About Configuring PPP over Ethernet Session Limit Support

- [Benefits of Configuring PPP over Ethernet Session Limit Support, page 2](#)
- [Trap Generation, page 2](#)

Benefits of Configuring PPP over Ethernet Session Limit Support

- The PPPoE Session Limit Support feature prevents the router from using too much memory for virtual access by limiting the number of PPPoE sessions that can be created on a router or on all Ethernet interfaces and subinterfaces as well as ATM interfaces and subinterfaces.
- The SNMP Enhancements for ASR 1000 feature enhances Cisco ASR 1000 Aggregation Series Router to count the PPPoE sessions in PTA, FWDED, and TRANS state for a particular physical interface, and the total number of sessions that exist in a physical interface. Provision for using a system-wide threshold trap and per-physical threshold trap is provided through SNMP. These functionalities enable users to retrieve the total number of sessions and per-interface session-loss threshold value.

Trap Generation

In scenarios where you must deploy ASR 1000 Series Routers with one physical port mapped to one DSLAM and if the total number of sessions for the DSLAM falls below the threshold value on a physical interface, due to a loss of high number of sessions, a notification trap is generated. You can use these traps to investigate the issue and take immediate actions.

When the number of active sessions falls below the threshold value, only one trap is generated. Further traps are not sent even if the number of sessions continue to decrease. The next set of traps are sent only if the number of sessions rise above the configured threshold value and fall. This criterion is applicable to both global and per-interface traps.

When threshold values are configured in both global and per-interface configuration modes, then both the threshold values are monitored separately. Traps are sent when the session count falls below the threshold value either in global configuration mode or in per-interface configuration mode.

How to Configure PPP over Ethernet Session Limit Support

- [Specifying the Maximum Number of PPPoE Sessions on a Router, page 2](#) (optional)
- [Specifying the Maximum Number of PPPoE Sessions on a Gigabit Ethernet Interface, page 4](#) (optional)
- [Configuring System-Wide Threshold Parameters, page 5](#) (required)

Specifying the Maximum Number of PPPoE Sessions on a Router

Perform this task to specify the maximum number of PPPoE sessions that can be created on a router.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **bba-group pppoe** {*name* | **global**}
4. **virtual-template** *template-number*
5. **sessions per-mac limit** *per-mac-limit*
6. **sessions per-vlan limit** *per-vlan-limit* [**inner** *vlan-id*]
7. **sessions per-vc limit** *per-vc-limit* [**threshold** *threshold-value*]
8. **sessions max limit** *number-of-sessions* [**threshold** *threshold-value*]
9. **exit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	bba-group pppoe { <i>name</i> global }	Configures a broadband aggregation (BBA) group to be used to establish PPPoE sessions and enters BBA group configuration mode. <ul style="list-style-type: none"> • <i>name</i>—Name of the BBA group. You can have multiple BBA groups. • global— Specifies the PPPoE profile that serves as the default profile for any PPPoE port (Gigabit Ethernet interface or VLAN) that has not been assigned a specific PPPoE profile.
Step 4	virtual-template <i>template-number</i> Example: Router(config-bba-group)# virtual-template 1	Specifies the virtual template that will be used to clone virtual access interfaces for all PPPoE ports that use this PPPoE profile.
Step 5	sessions per-mac limit <i>per-mac-limit</i> Example: Router(config-bba-group)# sessions per-mac limit 1000	(Optional) Configures the maximum number of PPPoE sessions allowed per MAC session limit in a PPPoE profile. The default MAC session limit is 100.

	Command or Action	Purpose
Step 6	<p>sessions per-vlan limit <i>per-vlan-limit</i> [inner <i>vlan-id</i>]</p> <p>Example: Router(config-bba-group)# session per-vlan limit 4000 inner 3500</p>	<p>(Optional) Sets the session limit for the inner VLAN on QinQ subinterface. The default session limit is 100.</p> <p>Note The per-VLAN limit is only applicable to Gigabit Ethernet subinterfaces (802.1q VLANs).</p>
Step 7	<p>sessions per-vc limit <i>per-vc-limit</i> [threshold <i>threshold-value</i>]</p> <p>Example: Router(config-bba-group)# sessions per-vc limit 2000</p>	<p>(Optional) Sets the maximum number of PPPoE sessions allowed per VC session limit in a PPPoE profile. The default session limit is 100.</p> <p>Note The per-VC limit is applicable only to ATM interfaces and subinterfaces.</p>
Step 8	<p>sessions max limit <i>number-of-sessions</i> [threshold <i>threshold-value</i>]</p> <p>Example: Router(config-bba-group)# sessions max limit 32000</p>	<p>Configures the PPPoE global profile with the maximum number of PPPoE sessions that will be permitted on a router, and sets the PPPoE session-count threshold at which a Simple Network Management Protocol (SNMP) trap will be generated.</p> <p>Note This command applies only to the global profile.</p>
Step 9	<p>exit</p> <p>Example: Router(config-bba-group)# exit</p>	<p>Returns to global configuration mode.</p>

Specifying the Maximum Number of PPPoE Sessions on a Gigabit Ethernet Interface

Perform this task to specify the maximum number of PPPoE sessions that can be created on a Gigabit Ethernet interface.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** {GigabitEthernet | tenGigabitEthernet} *slot/subslot/port* [*,subinterface*]
4. **pppoe enable** [**group** *group-name*]
5. **pppoe max-sessions** *number*
6. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none">• Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	interface {GigabitEthernet tenGigabitEthernet} slot/subslot/port[.subinterface] Example: Router(config)# interface GigabitEthernet0/0/1	Specifies a Gigabit Ethernet interface and enters interface configuration mode.
Step 4	pppoe enable [group group-name] Example: Router(config-if)# pppoe enable group one	Enables PPPoE sessions on a Gigabit Ethernet interface or subinterface. Note If a PPPoE profile is not assigned to the interface through the use of the group group-name option, the interface will use the global PPPoE profile.
Step 5	pppoe max-sessions number Example: Router(config-if)# pppoe max-sessions 10	Specifies the maximum number of PPPoE sessions permitted on the interface or subinterface.
Step 6	end Example: Router(config-if)# end	(Optional) Exits interface configuration mode and returns to privileged EXEC mode.

Configuring System-Wide Threshold Parameters

Perform this task to configure the system-wide threshold parameters.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **bba-group pppoe global**
4. **sessions threshold** number
5. **exit**
6. **interface type** number
7. **pppoe-sessions threshold** number
8. **end**

9. show pppoe summary

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode.
Step 2	configure terminal Example: Router> configure terminal	Enters global configuration mode.
Step 3	bba-group pppoe global Example: Router(config)# bba-group pppoe global	Defines a PPPoE profile and enters BBA group configuration mode.
Step 4	sessions threshold number Example: Router(config-bba-group)# sessions threshold 1000	Configures the global threshold value.
Step 5	exit Example: Router(config-bba-group)# exit	Exits BBA group configuration mode and returns to privileged EXEC mode.
Step 6	interface type number Example: Router(config-if)# interface GigabitEthernet 0/0	Enters interface configuration mode.
Step 7	pppoe-sessions threshold number Example: Router(config-if)# pppoe-sessions threshold 1000	Configures per-session threshold value.
Step 8	end Example: Router(config-if)# end	Exits interface configuration mode and returns to privileged EXEC mode
Step 9	show pppoe summary Example: Router# show pppoe summary	Displays the count of PPPoE sessions in PTA, FWDED, and TRANS state for a particular physical interface.

Configuration Examples for PPP over Ethernet Session Limit Support

This section provides the following configuration examples:

- [Example: Specifying the Maximum Number of PPPoE Sessions on a Router, page 7](#)
- [Example: Specifying the Maximum Number of PPPoE Sessions on a Gigabit Ethernet Interface, page 7](#)
- [Example: Configuring the System-wide Threshold Parameters, page 7](#)

Example: Specifying the Maximum Number of PPPoE Sessions on a Router

The following example shows how to configure a limit of 1,000 PPPoE sessions for the router:

```
bba-group pppoe global
  virtual-template 1
  sessions per-mac limit 1000
  sessions per-vlan limit 4000 inner 3500
  sessions per-vc limit 2000
```

Example: Specifying the Maximum Number of PPPoE Sessions on a Gigabit Ethernet Interface

The following example shows how to configure a limit of ten PPPoE sessions on the Gigabit Ethernet interface:

```
interface GigabitEthernet 1/0/0
  pppoe enable
  pppoe max-sessions 10
```

The following example shows how to configure a limit of ten PPPoE sessions on the Gigabit Ethernet subinterface by using the **encapsulation** command:

```
interface GigabitEthernet 0/0/0.1
  encapsulation dot1q 2
  pppoe enable
  pppoe max-sessions 10
```

Example: Configuring the System-wide Threshold Parameters

The following example shows how to configure global and per-session threshold values:

```
Router# configure terminal
Router(config)# bba-group pppoe global
Router(config-bba-group)# sessions threshold 1000
Router(config-bba-group)# exit
Router# configure terminal
Router(config)# interface GigabitEthernet 0/0
Router(config-if)# pppoe-sessions threshold 90
Router(config-if)# end
```

The following example shows how to use the **show pppoe summary** command to display the count of the PPPoE sessions:

```
Router# show pppoe summary
```

```

PTA : Locally terminated sessions
FWDED: Forwarded sessions
TRANS: All other sessions (in transient state)
TOTAL PTA  FWDED TRANS
TOTAL 1      1      0      0
GigabitEthernet0/3/1 1      1      0      0

```

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	<i>Cisco IOS Master Commands List, All Releases</i>
Broadband and DSL commands	<i>Cisco IOS Broadband and DSL Command Reference</i>
Broadband access aggregation of PPPoE sessions	<i>Providing Protocol Support for Broadband Access Aggregation of PPPoE Sessions</i>

Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

MIBs

MIBs	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFCs	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

Technical Assistance

Description	Link
<p>The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.</p>	<p>http://www.cisco.com/cisco/web/support/index.html</p>

Feature Information for Configuring PPP over Ethernet Session Limit Support

Table 1 lists the features in this module and provides links to specific configuration information.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.


Note

Table 1 lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Table 1 Feature Information for Providing PPP over Ethernet Session Limit Support

Feature Name	Releases	Feature Information
PPP over Ethernet Session Limit Support	Cisco IOS XE Release 2.1 Cisco IOS XE Release 2.4	<p>This feature was introduced on Cisco ASR 1000 Series Aggregation Services Routers.</p> <p>The PPPoE Session Limit Support feature enables you to limit the number of PPPoE sessions that can be created on a router or on a Gigabit Ethernet interface for configuration.</p> <p>This feature was integrated into Cisco IOS XE Release 2.4.</p> <p>The following sections provide information about this feature:</p> <ul style="list-style-type: none"> • Information About Configuring PPP over Ethernet Session Limit Support, page 2 • How to Configure PPP over Ethernet Session Limit Support, page 2
SNMP Enhancements for ASR 1000	Cisco IOS XE Release 3.2S	<p>The SNMP Enhancements for ASR 1000 feature enhances Cisco ASR 1000 Aggregation Series Routers to provide the count of the PPPOE sessions in PTA, Forwarded, and TRANS state for a particular physical interface, and the total count of sessions that exist in a physical interface.</p> <p>This feature was introduced in Cisco IOS XE 3.2S.</p> <p>The following sections provide information about this feature:</p> <ul style="list-style-type: none"> • Information About Configuring PPP over Ethernet Session Limit Support, page 2 • How to Configure PPP over Ethernet Session Limit Support, page 2 <p>The following commands were introduced or modified: pppoe-sessions threshold, sessions threshold.</p>

Cisco and the Cisco Logo are trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and other countries. A listing of Cisco's trademarks can be found at www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1005R)

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

© 2005–2010 Cisco Systems, Inc. All rights reserved.

