

RADIUS VC Logging

Feature Overview

RADIUS Virtual Circuit (VC) Logging allows the Cisco 6400 Universal Access Concentrator to accurately record the virtual path interface (VPI) and virtual circuit interface (VCI) of an incoming subscriber session.

With RADIUS VC Logging enabled, the RADIUS network access server (NAS) port field is extended and modified to carry VPI/VCI information. This information is logged in the RADIUS accounting record that was created at session startup.

Benefits

Accurate VPI/VCI Information

The VPI/VCI of an incoming permanent virtual circuit (PVC) is recorded at the point of entry on the Cisco 6400 node switch processor (NSP), offering the RADIUS client a unique VPI/VCI for each incoming PVC.

Restrictions

Both PPPoE and PPPoA support RADIUS VC Logging in Cisco IOS Release 12.1(1)DC and later. In earlier releases, only PPPoA supports RADIUS VC Logging.

To use the RADIUS VC Logging feature on the Cisco 6400 NRP and the Combined Network Management Ethernet (NME) Interface feature on the Cisco 6400 system, the Cisco 6400 NSP must be running Cisco IOS Release 12.1(3)DB or later. See CSCdr81919 for more information.

Supported Platforms

RADIUS VC Logging is supported on the Cisco 6400.

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Supported Standards, MIBs, and RFCs

MIBs

None

RFCs

- RFC 2138, *Remote Authentication Dial In User Service (RADIUS)*, April 1997
- RFC 2139, *RADIUS Accounting*, April 1997

Standards

None

Configuration Tasks

Perform the following tasks to configure RADIUS VC logging:

- Configuring the NME Interface IP Address on the NSP
- Verifying the NME Interface IP Address
- Configuring RADIUS VC Logging on the NRP
- Verifying RADIUS VC Logging

Configuring the NME Interface IP Address on the NSP

The NAS-IP-Address field in the RADIUS accounting packet contains the IP address of the Network Management Ethernet (NME) port on the NSP, even if the NME is shutdown.

On an NSP that is pre-loaded with the Cisco IOS Release 12.0(5)DB or newer software image, the combined NME interface is included in the default configuration. If your NRP does not use a DHCP server to obtain an IP address, you must configure a static IP address. To configure a static combined NME IP address, enter the following commands beginning in global configuration mode:

Command	Purpose
Switch(config)# interface BVI1	Selects the combined NME interface.
Switch(config-if)# ip address address subnet	Configures a static IP and subnetwork address.

Instead of the combined NME interface, you can choose to use the Ethernet port as a separate NME interface. To configure the NME IP address, enter the following commands beginning in global configuration mode:

Command	Purpose
Switch(config)# interface ethernet 0/0/0	Selects the NME interface.
Switch(config-if)# ip address address subnet or Switch(config-if)# ip address negotiated	Configures a static IP and subnetwork address. Allows the interface to obtain an IP address, subnet mask, router address, and static routes from a DHCP server.

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You must configure the NME IP address before configuring PVCs on the NRP. Otherwise the NAS-IP-Address field in the RADIUS accounting packet will contain an incorrect IP address.

Verifying the NME Interface IP Address

To verify the NME IP address, enter the **show interface bvi1** or **show interface e0/0/0 EXEC** command on the NSP. Check the Internet address statement (indicated with an arrow).

```
Switch# show interface bvi1
BVI1 is up, line protocol is up
Hardware is BVI, address is 0010.7ba9.c783 (bia 0000.0000.0000)
Internet address is 10.1.1.33/16
MTU 1500 bytes, BW 10000 Kbit, DLY 5000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
ARP type:ARPA, ARP Timeout 04:00:00
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Queueing strategy:fifo
Output queue 0/0, 0 drops; input queue 0/75, 0 drops
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  1540 packets input, 302775 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  545 packets output, 35694 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets
  0 output buffer failures, 0 output buffers swapped out
Switch#
```

Configuring RADIUS VC Logging on the NRP

To enable RADIUS VC logging on the Cisco 6400 NRP, enter the following command in global configuration mode:

Command	Purpose
Router(config)# radius-server attribute nas-port format d	Selects the ATM VC extended format for the NAS port field.

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To verify RADIUS VC Logging on the RADIUS server, examine a RADIUS accounting packet. If RADIUS VC logging is enabled on the Cisco 6400, the RADIUS accounting packet will appear similar to the following example:

```

Wed Jun 16 13:57:31 1999
NAS-IP-Address = 192.168.100.192
→ NAS-Port = 268566560
NAS-Port-Type = Virtual
User-Name = "cisco"
Acct-Status-Type = Start
Service-Type = Framed
→ Acct-Session-Id = "1/0/0/2.32_00000009"
Framed-Protocol = PPP
Framed-IP-Address = 172.16.7.254
Acct-Delay-Time = 0

```

The **NAS-Port** line shows that RADIUS VC logging is enabled. If this line does not appear in the display, then RADIUS VC logging is not enabled on the Cisco 6400.

The **Acct-Session-Id** line should also identify the incoming NSP interface and VPI/VCI information, in this format:

```
Acct-Session-Id = "slot/subslot/port/VPI.VCI_acct-session-id"
```

**Note**

The **NAS-IP-Address** line in the RADIUS accounting packet contains the IP address of the NME port on the NSP, even if the NME is shutdown. If the NME on the NSP does not have an IP address, this NAS-IP-Address field will contain "0.0.0.0."

Configuration Example

In the following example, a RADIUS server is identified, and the NAS port field is set to ATM VC Extended format:

```

radius-server host 10.31.5.96 auth-port 1645 acct-port 1646
radius-server attribute nas-port format d

```

Command Reference

This section documents the new command that configures the RADIUS VC Logging feature.

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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.

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

Syntax Description

format

Choose one of the following keywords:

- a**—Standard NAS port format.
- b**—Extended NAS port format.
- c**—Shelf-slot NAS port format.
- d**—ATM VC extended NAS port format.

Default

Standard NAS port format.

Command Modes

EXEC

Command History

Release	Modification
11.3(7)T	This command was first introduced.
11.3(9)DB and 12.0(5)DC	The d format was added for the Cisco 6400 NRP.

Usage Guidelines

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

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).

- **Standard format (a)**—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 format (b)**—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 undergoing authentication.
- **Shelf-slot format (c)**—This 16-bit NAS port format supports expanded hardware models requiring shelf and slot entries.
- **ATM VC extended format (d)**—This NAS port format uses 32 bits to indicate the interface, VPI, and VCI of an incoming PPP session.

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The ATM VC extended NAS port format on the NRP applies only to VCs created or recreated after the command is entered. The format does not apply retroactively to VCs configured before the **radius-server attribute nas-port format d** command is entered.

Examples

The following example selects the ATM VC extended NAS port format, used for RADIUS VC Logging:

```
radius-server attribute nas-port format d
```

Related Commands

Command	Purpose
radius-server host non-standard	Specifies a vendor-proprietary RADIUS server host

Glossary

NAS—network access server.

NME—Network Management Ethernet. The local area network used to control and manage equipment in a Central Office and branch locations. The NME connection on the Cisco 6400 is an RJ-45 connector for a 10BaseT port on the NSP module.

NSP—node switch processor. A component module responsible for all ATM switching and control functions within the Cisco 6400.

PPP—Point-to-Point Protocol. A protocol that encapsulates network layer protocol information over point-to-point links. PPP is defined in RFC 1661.

PPPoA—PPP over ATM

PPPoE—PPP over Ethernet

PVC—permanent virtual circuit. Virtual circuit that is permanently established. PVCs save bandwidth associated with circuit establishment and tear down in situations where certain virtual circuits must exist all the time.

RADIUS—Remote Access Dial-In User Service. Database for authenticating modem and ISDN connections and for tracking connection time.

VC—virtual circuit. Logical circuit created to ensure reliable communication between two network devices. A virtual circuit is defined by a VPI/VCI pair, and can be either permanent (PVC) or switched (SVC).

VCI—virtual channel identifier. 16-bit field in the header of an ATM cell. The VCI, together with the VPI, is used to identify the next destination of a cell as it passes through a series of ATM switches on its way to its destination.

VPI—virtual path identifier. Eight-bit field in the header of an ATM cell. The VPI, together with the VCI, is used to identify the next destination of a cell as it passes through a series of ATM switches on its way to its destination.