



Monitoring PPPoE Sessions with SNMP

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The PPPoE Session Count Management Information Base feature provides the ability to use Simple Network Management Protocol (SNMP) to monitor in real time the number of PPP over Ethernet (PPPoE) sessions configured on permanent virtual circuits (PVCs) and on a router.

The SNMP Traps for PPPoE Session Limits feature provides SNMP MIB support for the PPPoE session limits and generates notifications in case the limits are reached.

This MIB also supports two SNMP traps that generate notification messages when a PPPoE session-count threshold is reached on any PVC or on the router. The PPPoE session-count thresholds can be configured using the **sessions max limit** and **pppoe max-sessions** commands.

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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 Table at the end of this document.

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



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Prerequisites for Monitoring PPPoE Sessions with SNMP

- You must understand the concepts described in the Preparing for Broadband Access Aggregation module.
- PPPoE sessions must be established using the procedures in the Providing Protocol Support for Broadband Access Aggregation of PPPoE Sessions module.

Restrictions for Monitoring PPPoE Sessions with SNMP

The `snmp-server enable traps pppoe` command enables SNMP traps only. It does not support inform requests.

Information About Monitoring PPPoE Sessions with SNMP

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Network Management Protocol

SNMP is a network management protocol used almost exclusively in TCP/IP networks. SNMP provides a means to monitor and control network devices and to manage configurations, statistics collection, performance, and security. SNMP version 2 supports centralized and distributed network management strategies and includes improvements in the Structure of Management Information (SMI), protocol operations, management architecture, and security.

PPPoE Session Count MIB

A MIB is a database of network management information that is used and maintained by a network management protocol, such as SNMP. The value of a MIB object can be changed or retrieved using SNMP commands, usually through a network management system.

The PPPoE Session Count MIB uses two SNMP traps that generate notification messages when a PPPoE session-count threshold is reached on any PVC or on the router. The PPPoE session-count thresholds can be configured using the `sessions max limit` and `pppoe max-sessions` commands. You can also set per-MAC session and IWF limits for a PPPoE session, per-MAC throttle rate limit for a PPPoE session, per-VLAN session configuration limit, per-VLAN throttle rate limit, per-VC session configuration limit, and per-VC throttle rate limit configuration limit.

The table below describes the objects and tables supported by the PPPoE Session-Count MIB. For a complete description of the MIB, see the PPPoE Sessions Management MIB file CISCO-PPPOE-MIB.my, available through Cisco.com at the following URL: <http://tools.cisco.com/TTDIT/MIBS/servlet/index>.

Table 1 *PPPoE Session Count MIB Objects and Tables*

Object or Table	Description
cPppoeSystemCurrSessions	Number of PPPoE sessions active on the router.
cPppoeSystemHighWaterSessions	Highest number of PPPoE sessions configured at a particular time after the system was initialized.
cPppoeSystemMaxAllowedSessions	Number of PPPoE sessions configurable on the router.
cPppoeSystemThresholdSessions	Threshold value of PPPoE sessions configurable on the router.
cPppoeSystemExceededSessionErrors	Accumulated number of errors on the router that have occurred because the cPppoeSystemCurrSessions value exceeded the cPppoeSystemMaxAllowedSessions value.
cPppoeSystemPerMacSessionlimit	Per-MAC session limit for a PPPoE session
cPppoeSystemPerMacIWFSessionlimit	Per-MAC session IWF limit for a PPPoE session
cPppoeSystemPerMacThrottleRatelimit	Per-MAC throttle rate limit for a PPPoE session
cPppoeSystemPerVLANlimit	Per-VLAN session configuration limit
cPppoeSystemPerVLANthrottleRatelimit	Per-VLAN throttle rate limit
cPppoeSystemPerVCLimit	Per-VC session configuration limit
cPppoeSystemPerVCThrottleRatelimit	Per-VC throttle rate limit configuration limit
cPppoeVcCfgTable	PPPoE protocol-related configuration information about the virtual channel links (VCLs).
cPppoeVcSessionsTable	Configuration information and statistics about the number of PPPoE sessions on the VCLs.
cPppoeSystemSessionThresholdTrap	Generates a notification message when the number of PPPoE sessions on the router reaches the configured threshold value.
cPppoeVcSessionThresholdTrap	Generates a notification message when the number of PPPoE sessions on the PVC reaches the configured threshold value.

Benefits of Monitoring PPPoE Sessions with SNMP

The monitoring of PPPoE sessions with SNMP provides the following benefits:

- It helps manage the number of PPPoE sessions configured on a router or PVC by sending notification messages when the PPPoE session threshold has been reached.
- It provides a way of tracking PPPoE session information over time.

How to Configure Monitoring of PPPoE Sessions with SNMP

- [Configuring the PPPoE Session-Count Threshold for the Router, page 4](#)
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Configuring the PPPoE Session-Count Threshold for the Router

Perform this task to configure the PPPoE session-count threshold for the router.



Note

The **sessions max limit** command is available only if you configure the **bba-group pppoe** command using the **global** keyword.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **snmp-server enable traps pppoe**
4. **bba-group pppoe** {*group-name* | **global**}
5. **sessions max limit** *session-number* [**threshold** *threshold-value*]
6. **virtual-template** *template-number*
7. **end**
8. **more system:running-config**

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.

Command or Action	Purpose
<p>Step 3 <code>snmp-server enable traps pppoe</code></p> <p>Example:</p> <pre>Router(config)# snmp-server enable traps pppoe</pre>	<p>(Optional) Enables PPPoE session count SNMP notifications.</p> <ul style="list-style-type: none"> This command enables SNMP traps that send notification messages when PPPoE sessions have been reached.
<p>Step 4 <code>bba-group pppoe {group-name global}</code></p> <p>Example:</p> <pre>Router(config)# bba-group pppoe global</pre>	<p>Configures a BBA group to be used to establish PPPoE sessions and enters BBA group configuration mode.</p>
<p>Step 5 <code>sessions max limit session-number [threshold threshold-value]</code></p> <p>Example:</p> <pre>Router(config-bba-group)# sessions max limit 4000 threshold 3000</pre>	<p>Configures the PPPoE global profile with the maximum number of PPPoE sessions permitted on a router and sets the PPPoE session-count threshold at which an SNMP trap will be generated.</p> <p>Note This command applies only to the global profile.</p>
<p>Step 6 <code>virtual-template template-number</code></p> <p>Example:</p> <pre>Router(config-bba-group)# virtual-template 1</pre>	<p>Specifies the virtual template that will be used to clone the virtual access interfaces (VAI).</p>
<p>Step 7 <code>end</code></p> <p>Example:</p> <pre>Router(config-bba-group)# end</pre>	<p>Exits BBA group configuration mode and returns to privileged EXEC mode.</p>
<p>Step 8 <code>more system:running-config</code></p> <p>Example:</p> <pre>Router(#) more system:running-config</pre>	<p>Displays the running configuration and the PPPoE session-count thresholds.</p>

Configuring the PPPoE Session-Count Threshold for a PVC

Perform this task to configure the PPPoE session-count threshold for a PVC.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **snmp-server enable traps pppoe**
4. **interface atm slot / subslot / port [.subinterface] [multipoint | point-to-point]**
5. **pvc [name] vpi / vci**
6. **pppoe max-sessions number-of-sessions [threshold-sessions number-of-sessions]**
7. **protocol pppoe**
8. **end**
9. **more system:running-config**

DETAILED STEPS

Command or Action	Purpose
Step 1 enable Example: <pre>Router> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2 configure terminal Example: <pre>Router# configure terminal</pre>	Enters global configuration mode.
Step 3 snmp-server enable traps pppoe Example: <pre>Router(config)# snmp-server enable traps pppoe</pre>	(Optional) Enables PPPoE session count SNMP notifications. <ul style="list-style-type: none"> • This command enables SNMP traps that send notification messages when PPPoE session thresholds have been reached.
Step 4 interface atm slot / subslot / port [.subinterface] [multipoint point-to-point] Example: <pre>Router(config)# interface atm 0/0/0.3 point-to-point</pre>	Configures the ATM interface and enters subinterface configuration mode.
Step 5 pvc [name] vpi / vci Example: <pre>Router(config-subif)# pvc 5/120</pre>	Creates an ATM PVC and enters ATM VC configuration mode.

Command or Action	Purpose
<p>Step 6 <code>pppoe max-sessions <i>number-of-sessions</i> [threshold-sessions <i>number-of-sessions</i>]</code></p> <p>Example:</p> <pre>Router(config-if-atm-vc)# pppoe max-sessions 5 threshold-sessions 3</pre>	<p>Sets the maximum number of PPPoE sessions that will be permitted on an ATM PVC, PVC range, VC class, or VLAN, and sets the PPPoE session-count threshold at which an SNMP trap will be generated.</p>
<p>Step 7 <code>protocol pppoe</code></p> <p>Example:</p> <pre>Router(config-if-atm-vc)# protocol pppoe</pre>	<p>Enables PPPoE sessions to be established on ATM PVCs.</p>
<p>Step 8 <code>end</code></p> <p>Example:</p> <pre>Router(config-if-atm-vc)# end</pre>	<p>(Optional) Exits ATM VC configuration mode and returns to sub interface mode.</p>
<p>Step 9 <code>more system:running-config</code></p> <p>Example:</p> <pre>Router(#) more system:running-config</pre>	<p>Displays the running configuration and the PPPoE session-count thresholds.</p>

Configuring the PPPoE Session-Count Threshold for a VC Class

Perform this task to configure the PPPoE session-count threshold for a VC class.

SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `snmp-server enable traps pppoe`
4. `vc-class atm name`
5. `pppoe max-sessions number-of-sessions [threshold-sessions number-of-sessions]`
6. `protocol pppoe [group group-name | global]`
7. `end`
8. `more system:running-config`

DETAILED STEPS

Command or Action	Purpose
<p>Step 1 <code>enable</code></p> <p>Example:</p> <pre>Router> enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> Enter your password if prompted.
<p>Step 2 <code>configure terminal</code></p> <p>Example:</p> <pre>Router# configure terminal</pre>	<p>Enters global configuration mode.</p>
<p>Step 3 <code>snmp-server enable traps pppoe</code></p> <p>Example:</p> <pre>Router(config)# snmp-server enable traps pppoe</pre>	<p>(Optional) Enables PPPoE session count SNMP notifications.</p> <ul style="list-style-type: none"> This command enables SNMP traps that send notification messages when PPPoE session thresholds have been reached.
<p>Step 4 <code>vc-class atm name</code></p> <p>Example:</p> <pre>Router(config)# vc-class atm main</pre>	<p>Creates a VC class for an ATM PVC, or SVC, or ATM interface and enters VC class configuration mode.</p>
<p>Step 5 <code>pppoe max-sessions number-of-sessions [threshold-sessions number-of-sessions]</code></p> <p>Example:</p> <pre>Router(config-vc-class)# pppoe max-sessions 7 threshold-sessions 3</pre>	<p>Sets the maximum number of PPPoE sessions that will be permitted on an ATM PVC, PVC range, VC class, or VLAN, and sets the PPPoE session-count threshold at which an SNMP trap will be generated.</p>
<p>Step 6 <code>protocol pppoe [group group-name global]</code></p> <p>Example:</p> <pre>Router(config-vc-class)# protocol pppoe group one</pre>	<p>Enables PPPoE sessions to be established.</p>
<p>Step 7 <code>end</code></p> <p>Example:</p> <pre>Router(config-vc-class)# end</pre>	<p>(Optional) Exits VC class configuration mode and returns to privileged EXEC mode.</p>

Command or Action	Purpose
Step 8 <code>more system:running-config</code> Example: <code>Router(#) more system:running-config</code>	Displays the running configuration and the PPPoE session-count thresholds.

Configuring the PPPoE Session-Count Threshold for an ATM PVC Range

SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `snmp-server enable traps pppoe`
4. `interface atm slot / subslot / port [.subinterface] [multipoint | point-to-point]`
5. `range [range-name] pvc start-vpi / start-vci end-vpi / end-vci`
6. `pppoe max-sessions number-of-sessions [threshold-sessions number-of-sessions]`
7. `protocol pppoe [group group-name | global]`
8. `end`
9. `more system:running-config`

DETAILED STEPS

Command or Action	Purpose
Step 1 <code>enable</code> Example: <code>Router> enable</code>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2 <code>configure terminal</code> Example: <code>Router# configure terminal</code>	Enters global configuration mode.
Step 3 <code>snmp-server enable traps pppoe</code> Example: <code>Router(config)# snmp-server enable traps pppoe</code>	(Optional) Enables PPPoE session count SNMP notifications. <ul style="list-style-type: none"> • This command enables SNMP traps that send notification messages when PPPoE session thresholds have been reached.

Command or Action	Purpose
<p>Step 4 <code>interface atm slot / subslot / port [.subinterface] [multipoint point-to-point]</code></p> <p>Example:</p> <pre>Router(config)# interface atm 0/0/0.3 point-to-point</pre>	Configures the ATM interface and enters the subinterface configuration mode.
<p>Step 5 <code>range [range-name] pvc start-vpi / start-vci end-vpi / end-vci</code></p> <p>Example:</p> <pre>Router(config-subif)# range pvc 3/100 3/105</pre>	Defines a range of ATM PVCs and enters ATM PVC range configuration mode.
<p>Step 6 <code>pppoe max-sessions number-of-sessions [threshold-sessions number-of-sessions]</code></p> <p>Example:</p> <pre>Router(config-if-atm-range)# pppoe max-sessions 20 threshold-sessions 15</pre>	Sets the maximum number of PPPoE sessions that will be permitted on an ATM PVC, PVC range, VC class, or VLAN, and sets the PPPoE session-count threshold at which an SNMP trap will be generated.
<p>Step 7 <code>protocol pppoe [group group-name global]</code></p> <p>Example:</p> <pre>Router(config-if-atm-range)# protocol pppoe group two</pre>	Enables PPPoE sessions to be established.
<p>Step 8 <code>end</code></p> <p>Example:</p> <pre>Router(config-if-atm-range)# end</pre>	(Optional) Exits ATM PVC range configuration mode and returns to privileged EXEC mode.
<p>Step 9 <code>more system:running-config</code></p> <p>Example:</p> <pre>Router(#) more system:running-config</pre>	Displays the running configuration and the PPPoE session-count thresholds.

Configuring the PPPoE Session-Count Threshold for an Individual PVC Within a Range

Perform this task to configure the PPPoE session-count threshold for an individual PVC within an ATM PVC range.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **snmp-server enable traps pppoe**
4. **interface atm slot / subslot / port [..subinterface] [multipoint | point-to-point]**
5. **range [range-name] pvc start-vpi / start-vci end-vpi /end-vci**
6. **pvc-in-range [pvc-name] [vpi / vci]**
7. **pppoe max-sessions number-of-sessions [threshold-sessions number-of-sessions]**
8. **end**
9. **more system:running-config**

DETAILED STEPS

Command or Action	Purpose
<p>Step 1 enable</p> <p>Example:</p> <pre>Router> enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> • Enter your password if prompted.
<p>Step 2 configure terminal</p> <p>Example:</p> <pre>Router# configure terminal</pre>	<p>Enters global configuration mode.</p>
<p>Step 3 snmp-server enable traps pppoe</p> <p>Example:</p> <pre>Router(config)# snmp-server enable traps pppoe</pre>	<p>(Optional) Enables PPPoE session count SNMP notifications.</p> <ul style="list-style-type: none"> • This command enables SNMP traps that send notification messages when PPPoE session thresholds have been reached.
<p>Step 4 interface atm slot / subslot / port [..subinterface] [multipoint point-to-point]</p> <p>Example:</p> <pre>Router(config)# interface atm 6/0.110 multipoint</pre>	<p>Configures the ATM interface and enters subinterface configuration mode.</p>
<p>Step 5 range [range-name] pvc start-vpi / start-vci end-vpi /end-vci</p> <p>Example:</p> <pre>Router(config-subif)# range range1 pvc 3/100 4/199</pre>	<p>Defines a range of ATM PVCs and enters ATM PVC Range configuration mode.</p>

Command or Action	Purpose
Step 6 <code>pvc-in-range [pvc-name] [vpi / vci]</code> Example: <pre>Router(config-if-atm-range)# pvc-in-range pvc1 3/104</pre>	Configures an individual PVC within a PVC range and enters ATM PVC-in-range configuration mode.
Step 7 <code>pppoe max-sessions number-of-sessions [threshold-sessions number-of-sessions]</code> Example: <pre>Router(cfg-if-atm-range-pvc)# pppoe max-sessions 10 threshold-sessions 5</pre>	Sets the maximum number of PPPoE sessions that will be permitted on an ATM PVC, PVC range, VC class, or VLAN, and sets the PPPoE session-count threshold at which an SNMP trap will be generated.
Step 8 <code>end</code> Example: <pre>Router(cfg-if-atm-range-pvc)# end</pre>	(Optional) Exits ATM PVC-in-range configuration mode and returns to privileged EXEC mode.
Step 9 <code>more system:running-config</code> Example: <pre>Router(#) more system:running-config</pre>	Displays the running configuration and the PPPoE session-count thresholds.

Monitoring and Maintaining PPPoE Session Counts and SNMP Notifications

Perform the following task to monitor PPPoE sessions counts and SNMP notifications.

SUMMARY STEPS

1. `enable`
2. `debug snmp packets`
3. `debug pppoe errors [rmac remote-mac-address | interface type number [vc {[vpi /]vci | vc-name}] [vlan vlan-id]]`
4. `debug pppoe events [rmac remote-mac-address | interface type number [vc {[vpi /]vci | vc-name}] [vlan vlan-id]]`
5. `show vpdn session`
6. `show pppoe session`

DETAILED STEPS

Step 1 `enable`

Use this command to enable privileged EXEC mode. Enter your password when prompted.

Example:

```
Router> enable
```

Step 2

debug snmp packets

Use this command to display information about every SNMP packet sent or received by the router:

Example:

```
Router# debug snmp packets
SNMP: Packet received via UDP from 192.0.2.11 on GigabitEthernet1/0
SNMP: Get-next request, reqid 23584, errstat 0, erridx 0
  sysUpTime = NULL TYPE/VALUE
  system.1 = NULL TYPE/VALUE
  system.6 = NULL TYPE/VALUE
SNMP: Response, reqid 23584, errstat 0, erridx 0
  sysUpTime.0 = 2217027
  system.1.0 = Cisco Internetwork Operating System Software
  system.6.0 =
SNMP: Packet sent via UDP to 192.0.2.11
```

Step 3

debug pppoe errors [rmac remote-mac-address | interface type number [vc {[vpi /]vci | vc-name}] [vlan vlan-id]]

Use this command to display PPPoE protocol errors that prevent a session from being established or errors that cause an established session to be closed.

Example:

```
Router# debug pppoe errors interface atm 1/0.10
PPPoE protocol errors debugging is on
Router#
00:44:30:PPPoE 0:Max session count(1) on mac(00b0.c2e9.c470) reached.
00:44:30:PPPoE 0:Over limit or Resource low. R:00b0.c2e9.c470 L:ffff.ffff.ffff 0/101
ATM1/0.10
```

Step 4

debug pppoe events [rmac remote-mac-address | interface type number [vc {[vpi /]vci | vc-name}] [vlan vlan-id]]

Use this command to display PPPoE protocol messages about events that are part of normal session establishment or shutdown:

Example:

```
Router# debug pppoe events interface atm 1/0.10 vc 101

PPPoE protocol events debugging is on
Router#
00:41:55:PPPoE 0:I PADI R:00b0.c2e9.c470 L:ffff.ffff.ffff 0/101 ATM1/0.10
00:41:55:PPPoE 0:O PADO, R:00b0.c2e9.c470 L:0001.c9f0.0c1c 0/101 ATM1/0.10
00:41:55:PPPoE 0:I PADR R:00b0.c2e9.c470 L:0001.c9f0.0c1c 0/101 ATM1/0.10
00:41:55:PPPoE :encap string prepared
00:41:55:[3]PPPoE 3:Access IE handle allocated
00:41:55:[3]PPPoE 3:pppoe SSS switch updated
00:41:55:[3]PPPoE 3:AAA unique ID allocated
00:41:55:[3]PPPoE 3:No AAA accounting method list
00:41:55:[3]PPPoE 3:Service request sent to SSS
00:41:55:[3]PPPoE 3:Created R:0001.c9f0.0c1c L:00b0.c2e9.c470 0/101 ATM1/0.10
00:41:55:[3]PPPoE 3:State REQ_NASPORT Event MORE_KEYS
00:41:55:[3]PPPoE 3:O PADS R:00b0.c2e9.c470 L:0001.c9f0.0c1c 0/101 ATM1/0.10
00:41:55:[3]PPPoE 3:State START_PPP Event DYN_BIND
00:41:55:[3]PPPoE 3:data path set to PPP
```

```
00:41:57:[3]PPPoE 3:State LCP_NEGO      Event PPP_LOCAL
00:41:57:PPPoE 3/SB:Sent vtemplate request on base Vi2
00:41:57:[3]PPPoE 3:State CREATE_VA    Event VA_RESP
00:41:57:[3]PPPoE 3:Vi2.1 interface obtained
00:41:57:[3]PPPoE 3:State PTA_BIND     Event STAT_BIND
00:41:57:[3]PPPoE 3:data path set to Virtual Access
00:41:57:[3]PPPoE 3:Connected PTA
```

Step 5 **show vpdn session**

Use this command to display information about active Level 2 Forwarding (L2F) protocol tunnel and message identifiers on a VPDN:

Example:

```
Router# show vpdn session
%No active L2TP tunnels
%No active L2F tunnels
PPPoE Session Information Total tunnels 1 sessions 1
PPPoE Session Information
SID      RemMAC          LocMAC          Intf    VASt    OIntf    VC
1        0010.7b01.2cd9 0090.ab13.bca8 Vi4     UP      AT6/0    0/10
```

Step 6 **show pppoe session**

Use this command to display information about the currently active PPPoE sessions:

Example:

```
Router# show pppoe session
3 sessions in LOCALLY_TERMINATED (PTA) State
3 sessions total

Uniq ID  PPPoE  RemMAC          Port          VT  VA      State
      SID  LocMAC          VC:           VC:           VC:           VC:
1      1    0007.b3dc.a41c  ATM0/3/1.100  1  Vi2.1  PTA
      001a.3045.0331 VC: 99/100    UP
2      2    0007.b3dc.a41c  ATM0/3/1.100  1  Vi2.2  PTA
      001a.3045.0331 VC: 99/100    UP
3      3    0007.b3dc.a41c  ATM0/3/1.100  1  Vi2.3  PTA
      001a.3045.0331 VC: 99/100    UP

Router#
```

Configuration Examples for Monitoring PPPoE Sessions with SNMP

- [Configuring PPPoE Session-Count SNMP Traps Example, page 15](#)
- [PPPoE Session-Count Threshold for the Router Example, page 15](#)
- [PPPoE Session-Count Threshold for a PVC Example, page 15](#)
- [PPPoE Session-Count Threshold for a VC Class Example, page 15](#)
- [PPPoE Session-Count Threshold for a PVC Range Example, page 15](#)
- [PPPoE Session-Count Threshold for an Individual PVC Within a PVC Range Example, page 16](#)

Configuring PPPoE Session-Count SNMP Traps Example

The following example shows how to enable the router to send PPPoE session-count SNMP notifications to the host at the address 192.10.2.10:

```
snmp-server community public RW
snmp-server enable traps pppoe
snmp-server host 192.10.2.10 version 2c public udp-port 1717
```

PPPoE Session-Count Threshold for the Router Example

The following example shows a limit of 4000 PPPoE sessions configured for the router. The PPPoE session-count threshold is set at 3000 sessions, so when the number of PPPoE sessions on the router reaches 3000, an SNMP trap will be generated.

```
bba-group pppoe pppoe1
  sessions max limit 4000 threshold 3000
  virtual-template 1
pppoe limit max-sessions 4000 threshold-sessions 3000
```

PPPoE Session-Count Threshold for a PVC Example

The following example shows a limit of five PPPoE sessions configured for the PVC. The PPPoE session-count threshold is set at three sessions, so when the number of PPPoE sessions on the PVC reaches three, an SNMP trap will be generated.

```
interface ATM 0/0/0
  ip address 10.0.0.1 255.255.255.0
  no atm ilmi-keepalive
  pvc 5/120
    protocol ip 10.0.0.2 broadcast
    pppoe max-sessions 5 threshold-sessions 3
  protocol pppoe
```

PPPoE Session-Count Threshold for a VC Class Example

The following example shows a limit of seven PPPoE sessions configured for a VC class called "main." The PPPoE session-count threshold is set at three sessions, so when the number of PPPoE sessions for the VC class reaches three, an SNMP trap will be generated.

```
vc-class atm main
  protocol pppoe group global
vc-class atm global
  protocol pppoe
  pppoe max-sessions 7 threshold-sessions 3
```

PPPoE Session-Count Threshold for a PVC Range Example

The following example shows a limit of 20 PPPoE sessions configured for the PVC range. The PPPoE session-count threshold will also be 20 sessions because when the session-count threshold has not been explicitly configured, it defaults to the PPPoE session limit. An SNMP trap will be generated when the number of PPPoE sessions for the range reaches 20.

```
interface ATM 0/0/0.3 point-to-point
  range pvc 3/100 3/105
```

```
pppoe max-sessions 20 threshold-sessions 15
protocol pppoe
```

PPPoE Session-Count Threshold for an Individual PVC Within a PVC Range Example

The following example shows a limit of ten PPPoE sessions configured for pvc1. The PPPoE session-count threshold is set at three sessions, so when the number of PPPoE sessions for the PVC reaches three, an SNMP trap will be generated.

```
interface atm 6/0.110 multipoint
range rangel pvc 100 4/199
pvc-in-range pvcl 3/104
pppoe max-sessions 10 threshold-sessions 3
```

Where to Go Next

- If you want to establish PPPoE session limits for sessions on a specific PVC or VLAN configured on an L2TP access concentrator, refer to the "Establishing PPPoE Session Limits per NAS Port" module.
- If you want to use service tags to enable a PPPoE server to offer PPPoE clients a selection of service during call setup, refer to the "Offering PPPoE Clients a Selection of Services During Call Setup" module.
- If you want to enable an L2TP access concentrator to relay active discovery and service selection functionality for PPPoE over an L2TP control channel to a LNS or tunnel switch, refer to the "Enabling PPPoE Relay Discovery and Service Selection Functionality" module.
- If you want to configure the transfer upstream of the PPPoX session speed value, refer to the "Configuring Upstream Connection Speed Transfer" module.
- If you want to identify a physical subscriber line for RADIUS communication with a RADIUS server, refer to the "Identifying the Physical Subscriber Line for RADIUS Access and Accounting" module.
- If you want to configure a Cisco Subscriber Service Switch, refer to the "Configuring Cisco Subscriber Service Switch Policies" module.

Additional References

The following sections provide references related to monitoring PPPoE sessions with SNMP.

Related Documents

Related Topic	Document Title
Broadband access aggregation concepts	Understanding Broadband Access Aggregation
Tasks for preparing for broadband access aggregation	Preparing for Broadband Access Aggregation
Configuring PPPoE sessions	Providing Protocol Support for Broadband Access Aggregation of PPPoE Sessions

Related Topic	Document Title
Establishing PPPoE session limits for sessions on a specific PVC or VLAN configured on an L2TP access concentrator	Establishing PPPoE Session Limits per NAS Port
Using service tags to enable a PPPoE server to offer PPPoE clients a selection of service during call setup	Offering PPPoE Clients a Selection of Services During Call Setup
Enabling an L2TP access concentrator to relay active discovery and service selection functionality for PPPoE over an L2TP control channel to a LNS or tunnel switch	Enabling PPPoE Relay Discovery and Service Selection Functionality
Configuring the transfer upstream of the PPPoX session speed value	Configuring Upstream Connection Speed Transfer
Identifying a physical subscriber line for RADIUS communication with a RADIUS server	Identifying the Physical Subscriber Line for RADIUS Access and Accounting
Configuring a Cisco Subscriber Service Switch	Configuring Cisco Subscriber Service Switch Policies

Standards

Standards	Title
None	--

MIBs

MIBs	MIBs Link
PPPoE Session Count MIB	To locate and download MIBs for selected platforms, Cisco IOS XE software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://tools.cisco.com/ITDIT/MIBS/servlet/index http://tools.cisco.com/ITDIT/MIBS/servlet/index

RFCs

RFCs	Title
None	--

Technical Assistance

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	http://www.cisco.com/techsupport

Feature Information for Monitoring PPPoE Sessions with SNMP

The following table provides release information about the feature or features described in this module. This table 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.

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

Table 2 Feature Information for Monitoring PPPoE Sessions with SNMP

Feature Name	Releases	Feature Configuration Information
PPPoE Session Count MIB, SNMP Traps for PPPoE Session Limits	Cisco IOS XE Release 2.5.0 Cisco IOS XE Release 2.6	<p>This feature was introduced on Cisco ASR 1000 Series Aggregation Routers.</p> <p>This feature provides the ability to use SNMP to monitor in real time the number of PPP over Ethernet sessions configured on PVCs and on a router. You can also retrieve information from the MIB.</p> <p>The SNMP Traps for PPPoE Session Limits feature implements SNMP MIB support for the PPPoE session limits and generates notifications in case the limits are reached.</p> <p>The following commands were introduced or modified:</p> <p>snmp-server enable traps pppoe</p>

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