

Configuring RADIUS Accounting

This chapter describes Cisco vendor-specific attributes (VSAs) for Remote Authentication Dial-in User Services (RADIUS) in support of VoIP products. It covers VSA usage for the Cisco gateway, the RADIUS server, and the Cisco SIP proxy server, and also VSA formats and purposes.

Cisco has multiple categories of VSAs. This chapter describes the voice-specific VSAs used by a voice gateway, and one nonvoice VSA—Cisco NAS Port. The VSA set is constantly evolving as new software features are being developed. This chapter describes all VSAs used with Cisco voice and fax features.

The audience for this chapter includes RADIUS vendors and developers who write application software that interoperates with Cisco voice interfaces. It also includes independent software vendors (ISVs), VoIP service providers, system integrators, and original equipment manufacturers (OEMs).

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Prerequisites for RADIUS Accounting

Familiarize yourself with the following Internet Engineering Task Force (IETF) RADIUS standards:

- Remote Authentication Dial-In User Service (RADIUS), RFC 2865
- RADIUS Accounting, RFC 2866

Feature VSA

- Cisco IOS Release 12.4(9)T or a later release.
- Cisco IOS XE Release 16.3.1 or a later release.

T.38 Fax Statistics

- Cisco IOS Release 12.3(14)T or a later release.
- Authentication, Authorization, and Accounting (AAA) RADIUS server is enabled for VoIP calls.

Restrictions for RADIUS Accounting

Feature VSA

- Supports correlating call records for a single gateway only. Correlating call records across multiple gateways is not supported.
- Drops call detail record (CDR) attributes that are greater than 4 KB. When the gateway is configured to collect feature-vsa and Basic Automatic Call Distribution (B-ACD) call queueing is enabled, the additional records generated when the call is in queue may create a RADIUS packet that exceeds the 4-KB limit.
- Does not support conferencing features.
- Supports output to a syslog server using the **gw-accounting syslog** command. Limitations on the length of syslog messages, however, can restrict the amount of feature-vsa information that is collected.

T.38 Fax Statistics

- Supports VSA parsing only on those voice gateways that are configured for AAA.
- Supports only those fax calls made by SIP and H.323 signaling; does not support MGCP fax relay signaling statistics.

Information About RADIUS Accounting

Before you configure a gateway to recognize VSAs, you should understand the following concepts:

- Overview of RADIUS Accounting, page 2-4
- VSA Format, page 2-6
- Generation of h323-incoming-conf-id and h323-conf-id Values, page 2-7
- Customized Accounting Records, page 2-8
- Gateway Timeout During Digit Collection, page 2-9

Note The term “RADIUS client” is used when referring to the voice gateway in the VoIP telephony network.

Overview of RADIUS Accounting

A RADIUS server can be configured to collect accounting data during the accounting process for each call leg created on the Cisco voice gateway. An integration partner can use this information for postprocessing activities such as generating billing records and network analysis. Voice gateways can send accounting data in the form of call detail records (CDRs) to the RADIUS server in one of two ways:

- VSAs (RADIUS Attribute 26)

- Acct-Session-ID (RADIUS Attribute 44)

VSAs (RADIUS Attribute 26)

A vendor-specific attribute (VSA) is an attribute-value (AV) pair that is implemented by a particular vendor. The IETF RADIUS standards (RFC 2865 and RFC 2866) specify that you can use attribute 26 for communicating vendor-specific information between the voice gateway (RADIUS client) and an authentication/accounting server (RADIUS server). VSAs allow vendors to create their own extended attributes without going through the standards committee.

In Cisco IOS Release 12.2(11)T and later releases, the gateway generates CDRs using VSAs when you enable accounting using the **gw-accounting aaa** command.

For more information on enabling VSAs, see the "Configuring the Voice Gateway as a RADIUS Client" section on page 2-9.

Acct-Session-ID (RADIUS Attribute 44)

The Acct-Session-ID, RADIUS attribute 44, is a unique identifier that allows the RADIUS server to link all packets associated with a specific call. For per-call accounting records, the association of start, update, and stop records is done with the Accounting Session ID. Attributes that cannot be mapped to standard RADIUS attributes can be packed into the Acct-Session-ID attribute field.

Before Cisco IOS Release 12.2(11)T, the gateway packed all vendor-specific CDR information into RADIUS attribute 44. This was the default behavior when accounting was enabled using the **gw-accounting h323** command. Attribute 44 however, supports only a limited amount of CDR information. To capture complete CDR information, you must enable VSAs as described in the "Configuring the Voice Gateway as a RADIUS Client" section on page 2-9.

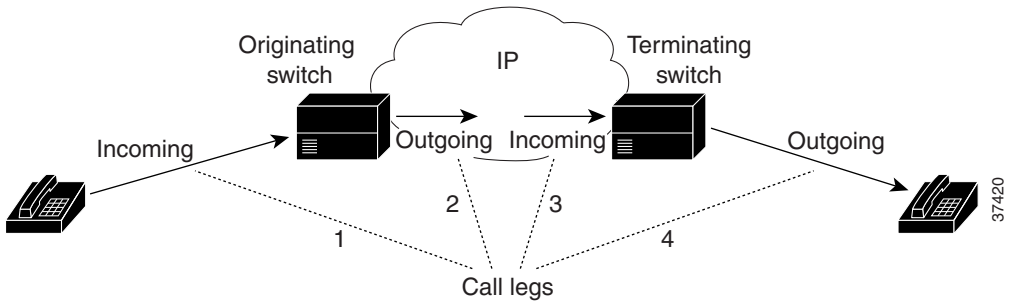
To send CDR information by overloading attribute 44, use the **attribute acct-session-id overloaded** command. For information about this command, see the *Cisco IOS Voice Command Reference*.

Voice Call Legs

A voice call leg is a logical connection between the router and either a telephony endpoint over a bearer channel or another endpoint using a session protocol. It is a discrete segment of a call connection that lies between two points in the connection. An end-to-end call consists of four call legs, two from the perspective of the source originating gateway and two from the perspective of the destination terminating gateway (see Figure 2-1).

Each call processed through a gateway consists of an incoming and an outgoing call leg. The call legs from a gateway can be correlated by a globally unique identifier (the value in VSA h323-conf-id).

Figure 2-1 Call Legs Example



VSA Format

Each Cisco VSA conforms to the RADIUS specification for attribute 26. All VSAs used in CDRs for Cisco voice features conform to this standard format.

Note The Cisco-NAS-port VSA is not a voice-specific VSA and does not use the AV pair format. The vendor-string does not have an AV pair; it has only the value, not the attribute or the equal sign(=).

Figure 2-2 shows the format of RADIUS VSAs and the specific Cisco voice VSAs.

Figure 2-2 VSA Format Example

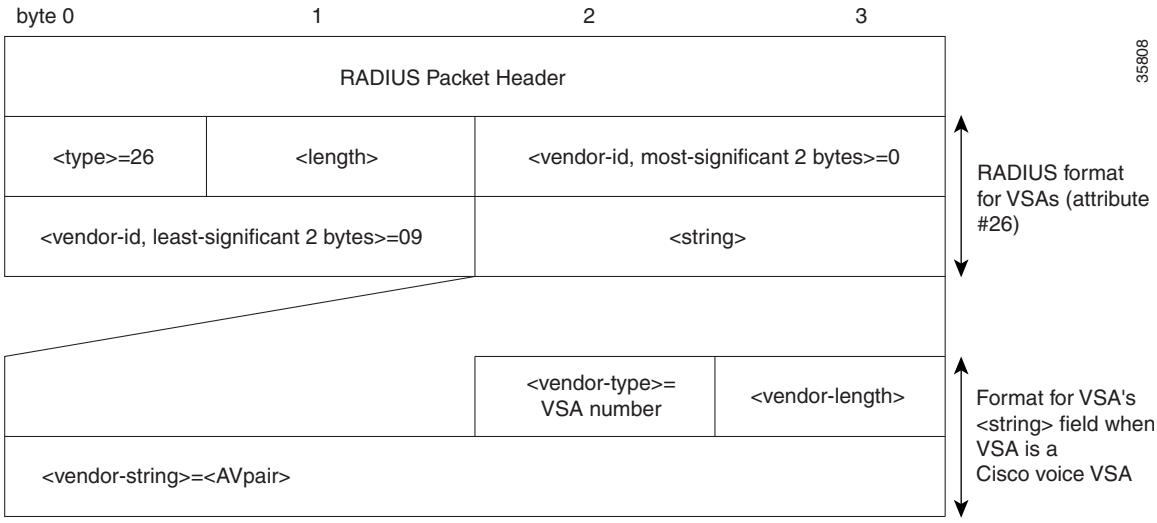


Table 2-1 describes the fields within the VSA.

Table 2-1 VSA Field Descriptions

VSA Field	Description
Type	26 (vendor-specific).
Length	7 or more bytes (the vendor-string field must be at least 1 byte).
Vendor-ID	9 (or, in binary, 0000 0000 0000 1001). The high-order octet is 0; the low-order three octets are the structure of management information (SMI) network-management private-enterprise code of the vendor in network byte order, as defined in Assigned Numbers RFC 1700.
String	Field of one or more octets. The actual format of the information is site- or application-specific. A robust implementation should support the field as undistinguished octets. • Vendor-type = VSA number • Vendor-length = Up to 247 bytes • Vendor-string = AV pair sent as an ASCII string

The format for the attribute-value (AV) pair is *attribute=value*. For example, *h323-billing-model=credit* is an AV pair in which *h323-billing-model* identifies the attribute, = separates the attribute from the value, and *credit* is the value. The *attribute* is one of the Cisco-defined attributes. See "" on page 63 for lists of these values and their formats.

Note This chapter refers to each VSA with its AV pair string notation. The gateway recognizes only the AV pair string.

Generation of h323-incoming-conf-id and h323-conf-id Values

Figure 2-3 shows how the gateway generates the h323-incoming-conf-id and h323-conf-id values when a Tcl script that authenticates the call is running on the originating gateway.

Figure 2-3 Gateway Operation When Tcl Script Runs on Originating Gateway: Example

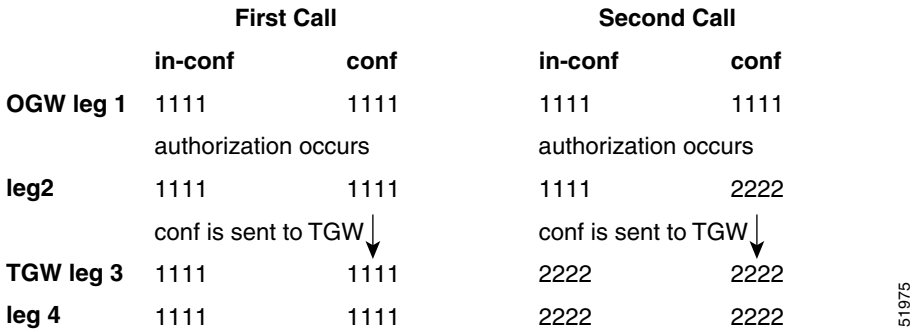
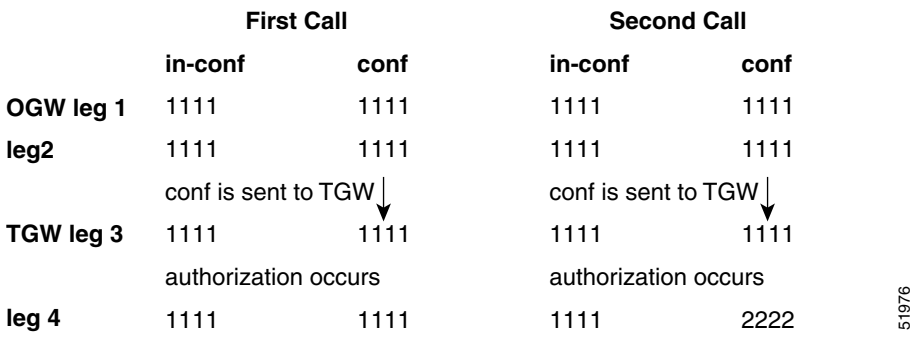


Figure 2-4 shows how the gateway generates the h323-incoming-conf-id and h323-conf-id values when the Tcl script that authenticates the call is running on the terminating gateway.

Figure 2-4 Gateway Operation When Tcl Script Runs on Terminating Gateway: Example



The examples above illustrate the following points of interest:

- A new h323-conf-id can be created for an outgoing call-leg by setting callInfo(newGuid) before placeCall. For example:
  - set callInfo(newGuid) 1

  - set event [placeCall $destination callInfo info]

- Because the h323-conf-id used on the originating gateway is communicated to the terminating gateway through H.323, the conf-id is the same in legs 2 and 3.
- On each gateway (both originating and terminating), the h323-incoming-conf-id is created by making a persistent and static copy of the h323-conf-id. After this h323-incoming-conf-id is created, it is never updated or changed for the duration of the session.
- The h323-incoming-conf-id value is always the same for legs 1 and 2, or for legs 3 and 4, and it need not be the same for all four legs of a call.

Customized Accounting Records

You can create accounting templates to customize your accounting records based on your billing needs. For example, to target different accounting servers for incoming calls from different trunks, you can define multiple accounting templates and associate them with different sets of incoming dial peers. An accounting template is a text file that defines the specific VSAs that are applicable to your accounting needs and helps reduce billing traffic from the gateway to the accounting server.

When you enable voice accounting, a default set of attributes, which includes both standard and voice-specific attributes, is automatically sent by the gateway to the accounting server. To send all voice VSAs to the accounting server use the **acct-template callhistory-detail** command. For a list of all the voice VSAs, see the "Cisco Voice VSAs" section on page 4-64.

The **show call accounting-template voice attrList** command displays all the voice attributes that can be filtered by accounting templates. Templates can contain only voice-specific VSAs. Non-voice specific attributes cannot be controlled through accounting templates.

To define a template, create a standard text file, listing the desired attributes, one per line. You can paste the output from the **show call accounting-template voice attrList** command into your text file and remove any attributes that are not applicable. To remove an attribute, either delete the attribute from the template or add the # sign in front of the attribute name. A custom accounting template acts as a filter, allowing only the defined attributes to be sent to the accounting server.

For a sample accounting template, see the "Customized Accounting Template: Example" section on page 2-24.

Session applications use some VSAs for authentication and authorization which are not controlled by the accounting template. For example, h323-ivr-out, h323-credit-amount, h323-credit-time, and h323-billing-model are only controlled by a Tcl script. These VSAs are sent as AV pairs through the *avlistSend* argument of the TCL verbs used in the script. You also cannot control h323-conf-id and h323-incoming-conf-id; they are mandatory VSAs required for co-relating accounting messages on the incoming and outgoing legs. If you specify these VSAs in the accounting template, they are ignored and no error messages are reported.

After creating a template, you must load the template to the gateway and then apply the template either globally or to specific dial peers. For configuration information, see the "Using an Accounting Template to Filter Output" section on page 2-12.

Gateway Timeout During Digit Collection

The presence of a "T" at the end of a phone number, such as a destination number or a called number, indicates that the gateway uses a timeout to determine that the digit collection from the user is complete instead of using a digit count.

For example, in the United States all phone numbers are 10 digits (xxx-xxx-xxxx). So, the gateway collects 10 digits and considers the number complete. In some other countries, the number of digits can vary. Numbers can be 9, 10, or 11 digits long. In such cases, the gateway waits to see if another digit is entered by the user. If no more digits are entered by the user, a timeout occurs. The gateway considers the number complete and stops listening for more digits. In this situation, the gateway appends a T at the end of the number.

How to Implement RADIUS Accounting

This section contains the following procedures:

- Configuring the Voice Gateway as a RADIUS Client, page 2-9 (required)
- Enabling the Voice Gateway to Use VSAs, page 2-11 (required)
- Using an Accounting Template to Filter Output, page 2-12 (optional)
- Applying a Customized Accounting Template to a Dial Peer, page 2-14 (optional)
- Verifying Voice VSA Implementation, page 2-16 (optional)
- Sending VSAs to a Syslog Server, page 2-18 (optional)

Configuring the Voice Gateway as a RADIUS Client

To configure the voice gateway as a RADIUS client, perform the following steps.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **aaa new-model**
4. **aaa authentication login h323 group radius**
5. **aaa authorization exec h323 group radius**
6. **aaa accounting connection h323 start-stop radius**
7. **radius-server host**
8. **radius-server host non-standard**
9. **radius-server key**
10. **exit**

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enters privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# config term`	Enters global configuration mode.
Step 3	**aaa new-model** **Example:** `Router(config)# aaa new-model`	Enables AAA.
Step 4	**aaa authentication login h323 group radius** **Example:** `Router(config)# aaa authentication login h323 group radius`	Creates a named list that checks the RADIUS server for authentication details for H.323 calls. • When you use this and the previous command together, the gateway authenticates any access to it except console access. • When you Telnet into the gateway with AAA authentication enabled, you must enter a username and password. You can override this by creating a method list that bypasses authentication.
Step 5	**aaa authorization exec h323 group radius** **Example:** `Router(config)# aaa authorization exec h323 group radius`	Creates named lists that configure RADIUS as the method for H.323 authorization.
Step 6	**aaa accounting connection h323 start-stop radius** **Example:** `Router(config)# aaa accounting connection h323 start-stop radius`	Specifies use of connection-based accounting and H.323.
Step 7	**radius-server host** *IP-address* **auth-port** *number* **acct-port** *number* **Example:** `Router(config)# radius-server host 172.16.39.46 auth-port 1612 acct-port 1616`	Specifies a RADIUS server host. • *IP-address*—IP address of the RADIUS server host • **auth-port** *number*—UDP destination port number for authentication requests. If set to 0, the host is not used for authentication. Default: 1645.
Step 8	**radius-server host non-standard** **Example:** `Router(config)# radius-server host non-standard`	Identifies that the security server is using a vendor-proprietary implementation of RADIUS. • Enables Cisco IOS software to support nonstandard RADIUS attributes.

	Command	Purpose
Step 9	**radius-server key** *password* **Example:** `Router(config)# radius-server key thisismypw`	Sets the password (key) to use for authenticating to the RADIUS server. • This password is used between the gateway and the RADIUS server.
Step 10	**exit** **Example:** `Router(config)# exit`	Exits the current mode.

Enabling the Voice Gateway to Use VSAs

To enable the voice gateway to recognize and capture VSAs in RADIUS attribute 26, perform the following steps.

Prerequisites

Enable accounting and authentication (as described in the "Configuring the Voice Gateway as a RADIUS Client" section on page 2-9).

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **radius-server vsa send accounting**
4. **gw-accounting aaa**
5. **acct-template** {*template-name* | **callhistory-detail**}
6. **end**

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enters privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**radius-server vsa send accounting** **Example:** `Router(config)# radius-server vsa send accounting`	Enables the gateway to recognize and use accounting VSAs as defined by RADIUS attribute 26.
Step 4	**gw-accounting aaa** **Example:** `Router(config)# gw-accounting aaa`	Enables the gateway to send accounting CDRs to the RADIUS server using VSAs (attribute 26). **Note** Releases before Cisco IOS Release 12.2(11)T used the **gw-accounting h323 vsa** command.
Step 5	**acct-template** {*template-name* | **callhistory-detail**} **Example:** `Router(config-gw-accounting-aaa)# acct-template custom1`	(Optional) Selects the voice attributes to collect. • *template-name*—Name of custom accounting template that defines the attributes to collect. Template must be loaded to voice gateway. See "Using an Accounting Template to Filter Output" section on page 2-12. • **callhistory-detail**—Collects all voice VSAs for accounting.
Step 6	**end** **Example:** `Router(config-gw-accounting-aaa)# end`	Exits to Privileged EXEC mode.

Using an Accounting Template to Filter Output

To use a custom accounting template to filter the voice attributes captured in call records, perform the following steps.

Prerequisites

- Cisco IOS Release 12.2(11)T or a later release.
- Cisco IOS XE Release 16.3.1 or a later release.
- Template file containing the names of the required attributes must be created:
  - Filename must have a .cdr extension
  - File must be stored in a location accessible to the router

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **call accounting template voice** *template-name url*
4. **call accounting template voice reload** *template-name*
5. **exit**
6. **show call accounting-template voice** *template-name*

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**call accounting template voice** *template-name url* **Example:** `Router(config)# call accounting template voice custom1 tftp://sample/mycustom.cdr`	Specifies the name and location of the custom accounting template to use for collecting accounting data. • *template-name*—Name assigned to the template file. • *url*—Location of the template file. **Note** After bootup, if the template file fails to load from the TFTP server, the system automatically tries to reload the file at five minute intervals.
Step 4	**call accounting template voice reload** *template-name* **Example:** `Router(config)# call accounting template voice reload mycustom`	(Optional) Forces a reload of the specified accounting template. • *template-name*—Name assigned to the template file.
Step 5	**exit** **Example:** `Router(config)# exit`	Exits to privileged EXEC mode.
Step 6	**show call accounting-template voice** *template-name* **Example:** `Router# show call accounting template voice custom1`	(Optional) Displays the status of a specific template and the attributes that are defined for that template.

Applying a Customized Accounting Template to a Dial Peer

To apply a customized accounting template to a dial peer, perform the following steps.

Prerequisites

- Cisco IOS Release 12.2(11)T or a later release.
- Cisco IOS XE Release 16.3.1 or a later release.
- The template file containing the names of the required attributes must be created and loaded to the gateway:

- Filename must have a .cdr extension
- File must be stored in a location accessible to the router

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **voice class aaa** *tag*
4. **accounting template** *template-name*
5. **exit**
6. **dial peer voice** *tag* {**pots** | **voip**}
7. **voice-class aaa** *tag*
8. end

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**voice class aaa** *tag* **Example:** `Router(config)# voice class aaa 2`	Defines a voice service class for dial-peer-based AAA configurations. • *tag*—Unique number that identifies the voice class.
Step 4	**accounting template** *template-name* [**out-bound**] **Example:** `Router(config-class)# accounting template custom2`	Assigns the specified accounting template to the voice class. • *template-name*—Name of the template file. • **out-bound**—(Optional) Specifies the outbound call leg.
Step 5	**exit** **Example:** `Router(config-class)# exit`	Exits to global configuration mode.
Step 6	**dial-peer voice** *tag* {**pots** | **voip**} **Example:** `Router(config)# dial-peer voice 20 pots`	Defines a dial peer.
Step 7	**voice-class aaa** *tag* **Example:** `Router(config-dial-peer)# voice-class aaa 2`	Assigns a voice service class to the dial peer. • *tag*—Unique number that identifies the voice class.
Step 8	**end** **Example:** `Router(config-dial-peer)# end`	Exits to privileged EXEC mode.

Verifying Voice VSA Implementation

To verify the implementation of voice VSAs, including VSA T.38 fax statistics, perform the following steps as appropriate (commands are listed in alphabetical order).

Note Perform these steps on both originating and terminating gateways.

SUMMARY STEPS

1. **show running-config**
2. **show aaa attributes** [**protocol radius**]
3. **show call active fax**
4. **show call active voice**
5. **show call history fax**
6. **show call history voice**
7. **show port fax log**
8. **show port operational-status**

DETAILED STEPS

Step 1 **show running-config**

Use this command to display the gateway running configuration, including RADIUS and Cisco VSA configuration.

Step 2 **show aaa attributes** [**protocol radius**]

Use this command to display the mapping between the AAA attribute number and the corresponding attribute name.

Step 3 **show call active fax**

Use this command to display call information for fax transmission in progress.

Step 4 **show call history fax**

Use this command to display the call-history table for fax calls.

Troubleshooting Tips

- Make sure the voice gateway is running the appropriate releases of Cisco IOS software and Cisco VCWare.
- Use the following **debug aaa** commands to display AAA debugging information:
  - **debug aaa accounting**
  - **debug aaa authentication**
  - **debug aaa authorization**
  - **debug voip aaa**
- Use the **debug radius accounting** command to display RADIUS debugging information.
- Use the **debug voip application accounting** command to display feature VSA debugging information.
- Use the **debug voip dspapi** command to display digital-signal-processor (DSP) application-programming-interface (API) message events.

- Use the **debug voip ivr** command to display IVR debugging information.

Note IVR debug messages are displayed when a call is being actively handled by the IVR scripts. Error output occurs only if something is not working or an error condition has been raised. States output supplies information about the current status of the IVR script and the different events that are occurring in that state.

- Use the **debug voip vtsp** command to display the state of the gateway and call events.

Sending VSAs to a Syslog Server

To enable the voice gateway to send call detail records to a syslog server, perform the following steps.

Restrictions

Limitations on the length of syslog messages can restrict the amount of information that is collected. If VSA information exceeds the size limit for a syslog message, some of the information is not collected.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **gw-accounting syslog**
4. **exit**

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enters privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**gw-accounting syslog** **Example:** `Router(config)# gw-accounting syslog`	Enables the gateway to send accounting CDRs to the syslog server.
Step 4	**exit** **Example:** `Router(config)# exit`	Exits to Privileged EXEC mode.

Configuration Examples for RADIUS Accounting

This section provides the following configuration examples:

- Cisco IOS Voice Gateway as RADIUS Client: Example, page 2-20
- Customized Accounting Template: Example, page 2-24
- Start Record for Basic Two-Way Call: Example, page 2-25
- Stop Record for Basic Two-Way Call: Example, page 2-26
- RADIUS Client Debug Log: Example, page 2-28

Cisco IOS Voice Gateway as RADIUS Client: Example

The following example shows how to configure RADIUS support and enable the use of VSAs on the Cisco voice gateway.

```
Router# show running-config

Building configuration...

Current configuration : 3711 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname 2800_cme1
!
boot-start-marker
boot-end-marker
!
card type t1 1 0
logging buffered 10000000 debugging
no logging console
enable password abc
!
aaa new-model
!
!
aaa accounting connection h323 start-stop broadcast group radius
!
aaa session-id common
!
resource policy
!
no network-clock-participate slot 1
!
!
ip cef
!
!
no ip domain lookup
!
!
voice-card 0
 no dspfarm
!
!
voice service voip
 allow-connections h323 to h323
 supplementary-service h450.12
 h323
!
!
!
username root
!
!
controller T1 1/0/0
 framing esf
 clock source internal
 linecode b8zs
 ds0-group 1 timeslots 1-5 type e&m-immediate-start
```

```
gw-accounting syslog
gw-accounting aaa
 acct-template sample
!
!
!
interface GigabitEthernet0/0
 ip address 10.3.32.55 255.255.0.0
 no ip proxy-arp
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
ip route 0.0.0.0 0.0.0.0 10.3.0.1
!
ip http server
!
!
radius-server host 10.3.105.214 auth-port 1612 acct-port 1616
radius-server vsa send accounting
radius-server vsa send authentication
!
control-plane
!
call accounting-template voice sample flash:test.cdr
!
!
voice-port 1/0/0:1
 timing digit 50
 timing inter-digit 50
!
!
!
dial-peer voice 2100 voip
 destination-pattern 201100....
 session target ipv4:10.3.32.58
 dtmf-relay h245-alphanumeric
!
dial-peer voice 99 voip
 incoming called-number 101.......
 dtmf-relay h245-alphanumeric
!
dial-peer voice 2101 voip
 destination-pattern 201101....
 session target ipv4:10.3.32.58
 dtmf-relay h245-alphanumeric
!
dial-peer voice 2201 pots
 destination-pattern 201201....
 incoming called-number 101201....
 port 1/0/0:1
 forward-digits all
!
!
!
telephony-service
 max-ephones 30
 max-dn 60
 ip source-address 10.3.32.55 port 2000
```

```
 max-conferences 8 gain -6
 call-forward pattern .T
 transfer-system full-consult
 transfer-pattern ..........
 create cnf-files version-stamp Jan 01 2002 00:00:00
!
!
ephone-dn  1  dual-line
 number 1011001001
!
ephone-dn  2  dual-line
 number 1011001002

ephone-dn  3  dual-line
 number 1011001003
!
ephone-dn  4
 number 1011001004
!
ephone-dn  5
 number 1011001005
!
ephone-dn  6  dual-line
 number 1011011006
!
ephone-dn  7  dual-line
 number 1011011007
!
ephone-dn  8  dual-line
 number 1011011008
!
ephone-dn  9
 number 1011011009
!
ephone-dn  10
 number 1011011010
!
ephone-dn  16  dual-line
 number 1012011016
!
ephone-dn  17  dual-line
 number 1012011017
!
ephone-dn  18  dual-line
 number 1012011018
!
ephone-dn  19
 number 1012011019
!
ephone-dn  20
 number 1012011020
!
!
ephone  1
 mac-address 1111.0001.1001
 button  1:1
!
ephone  2
 mac-address 1111.0001.1002
 button  1:2
!
ephone  3
 mac-address 1111.0001.1003
 button  1:3
```

```
!
ephone  4
 mac-address 1111.0001.1004
 button  1:4
!
ephone  5
 mac-address 1111.0001.1005
 button  1:5

ephone  6
 mac-address 1111.0001.1006
 button  1:6
!
ephone  7
 mac-address 1111.0001.1007
 button  1:7
!
ephone  8
 mac-address 1111.0001.1008
 button  1:8
!
ephone  9
 mac-address 1111.0001.1009
 button  1:9
!
ephone  10
 mac-address 1111.0001.1010
 button  1:10
!
ephone  16
 mac-address 1111.0001.1016
 button  1:16
!
ephone  17
 mac-address 1111.0001.1017
 button  1:17
!
ephone  18
 mac-address 1111.0001.1018
 button  1:18
!
ephone  19
 mac-address 1111.0001.1019
 button  1:19
!
ephone  20
 mac-address 1111.0001.1020
 button  1:20
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
!
scheduler allocate 20000 1000
!
end
```

Customized Accounting Template: Example

The following example shows an accounting template file named sample.cdr that defines 35 attributes.

```
h323-gw-id
h323-call-origin
h323-call-type
h323-setup-time
h323-connect-time
h323-disconnect-time
h323-disconnect-cause
h323-remote-address
h323-voice-quality
subscriber
acom-level
noise-level
voice-tx-duration
tx-duration
charged-units
disconnect-text
peer-if-index
logical-if-index
codec-type-rate
codec-bytes
session-protocol
vad-enable
remote-udp-port
hiwater-playout-display
lowater-playout-display
receive-delay
round-trip-delay
ontime-rv-playout
gapfill-with-silence
gapfill-with-prediction
gapfill-with-interpolation
gapfill-with-redundancy
lost-packets
early-packets
late-packets
```

Start Record for Basic Two-Way Call: Example

The following example shows an accounting start record with the CDR information including the feature VSA for a two-way call. Display this output by using the **debug radius accounting** command or the **gw-accounting syslog** command.

```
1d01h: RADIUS (00000066): Send Accounting-Request to 10.7.157.1:1646 id 1646/201, len 419
1d01h: RADIUS:  authenticator 82 CF 2F 5E 9B 45 AB 98 - BD AA F3 0D 5D D3 4E 4A
1d01h: RADIUS:  Acct-Session-Id     [44] 10 "000000C2"
1d01h: RADIUS:  Calling-Station-Id  [31]  5   "557"
1d01h: RADIUS:  Vendor, Cisco       [26]  56
1d01h: RADIUS:   h323-setup-time    [25]  50  "h323-setup-time=*05:03:25.017 UTC Sun Aug 4
2002"
1d01h: RADIUS:  Vendor, Cisco       [26]  28
1d01h: RADIUS:   h323-gw-id         [33]  22  "h323-gw-id=ragdeCME."
1d01h: RADIUS:  Vendor, Cisco       [26]  56
1d01h: RADIUS:   Conf-Id            [24]  50  "h323-conf-id=57166451 A69E11D6 808D87CA
50D5D35A"
1d01h: RADIUS:  Vendor, Cisco       [26]  31
*Sep 12 23:19:59.167: RADIUS:   Cisco AVpair       [1]   130
"feature-vsa=fn:TWC,ft:09/12/2005
23:19:59.159,cgn:1001,cdn:1002,frs:0,fid=49,fcid:8FE4F346231A11DA8029C01C71395D27,legID:12
"
*S1d01h: RADIUS:   h323-call-origin   [26]  25  "h323-call-origin=answer"
1d01h: RADIUS:  Vendor, Cisco       [26]  32
1d01h: RADIUS:   h323-call-type     [27]  26  "h323-call-type=Telephony"
1d01h: RADIUS:  Vendor, Cisco       [26]  65
1d01h: RADIUS:   Cisco AVpair       [1]   59  "h323-incoming-conf-id=57166451 A69E11D6
808D87CA 50D5D35A"
1d01h: RADIUS:  Vendor, Cisco       [26]  30
1d01h: RADIUS:   Cisco AVpair       [1]   24  "subscriber=RegularLine"
1d01h: RADIUS:  User-Name           [1]   5   "557"
1d01h: RADIUS:  Vendor, Cisco       [26]  32
1d01h: RADIUS:   Cisco AVpair       [1]   26  "connect-progress=Call Up"
1d01h: RADIUS:  Acct-Status-Type    [40]  6   Start                     [1]
1d01h: RADIUS:  NAS-Port-Type       [61]  6   802.11 wireless           [19]
1d01h: RADIUS:  NAS-Port            [5]   6   5
1d01h: RADIUS:  NAS-Port-Id         [87]  13  "EFXS 50/0/5"
1d01h: RADIUS:  Service-Type        [6]   6   Login                     [1]
1d01h: RADIUS:  NAS-IP-Address      [4]   6   10.5.20.8
1d01h: RADIUS:  Acct-Delay-Time     [41]  6   0
...
```

Stop Record for Basic Two-Way Call: Example

The following example shows an accounting stop record with the CDR information including the feature VSA for a two-way call.

```
1d01h: RADIUS:  authenticator D3 95 9B 87 37 32 C5 16 - 49 CA 38 04 56 4D DD 1C
1d01h: RADIUS:  Acct-Session-Id     [44]  10  "000000C3"
1d01h: RADIUS:  Calling-Station-Id  [31]  5   "557"
1d01h: RADIUS:  Called-Station-Id   [30]  5   "560"
1d01h: RADIUS:  Vendor, Cisco       [26]  51
1d01h: RADIUS:   Cisco AVpair       [1]   45  "call-id=57170079 A69E11D6 808F87CA50D5D35A"
1d01h: RADIUS:  Vendor, Cisco       [26]  56
1d01h: RADIUS:   h323-setup-time    [25]  50  "h323-setup-time=*05:03:25.337 UTC Sun Aug 4
2002"
1d01h: RADIUS:  Vendor, Cisco       [26]  28
1d01h: RADIUS:   h323-gw-id         [33]  22  "h323-gw-id=ragdeCME."
1d01h: RADIUS:  Vendor, Cisco       [26]  56
1d01h: RADIUS:  Vendor, Cisco       [26]  31
*Sep 12 23:19:59.167: RADIUS:   Cisco AVpair       [1]   130
"feature-vsa=fn:TWC,ft:09/12/2005
23:19:59.159,cgn:1001,cdn:1002,frs:0,fid=49,fcid:8FE4F346231A11DA8029C01C71395D27,legID:12
"
*S1d01h: RADIUS:   Conf-Id            [24]  50  "h323-conf-id=57166451 A69E11D6 808D87CA
50D5D35A"
1d01h: RADIUS:  Vendor, Cisco       [26]  34
1d01h: RADIUS:   h323-call-origin   [26]  28  "h323-call-origin=originate"
1d01h: RADIUS:  Vendor, Cisco       [26]  27
1d01h: RADIUS:   h323-call-type     [27]  21  "h323-call-type=VoIP"
1d01h: RADIUS:  Vendor, Cisco       [26]  65
1d01h: RADIUS:   Cisco AVpair       [1]   59  "h323-incoming-conf-id=57166451 A69E
11D6 808D87CA 50D5D35A"
1d01h: RADIUS:  Vendor, Cisco       [26]  30
1d01h: RADIUS:   Cisco AVpair       [1]   24  "subscriber=RegularLine"
1d01h: RADIUS:  Vendor, Cisco       [26]  30
1d01h: RADIUS:   Cisco AVpair       [1]   24  "session-protocol=cisco"
1d01h: RADIUS:  Acct-Input-Octets   [42]  6   0
1d01h: RADIUS:  Acct-Output-Octets  [43]  6   0
1d01h: RADIUS:  Acct-Input-Packets  [47]  6   0
1d01h: RADIUS:  Acct-Output-Packets [48]  6   0
1d01h: RADIUS:  Acct-Session-Time   [46]
1d01h: RADIUS:  Vendor, Cisco       [26]  58
1d01h: RADIUS:   h323-connect-time  [28]  52  "h323-connect-time=*05:03:28.427 UTC Sun Aug
4 2002"
1d01h: RADIUS:  Vendor, Cisco       [26]  61
1d01h: RADIUS:   h323-disconnect-tim[29]  55  "h323-disconnect-time=*05:03:28.427 UTC Sun
Aug 4 2002"
1d01h: RADIUS:  Vendor, Cisco       [26]  32
1d01h: RADIUS:   h323-disconnect-cau[30]  26  "h323-disconnect-cause=10"
1d01h: RADIUS:  Vendor, Cisco       [26]  37
1d01h: RADIUS:   h323-remote-address[23]  31  "h323-remote-address=10.5.20.11"
1d01h: RADIUS:  Vendor, Cisco       [26]  24
1d01h: RADIUS:   Cisco AVpair       [1]   18  "release-source=7"
1d01h: RADIUS:  Vendor, Cisco       [26]  28
1d01h: RADIUS:   h323-voice-quality [31]  22  "h323-voice-quality=0"
1d01h: RADIUS:  Vendor, Cisco       [26]  56
1d01h: RADIUS:   Cisco AVpair       [1]   50  "alert-timepoint=*05:03:25.397 UTC Sun Aug
2002
1d01h: RADIUS:  Vendor, Cisco       [26]  22
1d01h: RADIUS:   Cisco AVpair       [1]   16  "lost-packets=0"
1d01h: RADIUS:  User-Name           [1]   5   "557"^M
1d01h: RADIUS:  Acct-Status-Type    [40]  6   Stop                      [2]
1d01h: RADIUS:  Service-Type        [6]   6   Login                     [1]
1d01h: RADIUS:  NAS-IP-Address      [4]   6   10.5.20.8
```

```
1d01h: RADIUS:  Acct-Delay-Time     [41]  6   0
1d01h: RADIUS: no sg in radius-timers: ctx 0x6697ACCC sg 0x0000
...
```

RADIUS Client Debug Log: Example

The following is a sample output of a RADIUS client's log. The call legs are not in order because RADIUS uses User Datagram Protocol (UDP) for its transactions and does not guarantee message delivery. Comments explaining the commands are in bold.

legs 1 and 2

```
AS5300_5#
AS5300_5#deb radius
Radius protocol debugging is on
AS5300_5#deb aaa acc
AAA Accounting debugging is on
AS5300_5#
May 26 02:03:22.817:AAA:parse name=ISDN 0:D:8 idb type=-1 tty=-1
May 26 02:03:22.817:AAA/MEMORY:create_user (0x62379D54) user='101000' ruser='200000'
port='ISDN 0:D:8' rem_addr='101000/200000' authen_type=NONE service=H323_VSA priv=0
May 26 02:03:22.817:AAA/ACCT/CONN:Found list "h323"
```

!Client prepares Leg 1, Accounting_request_START
!Note 7 Cisco VSAs

```
May 26 02:03:22.817:AAA/ACCT/CONN/START User 101000, Port ISDN 0:D:8, Location "unknown"
May 26 02:03:22.817:AAA/ACCT/CONN/START User 101000, Port ISDN 0:D:8,
         task_id=2 start_time=959335402 timezone=PST service=connection protocol=h323
May 26 02:03:22.833:AAA/ACCT:user 101000, acct type 1 (2853992933):Method=radius (radius)
May 26 02:03:22.833:RADIUS:ustruct sharecount=3
May 26 02:03:22.833:RADIUS:added cisco VSA 2 len 10 "ISDN 0:D:8"
May 26 02:03:22.833:RADIUS:added cisco VSA 33 len 20 "h323-gw-id=AS5300_5."
May 26 02:03:22.833:RADIUS:added cisco VSA 24 len 38 "h323-conf-id=99936522 D14C0003 0
2A7CC"
May 26 02:03:22.833:RADIUS:added cisco VSA 1 len 29 "h323-incoming-conf-id=0 0 0 0"
May 26 02:03:22.837:RADIUS:added cisco VSA 26 len 23 "h323-call-origin=answer"
May 26 02:03:22.837:RADIUS:added cisco VSA 27 len 24 "h323-call-type=Telephony"
May 26 02:03:22.837:RADIUS:added cisco VSA 25 len 48 "h323-setup-time=02:03:22.817 PST Fri
May 26 2000"
```

!Client sends Leg 1, Accounting_request_START
!Note7 Cisco VSAs (attribute 26s)

```
May 26 02:03:22.837:RADIUS:Initial Transmit ISDN 0:D:8 id 0 10.13.84.100:1646,
Accounting-Request, len 332
May 26 02:03:22.837:        Attribute 4 6 010D4A05
May 26 02:03:22.837:        Attribute 26 18 00000009020C4953
May 26 02:03:22.837:        Attribute 61 6 00000000
May 26 02:03:22.837:        Attribute 1 8 31303130
May 26 02:03:22.837:        Attribute 30 8 32303030
May 26 02:03:22.837:        Attribute 31 8 31303130
May 26 02:03:22.837:        Attribute 40 6 00000001
May 26 02:03:22.837:        Attribute 6 6 00000001
May 26 02:03:22.837:        Attribute 26 28 0000000921166833
May 26 02:03:22.837:        Attribute 26 46 0000000918286833
May 26 02:03:22.837:        Attribute 26 37 00000009011F6833
May 26 02:03:22.837:        Attribute 26 31 000000091A196833
May 26 02:03:22.837:        Attribute 26 32 000000091B1A6833
May 26 02:03:22.837:        Attribute 26 56 0000000919326833
May 26 02:03:22.837:        Attribute 44 10 30303030
May 26 02:03:22.837:        Attribute 41 6 00000000
May 26 02:03:27.837:RADIUS:Retransmit id 0
May 26 02:03:27.837:RADIUS:acct-delay-time for 402DBE9C (at 402DBFE2) now 5
```

!Client receives Leg 1 Accounting_response to start_request
!Note 1 Cisco VSA (h323-return-code)

```
May 26 02:03:27.881:RADIUS:Received from id 1 10.13.84.100:1646, Accounting-response, len
46
```

```
May 26 02:03:27.885:        Attribute 26 26 0000000967146833
May 26 02:03:45.587:AAA:parse name=<no string> idb type=-1 tty=-1

!Client prepares first Access_request
!Note 1 Cisco VSA
May 26 02:03:45.587:AAA/MEMORY:create_user (0x624E9550) user='001234' ruser='' port=''
rem_addr='101000' authen_type=ASCII service=LOGIN priv=0
May 26 02:03:45.587:RADIUS:authenticating to get author data
May 26 02:03:45.587:RADIUS:ustruct sharecount=2
May 26 02:03:45.587:RADIUS:added cisco VSA 24 len 38 "h323-conf-id=99936522 D14C0003 0
2A7CC"

!Client sends first Access_request
!Note 1 Cisco VSA
May 26 02:03:45.587:RADIUS:Initial Transmit  id 2 10.13.84.100:1645, Access-Request, len
112
May 26 02:03:45.587:        Attribute 4 6 010D4A05
May 26 02:03:45.587:        Attribute 61 6 00000000
May 26 02:03:45.587:        Attribute 1 8 30303132
May 26 02:03:45.587:        Attribute 26 46 0000000918286833
May 26 02:03:45.587:        Attribute 31 8 31303130
May 26 02:03:45.587:        Attribute 2 18 021848D3

!Client receives Access_response_ACCEPT to first Access_request
!Note 5 Cisco VSAs
May 26 02:03:45.615:RADIUS:Received from id 2 10.13.84.100:1645, Access-Accept, len 160
May 26 02:03:45.615:        Attribute 26 26 0000000967146833
May 26 02:03:45.615:        Attribute 26 30 000000096B186833
May 26 02:03:45.615:        Attribute 26 36 00000009651E6833
May 26 02:03:45.615:        Attribute 26 23 000000096D116269
May 26 02:03:45.615:        Attribute 26 25 000000096E136375
May 26 02:03:45.615:RADIUS:saved authorization data for user 624E9550 at 62512AA8
May 26 02:03:45.615:RADIUS:cisco AVPair ":h323-return-code=0"
May 26 02:03:45.615:RADIUS:cisco AVPair ":h323-preferred-lang=en"
May 26 02:03:45.615:RADIUS:cisco AVPair ":h323-credit-amount=100000.00"
May 26 02:03:45.615:RADIUS:cisco AVPair ":h323-billing-model=1"
May 26 02:03:45.615:RADIUS:cisco AVPair ":h323-currency=USD"
May 26 02:03:45.615:AAA/MEMORY:free_user (0x624E9550) user='001234' ruser='' port=''
rem_addr='101000' authen_type=ASCII service=LOGIN priv=0

!Client prepares second Access_request
!Note 1 Cisco VSA
May 26 02:03:57.924:AAA:parse name=<no string> idb type=-1 tty=-1
May 26 02:03:57.924:AAA/MEMORY:create_user (0x623D3968) user='001234' ruser='' port=''
rem_addr='101000/200000' authen_type=ASCII service=LOGIN priv=0
May 26 02:03:57.924:RADIUS:authenticating to get author data
May 26 02:03:57.924:RADIUS:ustruct sharecount=2
May 26 02:03:57.924:RADIUS:added cisco VSA 24 len 38 "h323-conf-id=99936522 D14C0003 0
2A7CC"

!Client sends second Access_request
!Note 1 Cisco VSA
May 26 02:03:57.924:RADIUS:Initial Transmit  id 3 10.13.84.100:1645, Access-Request, len
120
May 26 02:03:57.924:        Attribute 4 6 010D4A05
May 26 02:03:57.924:        Attribute 61 6 00000000
May 26 02:03:57.924:        Attribute 1 8 30303132
May 26 02:03:57.924:        Attribute 26 46 0000000918286833
May 26 02:03:57.928:        Attribute 30 8 32303030
May 26 02:03:57.928:        Attribute 31 8 31303130
May 26 02:03:57.928:        Attribute 2 18 FA2D6DD9

!Client receives Access_response_ACCEPT to second Access_request
!Note 2 VSAs
```

```
May 26 02:03:58.028:RADIUS:Received from id 3 10.13.84.100:1646, Access-Accept, len 78
May 26 02:03:58.028:        Attribute 26 26 0000000967146833
May 26 02:03:58.028:        Attribute 26 32 00000009661A6833
May 26 02:03:58.028:RADIUS:saved authorization data for user 623D3968 at 625319E8
May 26 02:03:58.028:RADIUS:cisco AVPair ":h323-return-code=0"
May 26 02:03:58.028:RADIUS:cisco AVPair ":h323-credit-time=5999999"
May 26 02:03:58.028:AAA/MEMORY:free_user (0x623D3968) user='001234' ruser='' port=''
rem_addr='101000/200000' authen_type=ASCII service=LOGIN priv=0
May 26 02:04:10.041:AAA:parse name=<no string> idb type=-1 tty=-1
May 26 02:04:10.041:AAA/MEMORY:create_user (0x628A9878) user='001234' ruser='200000'
port='' rem_addr='101000/200000' authen_type=NONE service=H323_VSA priv=0

!Client prepares Leg 2, Accounting_request_START
!Note 6 Cisco VSAs
May 26 02:04:10.041:AAA/ACCT/CONN:Found list "h323"
May 26 02:04:10.041:AAA/ACCT/CONN/START User 001234, Port, Location "unknown"
May 26 02:04:10.041:AAA/ACCT/CONN/START User 001234, Port,
         task_id=3 start_time=959335450 timezone=PST service=connection protocol=h323
May 26 02:04:10.041:AAA/ACCT:user 001234, acct type 1 (751892777):Method=radius (radius)
May 26 02:04:10.041:RADIUS:ustruct sharecount=3
May 26 02:04:10.041:RADIUS:added cisco VSA 33 len 20 "h323-gw-id=AS5300_5."
May 26 02:04:10.041:RADIUS:added cisco VSA 24 len 38 "h323-conf-id=99936522 D14C0003 0
2A7CC"
May 26 02:04:10.041:RADIUS:added cisco VSA 1 len 29 "h323-incoming-conf-id=0 0 0 0"
May 26 02:04:10.041:RADIUS:added cisco VSA 26 len 26 "h323-call-origin=originate"
May 26 02:04:10.041:RADIUS:added cisco VSA 27 len 19 "h323-call-type=VoIP"
May 26 02:04:10.041:RADIUS:added cisco VSA 25 len 48 "h323-setup-time=02:04:10.037 PST Fri
May 26 2000"

!Client sends Leg 2, Accounting_request_START
!Note 6 Cisco VSAs
May 26 02:04:10.045:RADIUS:Initial Transmit  id 4 10.13.84.100:1646, Accounting-Request,
len 312
May 26 02:04:10.045:        Attribute 4 6 010D4A05
May 26 02:04:10.045:        Attribute 61 6 00000000
May 26 02:04:10.045:        Attribute 1 8 30303132
May 26 02:04:10.045:        Attribute 30 8 32303030
May 26 02:04:10.045:        Attribute 31 8 31303130
May 26 02:04:10.045:        Attribute 40 6 00000001
May 26 02:04:10.045:        Attribute 6 6 00000001
May 26 02:04:10.049:        Attribute 26 28 0000000921166833
May 26 02:04:10.049:        Attribute 26 46 0000000918286833
May 26 02:04:10.049:        Attribute 26 37 00000009011F6833
May 26 02:04:10.049:        Attribute 26 34 000000091A1C6833
May 26 02:04:10.049:        Attribute 26 27 000000091B156833
May 26 02:04:10.049:        Attribute 26 56 0000000919326833
May 26 02:04:10.049:        Attribute 44 10 30303030
May 26 02:04:10.049:        Attribute 41 6 00000000

!Client receives Leg 2, Accounting_response to start_request
!Note 1 Cisco VSA (h323-return-code)
May 26 02:04:10.061:RADIUS:Received from id 4 10.13.84.100:1646, Accounting-response, len
46
May 26 02:04:10.061:        Attribute 26 26 0000000967146833

!Client prepares Leg 2, Accounting_request_STOP
!Note 11 Cisco VSAs
May 26 02:04:59.190:AAA/ACCT:no attribute "pre-bytes-in" to replace, adding it
May 26 02:04:59.190:AAA/ACCT:no attribute "pre-bytes-out" to replace, adding it
May 26 02:04:59.190:AAA/ACCT:no attribute "pre-paks-in" to replace, adding it
May 26 02:04:59.190:AAA/ACCT:no attribute "pre-paks-out" to replace, adding it
May 26 02:04:59.190:AAA/ACCT:no attribute "bytes_in" to replace, adding it
May 26 02:04:59.190:AAA/ACCT:no attribute "bytes_out" to replace, adding it
May 26 02:04:59.190:AAA/ACCT:no attribute "paks_in" to replace, adding it
```

```
May 26 02:04:59.190:AAA/ACCT:no attribute "paks_out" to replace, adding it
May 26 02:04:59.190:AAA/ACCT:no attribute "elapsed_time" to replace, adding it
May 26 02:04:59.194:AAA/ACCT/CONN/STOP:cannot retrieve modem speed
May 26 02:04:59.194:AAA/ACCT/CONN/STOP User 001234, Port unknown:
task_id=3 start_time=959335450 timezone=PST service=connection protocol=h323
h323-gw-id=AS5300_5. h323-conf-id=99936522 D14C0003 0 2A7CC h323-incoming-conf-id=0 0 0 0
h323-call-origin=originate h323-call-type=VoIP h323-setup-time=02:04:10.037 PST Fri May 26
2000 h323-connect-time=02:04:10.780 PST Fri May 26 2000 h323-disconnect-time=02:04:59.190
PST Fri May 26 2000 h323-disconnect-cause=10 h323-voice-quality=0
h323-remote-address=20.20.20.1 pre-bytes-in=0 pre-bytes-out=0 pre-paks-in=0 pre-p...
May 26 02:04:59.194:AAA/ACCT:user 001234, acct type 1 (1758133853):Method=radius (radius)
May 26 02:04:59.194:RADIUS:ustruct sharecount=2
May 26 02:04:59.194:RADIUS:added cisco VSA 33 len 20 "h323-gw-id=AS5300_5."
May 26 02:04:59.194:RADIUS:added cisco VSA 24 len 38 "h323-conf-id=99936522 D14C0003 0
2A7CC"
May 26 02:04:59.194:RADIUS:added cisco VSA 1 len 29 "h323-incoming-conf-id=0 0 0 0"
May 26 02:04:59.194:RADIUS:added cisco VSA 26 len 26 "h323-call-origin=originate"
May 26 02:04:59.194:RADIUS:added cisco VSA 27 len 19 "h323-call-type=VoIP"
May 26 02:04:59.198:RADIUS:added cisco VSA 25 len 48 "h323-setup-time=02:04:10.037 PST Fri
May 26 2000"
May 26 02:04:59.198:RADIUS:added cisco VSA 28 len 50 "h323-connect-time=02:04:10.780 PST
Fri May 26 2000"
May 26 02:04:59.198:RADIUS:added cisco VSA 29 len 53 "h323-disconnect-time=02:04:59.190
PST Fri May 26 2000"
May 26 02:04:59.198:RADIUS:added cisco VSA 30 len 24 "h323-disconnect-cause=10"
May 26 02:04:59.198:RADIUS:added cisco VSA 31 len 20 "h323-voice-quality=0"
May 26 02:04:59.198:RADIUS:added cisco VSA 23 len 30 "h323-remote-address=20.20.20.1"

!Client sends Leg 2, Accounting_request_STOP
!Note 11 Cisco VSAs
May 26 02:04:59.202:RADIUS:Initial Transmit  id 5 10.13.84.100:1646, Accounting-Request,
len 691
May 26 02:04:59.202:        Attribute 4 6 010D4A05
May 26 02:04:59.202:        Attribute 61 6 00000000
May 26 02:04:59.202:        Attribute 1 8 30303132
May 26 02:04:59.202:        Attribute 30 8 32303030
May 26 02:04:59.202:        Attribute 31 8 31303130
May 26 02:04:59.202:        Attribute 40 6 00000002
May 26 02:04:59.202:        Attribute 6 6 00000001
May 26 02:04:59.202:        Attribute 26 28 0000000921166833
May 26 02:04:59.202:        Attribute 26 46 0000000918286833
May 26 02:04:59.202:        Attribute 26 37 00000009011F6833
May 26 02:04:59.202:        Attribute 26 34 000000091A1C6833
May 26 02:04:59.202:        Attribute 26 27 000000091B156833
May 26 02:04:59.202:        Attribute 26 56 0000000919326833
May 26 02:04:59.202:        Attribute 26 58 000000091C346833
May 26 02:04:59.202:        Attribute 26 61 000000091D376833
May 26 02:04:59.202:        Attribute 26 32 000000091E1A6833
May 26 02:04:59.202:        Attribute 26 28 000000091F166833
May 26 02:04:59.202:        Attribute 26 38 0000000917206833
May 26 02:04:59.202:        Attribute 44 10 30303030
May 26 02:04:59.202:        Attribute 42 6 00036F7A
May 26 02:04:59.202:        Attribute 43 6 00036349
May 26 02:04:59.202:        Attribute 47 6 000005A1
May 26 02:04:59.202:        Attribute 48 6 0000058A
May 26 02:04:59.202:        Attribute 46 6 00000030
May 26 02:04:59.206:        Attribute 41 6 00000000

!Client prepares Leg 1, Accounting_request_STOP
!Note 11 Cisco VSAs
May 26 02:04:59.206:AAA/ACCT:no attribute "pre-bytes-in" to replace, adding it
May 26 02:04:59.206:AAA/ACCT:no attribute "pre-bytes-out" to replace, adding it
May 26 02:04:59.206:AAA/ACCT:no attribute "pre-paks-in" to replace, adding it
May 26 02:04:59.206:AAA/ACCT:no attribute "pre-paks-out" to replace, adding it
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May 26 02:04:59.206:AAA/ACCT:no attribute "bytes_in" to replace, adding it
May 26 02:04:59.206:AAA/ACCT:no attribute "bytes_out" to replace, adding it
May 26 02:04:59.206:AAA/ACCT:no attribute "paks_in" to replace, adding it
May 26 02:04:59.206:AAA/ACCT:no attribute "paks_out" to replace, adding it
May 26 02:04:59.206:AAA/ACCT:no attribute "elapsed_time" to replace, adding it
May 26 02:04:59.206:AAA/ACCT/CONN/STOP:cannot retrieve modem speed
May 26 02:04:59.210:AAA/ACCT/CONN/STOP User 101000, Port ISDN 0:D:8:
task_id=2 start_time=959335402 timezone=PST service=connection protocol=h323
h323-gw-id=AS5300_5. h323-conf-id=99936522 D14C0003 0 2A7CC h323-incoming-conf-id=0 0 0 0
h323-call-origin=answer h323-call-type=Telephony h323-setup-time=02:03:22.817 PST Fri May
26 2000 <obsolete>=ISDN 0:D:8 h323-connect-time=02:03:23.086 PST Fri May 26 2000
h323-disconnect-time=02:04:59.206 PST Fri May 26 2000 h323-disconnect-cause=10
h323-voice-quality=0 <obsolete>=ISDN 0:D:8 pre-bytes-in=0 pre-bytes-out=0 pre-...
May 26 02:04:59.210:AAA/ACCT:user 101000, acct type 1 (3162356262):Method=radius (radius)
May 26 02:04:59.210:RADIUS:ustruct sharecount=2
May 26 02:04:59.210:RADIUS:added cisco VSA 2 len 10 "ISDN 0:D:8"
May 26 02:04:59.210:RADIUS:added cisco VSA 33 len 20 "h323-gw-id=AS5300_5."
May 26 02:04:59.210:RADIUS:added cisco VSA 24 len 38 "h323-conf-id=99936522 D14C0003 0
2A7CC"
May 26 02:04:59.210:RADIUS:added cisco VSA 1 len 29 "h323-incoming-conf-id=0 0 0 0"
May 26 02:04:59.210:RADIUS:added cisco VSA 26 len 23 "h323-call-origin=answer"
May 26 02:04:59.210:RADIUS:added cisco VSA 27 len 24 "h323-call-type=Telephony"
May 26 02:04:59.210:RADIUS:added cisco VSA 25 len 48 "h323-setup-time=02:03:22.817 PST Fri
May 26 2000"
May 26 02:04:59.210:RADIUS:added cisco VSA 28 len 50 "h323-connect-time=02:03:23.086 PST
Fri May 26 2000"
May 26 02:04:59.210:RADIUS:added cisco VSA 29 len 53 "h323-disconnect-time=02:04:59.206
PST Fri May 26 2000"
May 26 02:04:59.214:RADIUS:added cisco VSA 30 len 24 "h323-disconnect-cause=10"
May 26 02:04:59.214:RADIUS:added cisco VSA 31 len 20 "h323-voice-quality=0"

!Client sends Leg 1, Accounting_request_STOP
!Note 11 Cisco VSAs
May 26 02:04:59.214:RADIUS:Initial Transmit ISDN 0:D:8 id 6 10.13.84.100:1646,
Accounting-Request, len 673
May 26 02:04:59.214:        Attribute 4 6 010D4A05
May 26 02:04:59.214:        Attribute 26 18 00000009020C4953
May 26 02:04:59.214:        Attribute 61 6 00000000
May 26 02:04:59.214:        Attribute 1 8 31303130
May 26 02:04:59.214:        Attribute 30 8 32303030
May 26 02:04:59.214:        Attribute 31 8 31303130
May 26 02:04:59.214:        Attribute 40 6 00000002
May 26 02:04:59.214:        Attribute 6 6 00000001
May 26 02:04:59.214:        Attribute 26 28 0000000921166833
May 26 02:04:59.214:        Attribute 26 46 0000000918286833
May 26 02:04:59.214:        Attribute 26 37 00000009011F6833
May 26 02:04:59.214:        Attribute 26 31 000000091A196833
May 26 02:04:59.214:        Attribute 26 32 000000091B1A6833
May 26 02:04:59.214:        Attribute 26 56 0000000919326833
May 26 02:04:59.218:        Attribute 26 58 000000091C346833
May 26 02:04:59.218:        Attribute 26 61 000000091D376833
May 26 02:04:59.218:        Attribute 26 32 000000091E1A6833
May 26 02:04:59.218:        Attribute 26 28 000000091F166833
May 26 02:04:59.218:        Attribute 44 10 30303030
May 26 02:04:59.218:        Attribute 42 6 0003A5C1
May 26 02:04:59.218:        Attribute 43 6 00048C42
May 26 02:04:59.218:        Attribute 47 6 0000058A
May 26 02:04:59.218:        Attribute 48 6 000007D3
May 26 02:04:59.218:        Attribute 46 6 00000060
May 26 02:04:59.218:        Attribute 41 6 00000000

!Client receives Leg 2, Accounting_response
May 26 02:04:59.286:RADIUS:Received from id 5 10.13.84.100:1646, Accounting-response, len
46
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May 26 02:04:59.290:AAA/MEMORY:free_user (0x628A9878) user='001234' ruser='200000' port=''
rem_addr='101000/200000' authen_type=NONE service=H323_VSA priv=0

!Client receives Leg 1, Accounting_response
May 26 02:04:59.358:RADIUS:Received from id 6 10.13.84.100:1646, Accounting-response, len
46
May 26 02:04:59.358:AAA/MEMORY:free_user (0x62379D54) user='101000' ruser='200000'
port='ISDN 0:D:8' rem_addr='101000/200000' authen_type=NONE service=H323_VSA priv=0
AS5300_5#
AS5300_5#

legs 3 and 4
!Client prepares Leg 3, Accounting_request_START
!Note the 6 Cisco VSAs
May 26 02:04:10.052:AAA/ACCT/CONN:Found list "h323"
May 26 02:04:10.052:AAA/ACCT/CONN/START User 101000, Port, Location "unknown"
May 26 02:04:10.052:AAA/ACCT/CONN/START User 101000, Port,
         task_id=2 start_time=959335450 timezone=PST service=connection protocol=h323
May 26 02:04:10.052:AAA/ACCT:user 101000, acct type 1 (3870523452):Method=radius (radius)
May 26 02:04:10.052:RADIUS:ustruct sharecount=3
May 26 02:04:10.052:RADIUS:added cisco VSA 33 len 20 "h323-gw-id=AS5300_4."
May 26 02:04:10.052:RADIUS:added cisco VSA 24 len 38 "h323-conf-id=99936522 D14C0003 0
2A7CC"
May 26 02:04:10.052:RADIUS:added cisco VSA 1 len 29 "h323-incoming-conf-id=0 0 0 0"
May 26 02:04:10.052:RADIUS:added cisco VSA 26 len 23 "h323-call-origin=answer"
May 26 02:04:10.052:RADIUS:added cisco VSA 27 len 19 "h323-call-type=VoIP"
May 26 02:04:10.052:RADIUS:added cisco VSA 25 len 48 "h323-setup-time=02:04:10.052 PST Fri
May 26 2000"

!Client sends Leg 3, Accounting_request_START
!Note the 6 Cisco VSAs
May 26 02:04:10.056:RADIUS:Initial Transmit  id 0 10.13.84.100:1646, Accounting-Request,
len 309
May 26 02:04:10.056:        Attribute 4 6 010D4A04
May 26 02:04:10.056:        Attribute 61 6 00000000
May 26 02:04:10.056:        Attribute 1 8 31303130
May 26 02:04:10.056:        Attribute 30 8 32303030
May 26 02:04:10.056:        Attribute 31 8 31303130
May 26 02:04:10.056:        Attribute 40 6 00000001
May 26 02:04:10.056:        Attribute 6 6 00000001
May 26 02:04:10.056:        Attribute 26 28 0000000921166833
May 26 02:04:10.056:        Attribute 26 46 0000000918286833
May 26 02:04:10.056:        Attribute 26 37 00000009011F6833
May 26 02:04:10.056:        Attribute 26 31 000000091A196833
May 26 02:04:10.056:        Attribute 26 27 000000091B156833
May 26 02:04:10.056:        Attribute 26 56 0000000919326833
May 26 02:04:10.056:        Attribute 44 10 30303030
May 26 02:04:10.056:        Attribute 41 6 00000000

!Client prepares Leg 4, Accounting_request_START
!Note the 7 Cisco VSAs

May 26 02:04:10.284:AAA:parse name=ISDN 0:D:23 idb type=-1 tty=-1
May 26 02:04:10.284:AAA/MEMORY:create_user (0x625D6B6C) user='101000' ruser='200000'
port='ISDN 0:D:23' rem_addr='101000/200000' authen_type=NONE service=H323_VSA priv=0
May 26 02:04:10.284:AAA/ACCT/CONN:Found list "h323"
May 26 02:04:10.284:AAA/ACCT/CONN/START User 101000, Port ISDN 0:D:23, Location "unknown"
May 26 02:04:10.284:AAA/ACCT/CONN/START User 101000, Port ISDN 0:D:23,
         task_id=3 start_time=959335450 timezone=PST service=connection protocol=h323
May 26 02:04:10.284:AAA/ACCT:user 101000, acct type 1 (1531329072):Method=radius (radius)
May 26 02:04:10.284:RADIUS:ustruct sharecount=3
May 26 02:04:10.284:RADIUS:added cisco VSA 2 len 11 "ISDN 0:D:23"
May 26 02:04:10.284:RADIUS:added cisco VSA 33 len 20 "h323-gw-id=AS5300_4."
May 26 02:04:10.284:RADIUS:added cisco VSA 24 len 38 "h323-conf-id=99936522 D14C0003 0
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2A7CC"
May 26 02:04:10.284:RADIUS:added cisco VSA 1 len 29 "h323-incoming-conf-id=0 0 0 0"
May 26 02:04:10.288:RADIUS:added cisco VSA 26 len 26 "h323-call-origin=originate"
May 26 02:04:10.288:RADIUS:added cisco VSA 27 len 24 "h323-call-type=Telephony"
May 26 02:04:10.288:RADIUS:added cisco VSA 25 len 48 "h323-setup-time=02:04:10.284 PST Fri
May 26 2000"

!Client sends Leg 4, Accounting_request_START
!Note the 7 Cisco VSAs

May 26 02:04:10.288:RADIUS:Initial Transmit ISDN 0:D:23 id 1 10.13.84.100:1646,
Accounting-Request, len 336
May 26 02:04:10.288:        Attribute 4 6 010D4A04
May 26 02:04:10.288:        Attribute 26 19 00000009020D4953
May 26 02:04:10.288:        Attribute 61 6 00000000
May 26 02:04:10.288:        Attribute 1 8 31303130
May 26 02:04:10.288:        Attribute 30 8 32303030
May 26 02:04:10.288:        Attribute 31 8 31303130
May 26 02:04:10.288:        Attribute 40 6 00000001
May 26 02:04:10.288:        Attribute 6 6 00000001
May 26 02:04:10.288:        Attribute 26 28 0000000921166833
May 26 02:04:10.288:        Attribute 26 46 0000000918286833
May 26 02:04:10.288:        Attribute 26 37 00000009011F6833
May 26 02:04:10.288:        Attribute 26 34 000000091A1C6833
May 26 02:04:10.288:        Attribute 26 32 000000091B1A6833
May 26 02:04:10.288:        Attribute 26 56 0000000919326833
May 26 02:04:10.288:        Attribute 44 10 30303030
May 26 02:04:10.288:        Attribute 41 6 00000000

!Client receives Leg 3, Accounting_response
May 26 02:04:10.304:RADIUS:Received from id 1 10.13.84.100:1646, Accounting-response, len
46
May 26 02:04:15.061:RADIUS:Retransmit id 0
May 26 02:04:15.061:RADIUS:acct-delay-time for 402DC558 (at 402DC687) now 5

!Client receives Leg 4, Accounting_response
May 26 02:04:15.121:RADIUS:Received from id 2 10.13.84.100:1646, Accounting-response, len
46

!Client prepares Leg 4, Accounting_request_STOP
!Note the 11 Cisco VSAs
May 26 02:04:59.211:AAA/ACCT/CONN/STOP User 101000, Port ISDN 0:D:23:
  task_id=2 start_time=959335450 timezone=PST service=connection protocol=h323
h323-gw-id=AS5300_4. h323-conf-id=99936522 D14C0003 0 2A7CC h323-incoming-conf-id=0 0 0 0
h323-call-origin=answer h323-call-type=VoIP h323-setup-time=02:04:10.052 PST Fri May 26
2000 h323-connect-time=02:04:10.775 PST Fri May 26 2000 h323-disconnect-time=02:04:59.195
PST Fri May 26 2000 h323-disconnect-cause=10 h323-voice-quality=0
h323-remote-address=20.20.20.2 pre-bytes-in=0 pre-bytes-out=0 pre-paks-in=0 pre-paks...
May 26 02:04:59.199:AAA/ACCT:user 101000, acct type 1 (1079962383):Method=radius (radius)
May 26 02:04:59.199:RADIUS:ustruct sharecount=2
May 26 02:04:59.199:RADIUS:added cisco VSA 33 len 20 "h323-gw-id=AS5300_4."
May 26 02:04:59.199:RADIUS:added cisco VSA 24 len 38 "h323-conf-id=99936522 D14C0003 0
2A7CC"
May 26 02:04:59.199:RADIUS:added cisco VSA 1 len 29 "h323-incoming-conf-id=0 0 0 0"
May 26 02:04:59.199:RADIUS:added cisco VSA 26 len 23 "h323-call-origin=answer"
May 26 02:04:59.199:RADIUS:added cisco VSA 27 len 19 "h323-call-type=VoIP"
May 26 02:04:59.199:RADIUS:added cisco VSA 25 len 48 "h323-setup-time=02:04:10.052 PST Fri
May 26 2000"
May 26 02:04:59.199:RADIUS:added cisco VSA 28 len 50 "h323-connect-time=02:04:10.775 PST
Fri May 26 2000"
May 26 02:04:59.199:RADIUS:added cisco VSA 29 len 53 "h323-disconnect-time=02:04:59.195
PST Fri May 26 2000"
May 26 02:04:59.199:RADIUS:added cisco VSA 30 len 24 "h323-disconnect-cause=10"
May 26 02:04:59.199:RADIUS:added cisco VSA 31 len 20 "h323-voice-quality=0"
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May 26 02:04:59.199:RADIUS:added cisco VSA 23 len 30 "h323-remote-address=20.20.20.2"

!Client sends Leg 4, Accounting_request_STOP
!Note the 11 Cisco VSAs

May 26 02:04:59.203:RADIUS:Initial Transmit  id 3 10.13.84.100:1646, Accounting-Request,
len 688
May 26 02:04:59.203:        Attribute 4 6 010D4A04
May 26 02:04:59.203:        Attribute 61 6 00000000
May 26 02:04:59.203:        Attribute 1 8 31303130
May 26 02:04:59.203:        Attribute 30 8 32303030
May 26 02:04:59.203:        Attribute 31 8 31303130
May 26 02:04:59.203:        Attribute 40 6 00000002
May 26 02:04:59.203:        Attribute 6 6 00000001
May 26 02:04:59.203:        Attribute 26 28 0000000921166833
May 26 02:04:59.203:        Attribute 26 46 0000000918286833
May 26 02:04:59.203:        Attribute 26 37 00000009011F6833
May 26 02:04:59.203:        Attribute 26 31 000000091A196833
May 26 02:04:59.203:        Attribute 26 27 000000091B156833
May 26 02:04:59.203:        Attribute 26 56 0000000919326833
May 26 02:04:59.203:        Attribute 26 58 000000091C346833
May 26 02:04:59.203:        Attribute 26 61 000000091D376833
May 26 02:04:59.203:        Attribute 26 32 000000091E1A6833
May 26 02:04:59.203:        Attribute 26 28 000000091F166833
May 26 02:04:59.203:        Attribute 26 38 0000000917206833
May 26 02:04:59.203:        Attribute 44 10 30303030
May 26 02:04:59.207:        Attribute 42 6 00036349
May 26 02:04:59.207:        Attribute 43 6 00036F7A
May 26 02:04:59.207:        Attribute 47 6 0000058A
May 26 02:04:59.207:        Attribute 48 6 000005A1
May 26 02:04:59.207:        Attribute 46 6 00000030
May 26 02:04:59.207:        Attribute 41 6 00000000

!Client prepares Leg 3, Accounting_request_STOP
!Note the 11 Cisco VSAs

May 26 02:04:59.211:AAA/ACCT/CONN/STOP User 101000, Port ISDN 0:D:23:
task_id=3 start_time=959335450 timezone=PST service=connection protocol=h323
h323-gw-id=AS5300_4. h323-conf-id=99936522 D14C0003 0 2A7CC h323-incoming-conf-id=0 0 0 0
h323-call-origin=originate h323-call-type=Telephony h323-setup-time=02:04:10.284 PST Fri
May 26 2000 <obsolete>=ISDN 0:D:23 h323-connect-time=02:04:10.767 PST Fri May 26 2000
h323-disconnect-time=02:04:59.207 PST Fri May 26 2000 h323-disconnect-cause=10
h323-voice-quality=0 <obsolete>=ISDN 0:D:23 pre-bytes-in=0 pre-bytes-out=0...
May 26 02:04:59.211:AAA/ACCT:user 101000, acct type 1 (3621579115):Method=radius (radius)
May 26 02:04:59.215:RADIUS:ustruct sharecount=2
May 26 02:04:59.215:RADIUS:added cisco VSA 2 len 11 "ISDN 0:D:23"
May 26 02:04:59.215:RADIUS:added cisco VSA 33 len 20 "h323-gw-id=AS5300_4."
May 26 02:04:59.215:RADIUS:added cisco VSA 24 len 38 "h323-conf-id=99936522 D14C0003 0
2A7CC"
May 26 02:04:59.215:RADIUS:added cisco VSA 1 len 29 "h323-incoming-conf-id=0 0 0 0"
May 26 02:04:59.215:RADIUS:added cisco VSA 26 len 26 "h323-call-origin=originate"
May 26 02:04:59.215:RADIUS:added cisco VSA 27 len 24 "h323-call-type=Telephony"
May 26 02:04:59.215:RADIUS:added cisco VSA 25 len 48 "h323-setup-time=02:04:10.284 PST Fri
May 26 2000"
May 26 02:04:59.215:RADIUS:added cisco VSA 28 len 50 "h323-connect-time=02:04:10.767 PST
Fri May 26 2000"
May 26 02:04:59.215:RADIUS:added cisco VSA 29 len 53 "h323-disconnect-time=02:04:59.207
PST Fri May 26 2000"
May 26 02:04:59.215:RADIUS:added cisco VSA 30 len 24 "h323-disconnect-cause=10"
May 26 02:04:59.215:RADIUS:added cisco VSA 31 len 20 "h323-voice-quality=0"

!Client sends Leg 3, Accounting_request_STOP
!Note the 11 Cisco VSAs
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May 26 02:04:59.219:RADIUS:Initial Transmit ISDN 0:D:23 id 4 10.13.84.100:1646,
Accounting-Request, len 677
May 26 02:04:59.219:        Attribute 4 6 010D4A04
May 26 02:04:59.219:        Attribute 26 19 00000009020D4953
May 26 02:04:59.219:        Attribute 61 6 00000000
May 26 02:04:59.219:        Attribute 1 8 31303130
May 26 02:04:59.219:        Attribute 30 8 32303030
May 26 02:04:59.219:        Attribute 31 8 31303130
May 26 02:04:59.219:        Attribute 40 6 00000002
May 26 02:04:59.219:        Attribute 6 6 00000001
May 26 02:04:59.219:        Attribute 26 28 0000000921166833
May 26 02:04:59.219:        Attribute 26 46 0000000918286833
May 26 02:04:59.219:        Attribute 26 37 00000009011F6833
May 26 02:04:59.219:        Attribute 26 34 000000091A1C6833
May 26 02:04:59.219:        Attribute 26 32 000000091B1A6833
May 26 02:04:59.219:        Attribute 26 56 0000000919326833
May 26 02:04:59.219:        Attribute 26 58 000000091C346833
May 26 02:04:59.219:        Attribute 26 61 000000091D376833
May 26 02:04:59.219:        Attribute 26 32 000000091E1A6833
May 26 02:04:59.219:        Attribute 26 28 000000091F166833
May 26 02:04:59.219:        Attribute 44 10 30303030
May 26 02:04:59.219:        Attribute 42 6 0003B306
May 26 02:04:59.219:        Attribute 43 6 00031FBD
May 26 02:04:59.219:        Attribute 47 6 000005A1
May 26 02:04:59.219:        Attribute 48 6 0000058A
May 26 02:04:59.219:        Attribute 46 6 00000030
May 26 02:04:59.219:        Attribute 41 6 00000000

!Client receives Leg 4, Accounting_response
May 26 02:04:59.347:RADIUS:Received from id 3 10.13.84.100:1646, Accounting-response, len
46
May 26 02:04:59.347:AAA/MEMORY:free_user (0x6230E384) user='101000' ruser='200000' port=''
rem_addr='101000/200000' authen_type=NONE service=H323_VSA priv=0

!Client receives Leg 3, Accounting_response
May 26 02:04:59.359:RADIUS:Received from id 4 10.13.84.100:1646, Accounting-response, len
46
May 26 02:04:59.359:AAA/MEMORY:free_user (0x625D6B6C) user='101000' ruser='200000'
port='ISDN 0:D:23' rem_addr='101000/200000' authen_type=NONE service=H323_VSA priv=0
AS5300_4#
```

Additional References

This following sections provide additional references.

Standards

Standard	Title
E.164	ITU E.164 Telephone numbering
G.723	ITU G.723 Speech coders
G.729	ITU G.729 Coding of speech at 8 kbit/s using conjugate-structure algebraic-code-excited linear-prediction (CS-ACELP)
H.323	ITU-T H.323 Packet-based multimedia communications systems
ISO 639-1	ISO 639-1 Codes for the representation of names of languages
ISO 4217	ISO 4217 Type currency code list
Q.931	ITU-T Q.931 (and related standards)—ISDN user-network interface layer 3 specification for basic call control
T.35 Annex A	ITU T.35 Procedure for the allocation of ITU-T defined codes for non-standard facilities

MIBs

MIB	MIBs Link
—	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
RFC 1700	*RFC 1700 - Assigned Numbers*
RFC 2543	*RFC 2543 - SIP: Session Initiation Protocol*
RFC 2865	RFC 2865 - Remote Authentication Dial In User Service (RADIUS)
RFC 2866	RFC 2866 - RADIUS Accounting

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. 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. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	https://www.cisco.com/c/en/us/support/index.html

Feature Information for RADIUS Accounting

Table 2-2 lists the features in this chapter and provides links to specific configuration information.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS and Catalyst OS 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 2-2 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 2-2 Feature Information for Voice VSAs

Feature Name	Releases	Feature Information
Call Detail Records (CDR) Feature Correlation ID for Supplementary Features	12.4(9)T 12.4(4)XC	Captures information about supplementary features. Added 1 new VSA. The following sections provide information about this feature: • Feature VSA for Supplementary Services, page 4-82 • Feature Correlation ID, page 4-86
SIP: Configurable Hostname in Locally Generated SIP Headers	12.4(2)T	Implements support for host or domain names in SIP headers for outbound SIP calls. Added 1 new VSA. The following section provides information about this feature: • Cisco Voice VSAs, page 4-64

Table 2-2 Feature Information for Voice VSAs (continued)

Feature Name	Releases	Feature Information
T.38 Fax Statistics	12.3(14)T	Provides detailed statistics and a fax success indicator for T.38 (fax relay) calls for voice gateways with NextPort DSPs (Cisco AS5350, Cisco AS5400 and Cisco AS5850). Added 14 new T.38 fax statistics VSAs. The following section provides information about this feature: • T.38 Fax Statistics VSAs, page 4-90
VoIP Internal Error Codes	12.3(4)T	Supports VoIP Internal Error Codes. Added 1 new VSA. The following sections provide information about this feature: • Internal Error Codes, page 4-92
Call Release Source Reporting in Gateway-Generated Call Accounting Records	12.2(13)T	Identifies the source of a call release in a Voice over IP (VoIP) network. Added 1 new VSA. The following section provides information about this feature: • Cisco Voice VSAs, page 4-64
Fax Relay Accounting Enhancement (CSCdu41005)	12.2(10) 12.2(11)T	Allows accounting differentiation for fax and voice calls. Supports billing for fax services by indicating the fax start and stop times when a voice call transitions to fax mode. Added 2 VSAs. The following section provides information about this feature: • T.38 Fax Statistics VSAs, page 4-90
GTD for RADIUS using SS7 Interconnect for Voice Gateways version 2.0	12.2(11)T	Exposes ISUP parameters to the RADIUS record when using the SS7 Interconnect for Voice Gateways, version 2.0 feature. The following section provides information about this feature: • Cisco Voice VSAs, page 4-64
IVR: Customizing Accounting Templates	12.2(11)T	Enhancements to authentication, authorization, and accounting (AAA). The following sections provide information about this feature: • Customized Accounting Records, page 2-8 • Enabling the Voice Gateway to Use VSAs, page 2-11 The following commands were introduced or modified by this feature: **attribute acct-session-id overloaded**, **call accounting-template voice**, **gw-accounting**.

Table 2-2 Feature Information for Voice VSAs (continued)

Feature Name	Releases	Feature Information
RADIUS Number Translation VSAs for VoIP	12.2(11)T	Enables voice gateways to export translated called and calling numbers as generic VSAs. The following section provides information about this feature: • Cisco Voice VSAs, page 4-64
VoIP Trunk Group Label Routing Enhancement	12.2(11)T	Permits a routing tag for trunk group label to co-exist with Carrier ID routing tag on the gateway, gatekeeper, GKTMP, and GKAPI. The following section provides information about this feature: • Cisco Voice VSAs, page 4-64
SIP - Enhanced Billing Support for Gateways	12.2(8)T 12.2(2)XB	Provides the ability to effectively bill for traffic transported over SIP networks. Added 12 new VSAs for MSN billing and remote media. The following section provides information about this feature: • Cisco Voice VSAs, page 4-64
Interface-Descriptor VSAs	12.2(2)T	Captures description assigned to incoming and outgoing telephony ports used on the call legs. Added 2 new VSAs. The following section provides information about this feature: • Cisco Voice VSAs, page 4-64