



PPPoE RADIUS Port Identification

This document describes the PPPoE RADIUS Port Identification feature and includes the following sections:

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Feature Overview

The PPPoE RADIUS Port Identification feature enables an L2TP access concentrator (LAC) and an L2TP network server (LNS) to identify and forward NAS-Port and NAS-Port-Type attribute values for PPP over Ethernet (PPPoE) over ATM and PPPoE over IEEE 802.1Q VLANs.

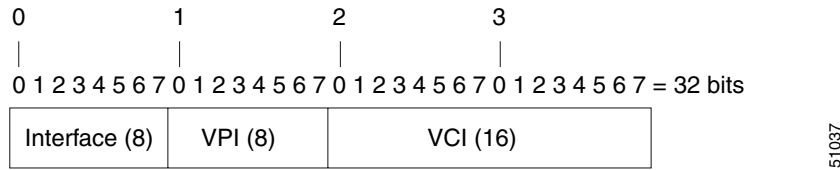
Before the introduction of the PPPoE RADIUS Port Identification feature, if you were using PPP over ATM, you could use the **radius-server attribute nas-port format** command to configure the NAS-Port field for the PPP extended format. Specifying the PPP extended format increased the size of the NAS-Port attribute field to 32 bits and changed the NAS-Port attribute format to provide the RADIUS server with details about the ATM port, virtual path identifier (VPI), and virtual channel identifier (VCI).

The PPPoE RADIUS Port Identification feature extends the functionality of the PPP extended NAS-Port format to support PPPoE over ATM and PPPoE over IEEE 802.1Q VLANs, in addition to PPP over ATM.

PPPoE over ATM

For PPPoE over ATM, the PPP extended format enables the NAS-Port attribute field to provide details about the ATM interface, VPI, and VCI. Figure 1 shows the format of the NAS-Port attribute field when the PPP extended NAS-Port format is configured and PPPoE over ATM is being used.

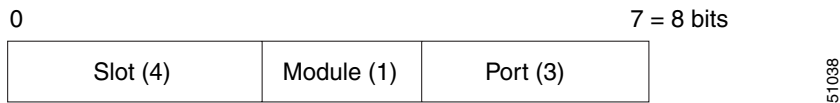
Figure 1 Format of the NAS-Port Attribute Field for PPPoE over ATM



The interface, VPI, and VCI correspond to the interface and virtual circuit (VC) on which the session entered the router. For Cisco 6400 series routers, the interface, VPI, and VCI correspond to the interface and VC on which the session entered the Cisco 6400 node switch processor (NSP).

Figure 2 shows the format of the 8-bit interface field. For platforms that do not have slots or modules, the slot and module fields will be 0.

Figure 2 Format of the Interface Field for PPPoE over ATM



The NAS-Port-Type value for PPPoE over ATM is 5, which is the value for virtual port types.

PPPoE over IEEE 802.1Q VLANs

For PPPoE over 802.1Q VLANs, the PPP extended format provides details about the interface and the VLAN ID. Figure 3 shows the format of the NAS-Port attribute field when the PPP extended NAS-Port format is configured and PPPoE over an IEEE 802.1Q VLAN is being used.

Figure 3 Format of the NAS-Port Attribute Field for PPPoE over 802.1Q VLANs

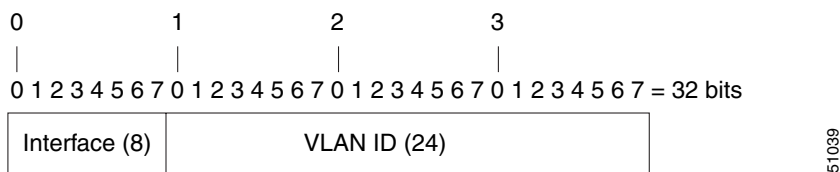
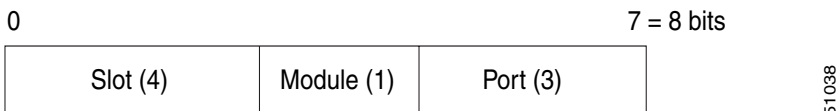


Figure 4 shows the format of the 8-bit interface field. For platforms that do not have slots or modules, the slot and module fields will be 0.

Figure 4 Format of the Interface Field for PPPoE over 802.1Q VLANs



The NAS-Port-Type value for PPPoE over 802.1Q VLANs is 15.

PPPoE RADIUS Port Identification on the LNS

The PPPoE RADIUS Port Identification feature enables an LNS to recognize PPP extended NAS-Port format information that has been sent from the LAC. When this feature is enabled on an LNS, the LNS will forward the NAS-Port and NAS-Port-Type values for PPP over ATM, PPPoE over ATM, and PPPoE over 802.1Q VLANs to the RADIUS server for accounting.

Benefits

The PPPoE RADIUS Port Identification feature introduces command line and value format consistency across various PPPoE media contexts for digital subscriber line (DSL) implementers.

Prior to the introduction of this feature, the **radius-server attribute nas-port format** command could be used to specify the PPP extended NAS-Port format, which supported PPP over ATM. With the introduction of this feature, the same command can be used to configure the PPP extended format for PPPoE over ATM and for PPPoE over 802.1Q VLANs as well. In addition, the PPP extended format can now be used on the LNS for L2TP tunneling.

Restrictions

In order for the LNS to forward PPP extended NAS-Port format values to the RADIUS server, both the LAC and the LNS must be Cisco routers running a Cisco IOS image that supports the PPPoE RADIUS Port Identification feature.

Related Features and Technologies

- PPP over ATM
- PPPoE over ATM
- PPPoE over 802.1Q VLANs
- RADIUS attributes and accounting

Related Documents

- *PPPoE on ATM*, Cisco IOS Release 12.1(1)T
- *PPPoE over IEEE 802.1Q VLANs*, Cisco IOS Release 12.1(5)T
- *Cisco IOS Security Configuration Guide*, Release 12.1
- *Cisco IOS Security Command Reference*, Release 12.1
- *Cisco IOS Wide-Area Networking Configuration Guide*, Release 12.1
- *Cisco IOS Wide-Area Networking Command Reference*, Release 12.1
- RFC 2516, *A Method for Transmitting PPP over Ethernet (PPPoE)*

Supported Platforms

- Cisco 3620
- Cisco 3640
- Cisco 4500-M series
- Cisco 7200 series
- Cisco 7500 series

Supported Standards, MIBs, and RFCs

Standards

No new or modified standards are supported by this feature.

MIBs

No new or modified MIBs are supported by this feature.

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 Connection Online (CCO) at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

RFCs

No new or modified RFCs are supported by this feature.

Configuration Tasks

See the following sections for configuration tasks for the PPPoE RADIUS Port Identification feature. Each task in the list is identified as optional or required.

- Configuring the LAC for PPPoE RADIUS Port Identification (Required)
- Configuring the LNS for PPPoE RADIUS Port Identification (Required)

Configuring the LAC for PPPoE RADIUS Port Identification

To configure the LAC with the NAS-Port format for PPPoE over ATM and PPPoE over 802.1Q VLANs, use the following command in global configuration mode:

Command	Purpose
Router(config)# radius-server attribute nas-port format d	Specifies that PPP extended NAS-Port format will be used for RADIUS accounting.

Configuring the LNS for PPPoE RADIUS Port Identification

To configure the LNS to recognize the NAS-Port format for PPP over ATM, PPPoE over ATM, and PPPoE over 802.1Q VLANs, use the following commands in global configuration mode:

	Command	Purpose
Step 1	Router(config)# radius-server attribute nas-port format d	Specifies that PPP extended NAS-Port format will be used for RADIUS accounting.
Step 2	Router(config)# vpdn aaa attribute nas-port vpdn-nas	Enables the LNS to send PPP extended NAS-Port format values to the RADIUS server for accounting.

Verifying the PPPoE RADIUS Port Identification Feature

To verify that the PPPoE RADIUS Port Identification feature is configured correctly, use the following command in privileged EXEC mode:

Command	Purpose
Router# more system:running-config	Displays the running configuration.

Monitoring and Maintaining PPPoE RADIUS Port Identification

To monitor the PPPoE RADIUS Port Identification feature, use the following privileged EXEC command:

Command	Purpose
Router# debug radius	Displays information about RADIUS.

Configuration Examples

This section provides the following configuration examples:

- RADIUS Port Identification for PPPoE over ATM Example
- RADIUS Port Identification for PPPoE over an 802.1Q VLAN Example
- Configuring the LNS for PPPoE RADIUS Port Identification Example

RADIUS Port Identification for PPPoE over ATM Example

The following example shows the configuration of the PPP extended NAS-Port format on an LAC using PPPoE over ATM:

```
!  
vpdn enable  
no vpdn logging  
!  
vpdn-group pppoe  
  accept-dialin  
  protocol pppoe  
  virtual-template 2  
  pppoe limit per-mac 2000  
!  
!  
vpdn-group 2  
  request-dialin  
  protocol l2tp  
  domain testdomain.com  
  initiate-to ip 172.73.0.1  
  local name lac1  
!  
!  
interface ATM4/0.1 multipoint  
  pvc 1/33  
    encapsulation aal5snap  
    protocol pppoe  
end  
!  
aaa new-model  
aaa authentication ppp default local group radius  
aaa authorization network default local group radius  
aaa accounting network default start-stop group radius  
  
radius-server host 171.69.69.66 auth-port 1645 acct-port 1646  
radius-server retransmit 3  
radius-server attribute nas-port format d  
radius-server key rad123  
!
```

RADIUS Port Identification for PPPoE over an 802.1Q VLAN Example

The following example shows the configuration of the PPP extended NAS-Port format on an LAC running PPPoE over an 802.1Q VLAN:

```
!  
vpdn enable  
no vpdn logging  
!  
vpdn-group pppoe  
  accept-dialin  
  protocol pppoe  
  virtual-template 2  
  pppoe limit per-mac 2  
  pppoe limit per-vlan 10  
!  
vpdn-group 2  
  request-dialin  
  protocol l2tp  
  domain testdomain.com  
  initiate-to ip 172.73.0.1  
  local name lac1  
!  
interface FastEthernet2/0.2  
  encapsulation dot1Q 2  
  pppoe enable  
!  
interface FastEthernet2/0.3  
  encapsulation dot1Q 3  
  pppoe enable  
!  
aaa new-model  
aaa authentication ppp default local group radius  
aaa authorization network default local group radius  
aaa accounting network default start-stop group radius  
  
radius-server host 171.69.69.66 auth-port 1645 acct-port 1646  
radius-server retransmit 3  
radius-server attribute nas-port format d  
radius-server key rad123
```

Configuring the LNS for PPPoE RADIUS Port Identification Example

In the following example, the LNS is configured to recognize and forward PPP extended NAS-Port format values to the RADIUS server. The PPP extended NAS-Port format must also be configured on the LAC for this configuration to be effective.

```
vpdn enable
no vpdn logging
!
vpdn-group L2TP-tunnel
  accept-dialin
  protocol l2tp
  virtual-template 1
  terminate-from hostname lac1
  local name lns1
!
!
aaa new-model
aaa authentication ppp default local group radius
aaa authorization network default local group radius
aaa accounting network default start-stop group radius

radius-server host 171.79.79.76 auth-port 1645 acct-port 1646
radius-server retransmit 3
radius-server attribute nas-port format d
radius-server key lns123
!
vpdn aaa attribute nas-port vpdn-nas
!
```

Command Reference

This section documents modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.1 command reference publications.

- **radius-server attribute nas-port format**
- **vpdn aaa attribute nas-port vpdn-nas**

radius-server attribute nas-port format

To select the NAS-Port format used for RADIUS accounting features, use the **radius-server attribute nas-port format** global configuration command. To restore the default NAS-Port format, use the **no** form of this command.

radius-server attribute nas-port format *format*

no radius-server attribute nas-port format *format*

Syntax Description	<i>format</i>	NAS-Port format. Possible values for the format argument are as follows: a —Standard NAS-Port format b —Extended NAS-Port format c —Shelf-slot NAS-Port format d —PPP extended NAS-Port format
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Defaults Standard NAS-Port format

Command Modes Global configuration

Command History	Release	Modification
	11.3(7)T	This command was introduced.
	11.3(9)DB	The PPP extended NAS-Port format was added.
	12.1(5)T	The PPP extended NAS-Port format was expanded to support PPPoE over ATM and PPPoE over IEEE 802.1Q VLANs.

Usage Guidelines The **radius-server attribute nas-port format** command configures RADIUS to change the size and format of the NAS-Port attribute field (RADIUS IETF attribute 5).

The following NAS-Port formats are supported:

- Standard NAS-Port format—This 16-bit NAS-Port format indicates the type, port, and channel of the controlling interface. This is the default format used by Cisco IOS software.
- Extended NAS-Port format—The standard NAS-Port attribute field is expanded to 32 bits. The upper 16 bits of the NAS-Port attribute display the type and number of the controlling interface; the lower 16 bits indicate the interface that is undergoing authentication.
- Shelf-slot NAS-Port format—This 16-bit NAS-Port format supports expanded hardware models requiring shelf and slot entries.
- PPP extended NAS-Port format—This NAS-Port format uses 32 bits to indicate the interface, VPI, and VCI for PPP over ATM and PPPoE over ATM, and the interface and VLAN ID for PPPoE over IEEE 802.1Q VLANs.

**Note**

This command replaces the **radius-server attribute nas-port extended** command.

Examples

In the following example, a RADIUS server is identified, and the NAS-Port field is set to the PPP extended format:

```
radius-server host 172.31.5.96 auth-port 1645 acct-port 1646
radius-server attribute nas-port format d
```

Related Commands

Command	Description
vpdn aaa attribute nas-port vpdn-nas	Enables the LNS to send PPP extended NAS-Port format values to the RADIUS server for accounting.

vpdn aaa attribute nas-port vpdn-nas

To enable the L2TP network server (LNS) to send PPP extended NAS-Port format values to the RADIUS server for accounting, use the **vpdn aaa attribute nas-port vpdn-nas** global configuration command. To prevent the LNS from sending PPP extended NAS-Port format values, use the **no** form of this command.

vpdn aaa attribute nas-port vpdn-nas

no vpdn aaa attribute nas-port vpdn-nas

Syntax Description This command has no arguments or keywords.

Defaults The LNS will not send PPP extended NAS-Port format values to the RADIUS server.

Command Modes Global configuration

Command History	Release	Modification
	11.3(8.1)T	This command was introduced.
	12.1(5)T	This command was modified to support the PPP extended NAS-Port format.

Usage Guidelines The PPP extended NAS-Port format enables the NAS-Port and NAS-Port-Type attributes to provide port details to the RADIUS server when PPP over ATM, PPP over Ethernet (PPPoE) over ATM, or PPPoE over 802.1Q VLANs is used.

The **vpdn aaa attribute nas-port vpdn-nas** command should be configured on the LNS only. The **radius-server attribute nas-port format** command with the **d** keyword must also be configured on the LNS and the L2TP access concentrator (LAC), and the LAC and LNS must both be Cisco routers.

Examples

In the following example, the LNS is configured to recognize and forward PPP extended NAS-Port format values to the RADIUS server. PPP extended NAS-Port format must also be configured on the LAC for this configuration to be effective.

```

vpdn enable
no vpdn logging
!
vpdn-group L2TP-tunnel
  accept-dialin
  protocol l2tp
  virtual-template 1
  terminate-from hostname lac1
  local name lns1
!
aaa new-model
aaa authentication ppp default local group radius
aaa authorization network default local group radius
aaa accounting network default start-stop group radius

radius-server host 171.79.79.76 auth-port 1645 acct-port 1646
radius-server retransmit 3
radius-server attribute nas-port format d
radius-server key lns123
!
vpdn aaa attribute nas-port vpdn-nas

```

Related Commands

Command	Description
radius-server attribute nas-port format	Selects the NAS-Port format used for RADIUS accounting features.