



Configuring Dynamic Prompts, Customizing Accounting Templates, and Directing AAA Requests for Cisco Voice Gateways

Cisco IOS Release 12.2(11)T

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Preface

Audience

This guide is for users who are interested in:

- Playing out ISO formatted time and date, and visible noncontrol ASCII characters for dynamic prompts.
- Redirecting AAA requests to RADIUS servers based on account number, called party number, or incoming trunk groups.
- Creating accounting templates using voice vendor specific attributes (VSAs) to customize their billing records.

Structure of This Guide

This guide contains the following sections:

- Chapter 1, “An Overview of Dynamic Prompts, Accounting Templates, and Directing AAA Requests”
- Chapter 2, “Cisco IOS Configuration”
- Chapter 3, “Cisco IOS Commands”
- Chapter 4, “Examples”
- Chapter 5, “Cisco IOS Troubleshooting”
- Appendix A, “ASCII Table”
- Glossary

Document Conventions

This guide uses the following conventions to convey instructions and information.

Convention	Description
boldface font	Commands and keywords.
<i>italic font</i>	Variables for which you supply values.
[]	Keywords or arguments that appear within square brackets are optional.
{x y z}	A choice of required keywords appears in braces separated by vertical bars. You must select one.
screen font	Examples of information displayed on the screen.
boldface screen font	Examples of information you must enter.
< >	Nonprinting characters, for example passwords, appear in angle brackets in contexts where italic font is not available.
[]	Default responses to system prompts appear in square brackets.

**Note**

Means *reader take note*. Notes contain helpful suggestions or references to additional information and material.

**Timesaver**

This symbol means *the described action saves time*. You can save time by performing the action described in the paragraph.

**Caution**

This symbol means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

**Tip**

This symbol means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

Obtaining Documentation

The following sections explain how to obtain documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following URL:

<http://www.cisco.com>

Translated documentation is available at the following URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco product documentation from the Networking Products MarketPlace:
http://www.cisco.com/cgi-bin/order/order_root.pl
- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

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If you are reading Cisco product documentation on Cisco.com, you can submit technical comments electronically. Click **Feedback** at the top of the Cisco Documentation home page. After you complete the form, print it out and fax it to Cisco at 408 527-0730.

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To submit your comments by mail, use the response card behind the front cover of your document, or write to the following address:

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Attn: Document Resource Connection
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San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

Cisco.com is a highly integrated Internet application and a powerful, easy-to-use tool that provides a broad range of features and services to help you to

- Streamline business processes and improve productivity
- Resolve technical issues with online support
- Download and test software packages
- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

You can self-register on Cisco.com to obtain customized information and service. To access Cisco.com, go to the following URL:

<http://www.cisco.com>

Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available through the Cisco TAC: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Inquiries to Cisco TAC are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.

- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

Which Cisco TAC resource you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

The Cisco TAC Web Site allows you to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to the following URL:

<http://www.cisco.com/tac>

All customers, partners, and resellers who have a valid Cisco services contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to the following URL to register:

<http://www.cisco.com/register/>

If you cannot resolve your technical issues by using the Cisco TAC Web Site, and you are a Cisco.com registered user, you can open a case online by using the TAC Case Open tool at the following URL:

<http://www.cisco.com/tac/caseopen>

If you have Internet access, it is recommended that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses issues that are classified as priority level 1 or priority level 2; these classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer will automatically open a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to the following URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled; for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). In addition, please have available your service agreement number and your product serial number.



An Overview of Dynamic Prompts, Accounting Templates, and Directing AAA Requests

Feature History

Release	Modification
12.2(11)T	Customizing accounting templates, directing AAA requests, and enhancements to dynamic prompts are introduced on the Cisco 3660, Cisco AS5300, Cisco AS5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.

This chapter consists of the following:

- “Dynamic Prompts” section on page 1-13
- “AAA Enhancements to Voice Gateways” section on page 1-14
- “Customizing Accounting Records” section on page 1-15
- “Related Features and Technologies” section on page 1-17
- “Related Documents” section on page 1-18
- “Supported Platforms” section on page 1-19
- “Supported Standards, MIBs and RFCs” section on page 1-20
- “Prerequisites” section on page 1-20

Dynamic Prompts

The functionality of dynamic prompts, an existing Cisco IOS feature, has been expanded in Cisco IOS Release 12.2(11)T to playout ISO formatted time and date, and visible noncontrol ASCII characters. Dynamic prompts allow a TCL application to play the date and time information on a Cisco voice gateway. The information is first retrieved by using the **clock** command in the TCL library, and then played through dynamic prompts using the multi-language script.

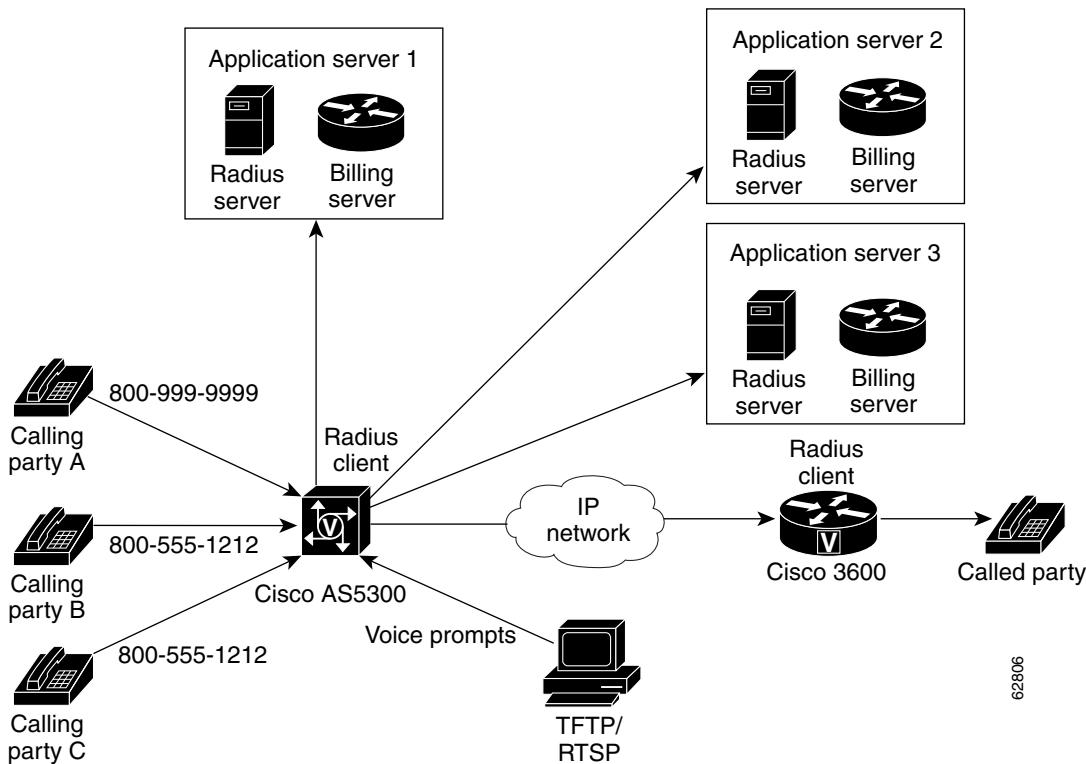
The **media play** command in the TCL library plays the specified dynamic prompt on the specified call leg. The English version of the multi-language TCL script must be enabled before you use the **media play** command; it allows a dynamic prompt to play string, and visible noncontrol ASCII characters.

AAA Enhancements to Voice Gateways

Cisco IOS Release 12.2(11)T introduces the capability of splitting AAA requests to RADIUS servers based on account number, called party number, and incoming trunk groups.

Consider the topology shown in Figure 1 below.

Figure 1 RADIUS/Billing Selection Based on DNIS and Card Number



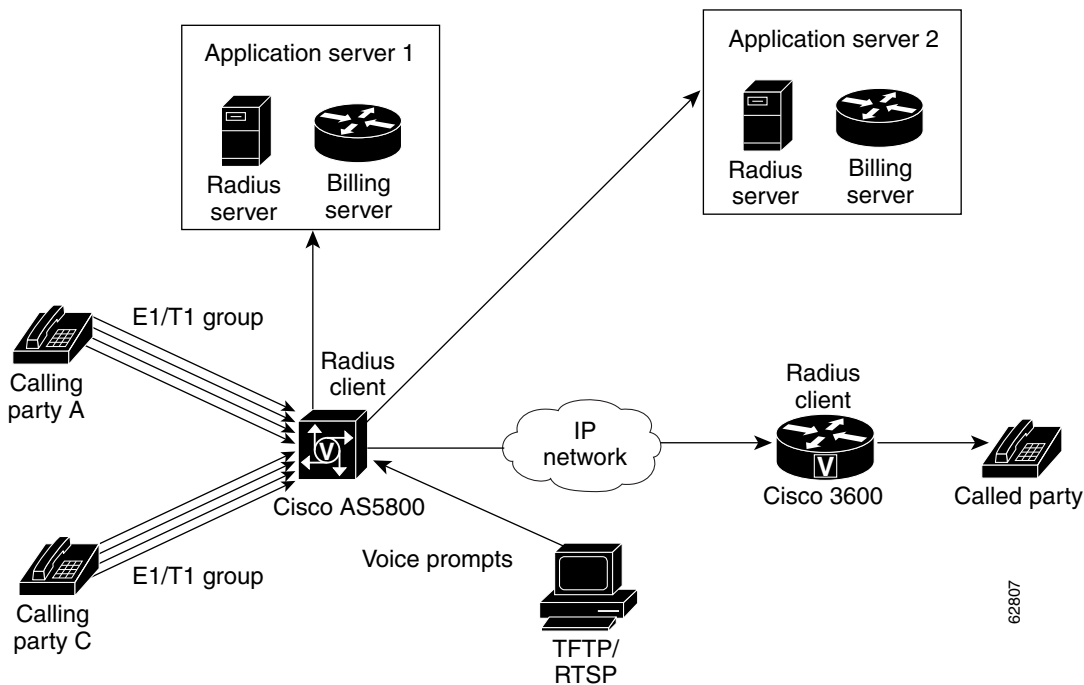
In Figure 1 above, the gateway identifies the TCL IVR application to be invoked based on:

- The access number dialed by the caller, or
- The account number or card number

Calling party A has a different access number compared to calling parties B and C. Because calling parties B and C use the same access number, the service provider can use the TCL IVR script to manipulate the call and direct the AAA information to the appropriate billing/RADIUS server based on the individual card numbers entered by callers B and C. If a caller is using an account number instead of a prepaid calling card, the service provider can use the caller's account number to direct the AAA information to the appropriate RADIUS/billing server that is used to authorize calls based on account numbers.

Figure 2 below shows RADIUS/Billing server selections based on T1/E1 trunk groups. For example, if caller A is using a pre-paid application, the service provider directs AAA information to the appropriate RADIUS/Billing server based on the T1/E1 trunk group that is assigned to receive prepaid application calls.

Figure 2 RADIUS/Billing Server Selection Based on T1/E1 Trunk Groups



Customizing Accounting Records

You can create an accounting template to customize your accounting records based on your billing needs. An accounting template is a text-based interface that allows you to customize and define the content of that template and helps reduce billing traffic from the gateway to the accounting servers.

A sample accounting template applicable to POTS and VoIP dial-peers is shown below.

Vendor specific attributes (VSAs) used in session applications such as `h323-ivr-out`, `h323-credit-amount`, `h323-credit-time`, `h323-billing-model`, are only controlled in the TCL script and not in the accounting template. If you specify these VSAs in the accounting template, they are ignored and no error messages are reported. You 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.

Session applications also 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 the TCL script. The VSAs listed in this template are voice-specific only. Non-voice specific attributes cannot be controlled through this template. To add new attributes not defined in this template, contact your Cisco marketing representative.

To delete an attribute, add the # sign in front of the attribute name.

Accounting Template

You can create a custom accounting template by selecting only those VSAs that are applicable to your billing needs. The list below shows some existing VSAs introduced in previous Cisco IOS releases (also known as default VSAs in this document) and new VSAs introduced in Cisco IOS Release 12.2(11) T that can be used to create custom accounting templates. For the latest list of VSAs, refer to the *RADIUS Vendor-Specific Attributes Voice Implementation Guide*.

Attribute Name	Usage and Restrictions
----------------	------------------------

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	ICPIF
-------------------------------	-------

Detail CallHistory

acom-level	#POTS leg only
------------	----------------

noise-level	#POTS leg only
-------------	----------------

img-pages-count	#POTS leg only
-----------------	----------------

voice-tx-duration	#POTS leg only
-------------------	----------------

tx-duration	#POTS leg only
-------------	----------------

charged-units	#
---------------	---

disconnect-text	#
-----------------	---

peer-if-index	#
---------------	---

logical-if-index	#
------------------	---

codec-type-rate	#
-----------------	---

codec-bytes	#IP leg only
-------------	--------------

session-protocol	#IP leg only
vad-enable	#IP leg only
remote-udp-port	#IP leg only
hiwater-playout-display	#IP leg only
lowater-playout-display	#IP leg only
receive-delay	#IP leg only
round-trip-delay	#IP leg only
ontime-rv-playout	#IP leg only
gapfill-with-silence	#IP leg only
gapfill-with-prediction	#IP leg only
gapfill-with-interpolation	#IP leg only
gapfill-with-redundancy	#IP leg only
lost-packets	#IP leg only
early-packets	#IP leg only
late-packets	#IP leg only

Each accounting template attribute is unique. For example, the attribute disconnect-time is applied to a stop message because you can only get that information at the end of a call and not at the start of that call.

If you want to generate individual accounting templates for different incoming trunk calls on an accounting server, you can define multiple templates and associate them with different sets of incoming dial-peers. You can customize the template by deleting attributes that are not required for your specific template.

Related Features and Technologies

- *Service Provider feature set for VoIP* uses the IVR for interaction with the caller; collects digits for accounting and billing purposes.
- *Authentication, Authorization, and Accounting (AAA)* feature is used in conjunction with IVR.
- *Settlement for Packet Telephony on Cisco Access Platforms* uses the TCL IVR scripts for the billing process.
- *Debit Card for Packet Telephony on Cisco Access Platforms* uses TCL IVR extensively for interoperability.

- *Enhanced Multi-Language Support for Cisco IOS Interactive Voice Response* allows you to implement and add support for new languages and text-to-speech (TTS) notations to the core IVR infrastructure on Cisco voice gateways.

Related Documents

For related information on the features described in this document, refer to the following documents:

- *Internetworking Terms and Acronyms*.
- *Hardware installation documents for Cisco AS5300* for information on installing the hardware for the Cisco voice gateway.
- *Cisco AS5300 Software Configuration Guide* for information on prerequisite configuration of the voice gateway, including ISDN and IP networking and telephony dial peers.
- *Release Notes for Cisco IOS Release 12.2T*
- *Platform Specific Information for Cisco 2600 Series Routers*.
- *Platform Specific Information for Cisco 3600 Series Routers*.
- *Voice over IP for the Cisco AS5300*, the section “VFC Management” provides VCWare download instructions.
- *Hardware installation documents for Cisco AS5350* for information on installing the hardware for the Cisco voice gateway.
- *Hardware installation documents for Cisco AS5400* for information on installing the hardware for the Cisco voice gateway.
- *Cisco AS5350 and Cisco AS5400 Universal Gateway Software Configuration Guide* for information on prerequisite configuration of the voice gateway, including ISDN, IP networking, and telephony dial peers.
- *Enhanced Multi-Language Support for Cisco IOS Interactive Voice Response*, Cisco IOS Release 12.2(2)T feature module, describes multi-language support for dynamic prompts.
- *Configuring Debit Card Applications*, for information on debit card applications that work in conjunction with Cisco interactive voice response (IVR) software, AAA, RADIUS, and an integrated third party billing system.
- *Cisco IOS Voice, Video, and Fax Configuration Guide*, Cisco IOS Release 12.2:
 - “Configuring Dial Plans, Dial Peers, and Digit Manipulation” chapter for information on configuring dial peers.
 - “Configuring TCL IVR Applications” chapter for information on configuring TCL applications.
- *Cisco IOS Voice, Video, and Fax Command Reference*, Cisco IOS Release 12.2, for command reference information on Cisco IOS commands.
- “Authentication, Authorization, and Accounting (AAA)” chapter in the *Cisco IOS Security Configuration Guide*, Cisco IOS Release 12.2, for information on configuring accounting records.
- *RADIUS Vendor-Specific Attributes Voice Implementation Guide* .
- *TCL IVR API Version 2.0 Programmer's Guide* for information about creating and implementing Tool Command Language (TCL) IVR scripts.
- *Cisco Prepaid Debitcard Multi-language Programmer's Reference*
- *Enhanced Multi-Language Support for Cisco IOS Interactive Voice Response*

**Tips**

see the “Obtaining Documentation” section.

Supported Platforms

This feature is supported on the following platforms:

- Cisco 3660 router
- Cisco AS5300 universal access server
- Cisco AS5350 universal gateway
- Cisco AS5400 universal gateway
- Cisco AS5800 universal gateway
- Cisco AS5850 universal gateway

Determining Platform Support Through Cisco Feature Navigator

Cisco IOS software is packaged in feature sets that are supported on specific platforms. To get updated information regarding platform support for this feature, access Cisco Feature Navigator. Cisco Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Cisco Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image. You can search by feature or release. Under the release section, you can compare releases side by side to display both the features unique to each software release and the features in common.

To access Cisco Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<http://www.cisco.com/register>

Cisco Feature Navigator is updated regularly when major Cisco IOS software releases and technology releases occur. For the most current information, go to the Cisco Feature Navigator home page at the following URL:

<http://www.cisco.com/go/fn>

Availability of Cisco IOS Software Images

Platform support for particular Cisco IOS software releases is dependent on the availability of the software images for those platforms. Software images for some platforms may be deferred, delayed, or changed without prior notice. For updated information about platform support and availability of software images for each Cisco IOS software release, refer to the online release notes or, if supported, Cisco Feature Navigator.

Supported Standards, MIBs and RFCs

MIBs

There are no MIBs. To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB web site on Cisco.com at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:

<http://tools.cisco.com/ITDIT/MIBS/servlet/index>

If Cisco MIB Locator does not support the MIB information that you need, you can also obtain a list of supported MIBs and download MIBs from the Cisco MIBs page at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

To access Cisco MIB Locator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<http://www.cisco.com/register>

RFCs

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

Prerequisites

The following tasks are a prerequisite to configuring the Cisco IOS features in this document:

- Establish a working IP network. For more information about configuring IP, refer to the “IP Overview,” “Configuring IP Addressing,” and “Configuring IP Services” chapters in the Cisco IOS Release 12.0 *Network Protocols Configuration Guide, Part 1*.
- Configure Voice over IP. For more information about configuring Voice over IP, refer to the “Voice over IP Software Configuration Guide.”
- Configure a TFTP sever to perform storage and retrieval of the audio files, which are required by the Debit Card gateway or other features requiring TCL IVR scripts and audio files.
- Program and configure the interface between the RADIUS server and the Cisco voice gateway to operate with vendor specific attributes (VSAs).
- Download the TCL scripts that are not embedded in Cisco IOS from the Cisco CCO software support URL:
<http://www.cisco.com/public/sw-center/>
- Define and apply IVR applications on the dial peer to direct AAA requests to a RADIUS server.



Tips

See the “Related Documents” section.

Hardware Requirements

One of the following hardware platforms is required:

- Cisco AS5300 universal access server with a voice feature card (VFC)
- Cisco AS5350 or Cisco AS5400 universal gateway with a dial feature card (DFC)

Memory Requirements

- DRAM
 - Cisco 2650 and Cisco 3640: at least 96 MB of DRAM
 - Cisco AS5300 and Cisco AS5350: minimum 128 MB of DRAM
 - Cisco 3660 and Cisco AS5400: minimum 256 MB of DRAM
- Flash memory
 - Cisco 2650, 3640, 3660 and Cisco AS5300: minimum 16 MB of Flash memory
 - Cisco AS5350 and Cisco AS5400: minimum 32 MB of Flash memory



Cisco IOS Configuration

The configuration tasks for each feature are in the following sections:

- Retrieving System Time and Date using TCL Clock Commands, page 2-23
- Playing Information through Dynamic Prompts, page 2-25
- Directing AAA Requests to a RADIUS Server, page 2-26
- Enabling and Disabling Accounting for any Call Leg, page 2-29
- Customizing Accounting Packets, page 2-30

Retrieving System Time and Date using TCL Clock Commands

Refer to the *TCL IVR API Version 2.0 Programmer's Guide* for information about creating and implementing Tool Command Language (TCL) IVR scripts.

To retrieve the system time and date, use the following **clock** commands:

Step 1 To retrieve the system time and date, enter the **clock format** TCL verb.

```
clock format clock value ? -format string ?? -gmt boolean ?
```

Arguments:

- clock value
- format string
- gmt boolean

This command converts an integer time value returned by `clock seconds`, `clock scan`, or the `atime`, `mtime`, or `ctime` options of the `file` command, to human-readable form. If the `-format` argument is present, the next argument is a string that describes how the date and time are to be formatted. Field descriptors consist of a `%` followed by a field descriptor character. All other characters are copied into the result.

Valid field descriptors are:

- `%%` Insert a `%`.
- `%a` Abbreviated weekday name (Mon, Tue, etc.).
- `%A` Full weekday name (Monday, Tuesday, etc.).
- `%b` Abbreviated month name (Jan, Feb, etc.).
- `%B` Full month name.
- `%c` Locale specific date and time.

%d	Day of month (01 - 31).
%H	Hour in 24-hour format (00 - 23).
%I	Hour in 12-hour format (00 - 12).
%j	Day of year (001 - 366).
%m	Month number (01 - 12).
%M	Minute (00 - 59).
%p	AM/PM indicator.
%S	Seconds (00 - 59).
%U	Week of year (01 - 52), Sunday is the first day of the week.
%w	Weekday number (Sunday = 0).
%W	Week of year (01 - 52), Monday is the first day of the week.
%x	Locale specific date format.
%X	Locale specific time format.
%y	Year without century (00 - 99).
%Y	Year with century (for example, 1990)
%Z	Time zone name.

The following field descriptors may not be supported on all operating systems. For example, they may be supported on UNIX and not be supported on Microsoft Windows systems. Cisco IOS software supports the following field descriptors:

%D	Date as %m/%d/%y.
%e	Day of month (1 - 31), no leading zeros.
%h	Abbreviated month name.
%n	Insert a newline.
%r	Time as %I:%M:%S %p.
%R	Time as %H:%M.
%t	Insert a tab.
%T	Time as %H:%M:%S.

If the *-format* argument is not specified, the format string `%a %b %d %H:%M:%S %Z %Y` is used. If the *-gmt* argument is specified, the next argument must be a boolean. If the argument is true, it specifies that the time will be formatted as Greenwich Mean Time. If the argument is false, the local time-zone will be used as defined by the operating environment.

Step 2 To return the current date and time as a system-dependent integer value, enter the **clock seconds** TCL verb.

clock seconds

The unit of the integer value is seconds, allowing it to be used for relative time calculations. The integer value is defined as total elapsed time from an epoch. An epoch is not specified in this command.

Playing Information through Dynamic Prompts

This section describes the TCL commands used to retrieve information on a voice gateway and then play them out using dynamic prompts.

To play the new dynamic prompts mentioned in the section “Playing System Time and Date using the Media Play Command” below, first download the multi-language script and enable it using the following command:



Note

Only the English version of the multi-language script is supported. To download multi-language scripts, refer to *Enhanced Multi-Language Support for Cisco IOS Interactive Voice Response*.

- Step 1** Enter the **call language voice** command in global configuration mode. Enter *en* for the argument language. URL is the address where you store the multi-language script.

```
Router(config)# call language voice language url
```

Example:

```
call language voice en tftp://highway/mjs/scripts/multi-lang/en_translate.tcl
```

Playing System Time and Date using the Media Play Command

To play a specific dynamic prompt, use the following TCL verb:

- Step 1** Enter the media play TCL verb. Assign an incoming or outgoing leg ID, or an information tag.

```
media play {[legID|info-tag][url-list]}
```

Arguments:

- **@C string** – takes a string of printable ASCII characters and plays out the characters sequentially. The syntax is “@C ‘\$string’”. @C indicates payout for a character string. A single space must separate @C and the ASCII string, where the ASCII string is enclosed within single quotation marks. For a single quote to play out in the ASCII string, enter two single consecutive quotes in the input. The system treats two consecutive single quotes as a single quote during processing. For example, for “@C ‘danny’s example’” the output is danny’s example played out as:

```
“d” “a” “n” “n” “y” single-quote “s” space “e” “x” “a” “m” “p” “l” “e”
```

- The maximum number of characters in a **media play** command is 50 characters to prevent high performance impact. The supported characters are ASCII 0x20 to 0x7E. English letters in the set are not case sensitive.
- **%Ttime_of_day** – accepts an ISO standard time format and plays out the time. Supported formats are *hhmmss*, *hhmm*, or *hh*, where hh is hour, mm is minute, and ss is second. Hour is in 24-hour format.

Examples:

```
%T131501 will play one fifteen pm and one second.
```

```
%T0001 will play twelve O one am.
```

```
%T14 will play two pm.
```

- **%Ddate** – accepts an ISO standard date format and plays out the date. Supported formats are *CCYYMMDD*, *CCYYMM*, *CCYY*, *--MMDD*, *--MM* or *---DD*. CC is century, YY is year, MM is month, and DD is day of month.

Examples:

```
%D20000914 will play year two thousand september fourteenth.
%D199910 will play year nineteen ninety nine october.
%D2001 will play year two thousand one.
%D--0102 will play January second.
%D--12 will play december.
%D--31 will play thirty first.
```

- `%Wday_of_week` -- day of week. 1=Monday, 2=Tuesday, ..., 7=Sunday. Take the input and play out the name of the day of the week.

Example:

```
%W1 will play Monday.
```

The prompt names for playable characters are shown in Appendix A, “ASCII Table”

Directing AAA Requests to a RADIUS Server

You can use TCL scripts or the CLI to direct AAA requests to a specific RADIUS server based on:

- User account number
- Called party number
- Trunk group

You must perform the following prerequisite tasks before you start directing AAA requests to a RADIUS server:

Step 1 Define a RADIUS server by entering the following command:

```
Router(config)# radius server host ipaddress auth-port port-number acct-port port-number
```

Example:

```
radius server host 1.5.35.10 auth-port 2001 acct-port 2002
```

Step 2 Use the RADIUS server defined in Step 1 above to define a AAA group.

- a. To define a group name, enter the following command in global configuration mode:

```
Router(config)# aaa group server radius group-name
```



Note For the argument **group-name** in the command, enter the name of the specific RADIUS server (for example server1) you want to authenticate, or enter the argument **radius** if you want to authenticate all RADIUS servers .

- b. To configure the IP address of the RADIUS server for the group server, enter the following command in group server configuration mode:

```
Router(config-sg-radius)# server ip-address auth-port port-number acct-port port-number
```

- Step 3** Use the AAA group defined in Step 2 above to define an AAA method list.
- For voice authentication, enter the **aaa authentication login** command in global configuration mode.

```
Router(config)# aaa authentication login list-name method1 [method2...]
```

Examples:

```
aaa authentication login h323 group server2
aaa authentication login MIS-access group radius
```

- For voice authorization, enter the **aaa authorization** command in global configuration mode.

```
Router(config)# aaa authorization exec list-name method1 [method2...]
```

Examples:

```
aaa authorization exec h323 group server2
aaa authorization exec MIS-access group radius
```

- For voice accounting, enter the **aaa accounting** command in global configuration mode.

```
Router(config)# aaa accounting connection list-name start-stop method1 [method2...]
```

Example:

```
aaa accounting connection h323 start-stop group server1
```

Directing AAA Requests using Account Numbers

It is easier to use TCL scripts instead of the CLI to direct AAA requests using account numbers.

To use TCL scripts for directing AAA requests using account numbers, follow the steps below:

- Step 1** Before you start using TCL scripts to direct AAA requests using account numbers, you must define and apply the interactive voice response (IVR) application on the dial peer.

- Step 2** Use the authentication, authorization, and accounting TCL verbs to customize your TCL scripts. Refer to the Accounting Template, page 1-16 in Chapter 1, “An Overview of Dynamic Prompts, Accounting Templates, and Directing AAA Requests” for an example of a TCL script.

The authentication, accounting, and authorization TCL verbs are:

- Authentication: Use the following TCL verb:

```
aaa authenticate account password [-a avlistSend] [-s servertag]
```

- Authorization: Use the following TCL verb:

```
aaa authorize account password ani destination {legID|info-tag} [-s servertag]
```

- Accounting: Use the following TCL verbs to start or update accounting messages:

```
aaa accounting start {legID|info-tag} [-s servertag]
```

- Step 3** (Optional). If you use the accounting TCL verb, then use the **accounting suppress** command to suppress accounting on the same dial peer on which you have specified your application.

Follow the steps below to suppress accounting on the dial peer:

- Enter the **voice class aaa** command in global configuration mode.

```
Router(config)# voice-class aaa tag
```

- Enter the **accounting suppress** command in voice class mode.

```
Router(config-class)# accounting suppress
```

- c. Enter the **voice class aaa** command in dial peer mode.

```
Router(config)# dial-peer
Router(config-dial-peer)# voice class aaa tag
```

Directing AAA Requests using Called Party Number

You can use the called party number to direct AAA requests in dial peer mode as follows:

Step 1 Define dial peer.

- a. Enter dial peer configuration mode using the **dial peer voice** command. The argument **number** defines a particular dial peer.

```
Router(config)# dial-peer voice tag {pots|voip}
```

- b. Specify the incoming called number using the **incoming called number** command in dial peer configuration mode. The argument *string* is a series of digits that specifies the incoming called number.

```
Router(config-dial-peer)# incoming called number string
```

Step 2 Define the voice class.

- a. Enter the **voice class aaa** command in global configuration mode. The argument *tag* identifies the dial peer.

```
Router(config)# voice class aaa tag
```

- b. Define authentication, authorization, and accounting methods. Enter the authentication, authorization and accounting commands in voice class mode. The argument *methodListName* is used to name the list of authentication, authorization or accounting methods applicable to each command.

```
Router(config-class)# authentication method methodListName
Router(config-class)# accounting method methodListName
Router(config-class)# authorization method methodListName
```

- c. Define voice class in dial peer mode. Enter dial peer configuration mode and then define the voice class in that mode. The argument **tag** identifies the same dial peer as in step a above.

```
Router(config)# dial-peer voice tag {pots|voip}
Router(config-dial-peer)# voice-class aaa tag
```

Directing AAA Requests using Trunk Groups

To direct AAA requests using trunk groups, a trunk group must first associate with a dial peer. To use this method, group all the interfaces using one trunk group and define only one dial peer instead of individual ports for the interfaces using that trunk group.

You can direct AAA requests using trunk groups in dial peer mode as follows:

- Step 1** Define the trunk group by entering the **trunk group** command in global configuration mode. The argument *tag* is a number.

```
Router(config)# trunk group tag
```

- Step 2** Use the trunk group tag in Step 1 to group the interfaces.

- a. Enter the **interface serial** command in global configuration mode to specify a serial interface on the channelized T1 or E1 controller. The argument *slot/port* denotes the slot and port number where the channelized T1 or E1 controller is located. The argument *timeslot* denotes the ISDN D channel timeslot which is 15 for channelized E1 and 23 for channelized T1.

```
Router(config)# interface serial slot/port: timeslot
```

- b. Enter the **trunk group** command.

```
Router(config-inter-serial)# trunk group tag
```

- Step 3** Use the *tag* defined in Step 2-b above in dial peer mode.

- a. Enter the **voice class aaa** command in global configuration mode.

```
Router(config)# voice-class aaa tag
```

- b. Define authentication, accounting, and authorization methods. Enter the **authentication method**, **accounting method**, and **authorization method** commands in voice class mode. The argument *methodListName* is used to name the list of authentication, accounting, or authorization methods applicable to each command.

```
Router(config-class)# authentication method methodListName
```

```
Router(config-class)# accounting method methodListName
```

```
Router(config-class)# authorization method methodListName
```

- c. Enter dial peer configuration mode using the **dial peer voice** command.

```
Router(config)# dial-peer voice tag pots
```

- d. Define the voice class in dial peer mode. The argument *tag* identifies the same dial peer as in Step a above.

```
Router(config-dial-peer)# voice-class aaa tag
```

- e. Define the trunk group in dial peer mode. The argument *tag* is the the same number as in Step 2-b above.

```
Router(config-dial-peer)# trunk group tag
```

Enabling and Disabling Accounting for any Call Leg

Enabling voice accounting by using the **gw-accounting aaa** command will send only the default list of VSAs to the accounting server.

Global Configuration Mode

To enable and disable accounting for any call leg in global configuration mode, follow these steps:

-
- Step 1** To enable accounting for any call leg, enter the **gw-accounting aaa** command in global configuration mode. Use the no form of the command to disable accounting.

```
Router (config)# gw-accounting aaa
Router (config)# no gw-accounting aaa
```

To disable accounting based on the type of dial peer, use the following command:

- Step 2** To disable accounting based on the type of dial peer, use the following commands:

- a. Enter the **gw-accounting aaa** command.

```
Router (config)# gw-accounting aaa
```

- b. Enter the **suppress** command.

```
Router (config-gw-accounting-aaa)# suppress
```

You have a choice of entering **pots** or **voip**, based on the type of dial peer.

- c. Enter the **suppress pots** or **suppress voip** command.

```
Router (config-gw-accounting-aaa)# suppress pots
or
Router (config-gw-accounting-aaa)# suppress voip
```

Dial Peer Mode

To disable accounting in dial peer mode, follow these steps:

-
- Step 1** Enter the **voice class aaa** command in global configuration mode.

```
Router (config)# voice class aaa tag
```

- Step 2** Enter the **accounting suppress** command in voice class aaa mode.

```
Router (config-class)# accounting suppress [in-bound|out-bound]
```

- Step 3** Enter the **voice class aaa** command in dial peer mode.

```
Router (config)# dial-peer
Router (config-dial-peer)# voice-class aaa tag
```

Customizing Accounting Packets

This section contains the following sub-sections:

- Configuration Overview, page 2-31
- Configuration Tasks for Customizing Accounting Packets, page 2-34

Configuration Overview

Accounting packets for voice calls consist of non voice-specific and voice-specific attributes. This document focuses only on voice-specific attributes. With the introduction of the TCL accounting verb, you can now add some application level attributes through the TCL script and fine-tune the attribute list created by the system to create an accounting template that is customized to your accounting needs.

To customize your accounting packets, you must first create accounting templates. If you do not want to customize your accounting packets, enable voice accounting by using the **gw-accounting aaa** command to generate accounting packets. A specific set of attributes, which include both non voice-specific and voice-specific attributes, is automatically sent by the gateway to the RADIUS server.

To view the current list of these VSAs, refer to the *RADIUS Vendor Specific Attributes Voice Implementation Guide*. For example, in the Accounting Template, page 1-16 of Chapter 1, “An Overview of Dynamic Prompts, Accounting Templates, and Directing AAA Requests”, the default attributes are:

```
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    ICPIF
subscriber
```

In addition to these default VSAs, a new set of voice-specific VSAs is introduced in Cisco IOS Release 12.2(2) XU. Refer to the *RADIUS Vendor Specific Attributes Voice Implementation Guide* for the current list of VSAs. The Accounting Template, page 1-16 in Chapter 1, “An Overview of Dynamic Prompts, Accounting Templates, and Directing AAA Requests” lists these new voice-specific VSAs, reproduced here below:

Attribute Name	Usage and Restrictions
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 ICPIF

Detail CallHistory

acom-level	Pots leg only
noise-level	Pots leg only
img-pages-count	Pots leg only
voice-tx-duration	Pots leg only
tx-duration	Pots leg only
charged-units	
disconnect-text	
info-type	
peer-address	
peer-id	
peer-if-index	
logical-if-index	
codec-type-rate	
codec-bytes	IP leg only
session-protocol	IP leg only
vad-enable	IP leg only
remote-udp-port	IP leg only
hiwater-playout-display	IP leg only
lowater-playout-display	IP leg only

receive-delay	IP leg only
round-trip-delay	IP leg only
ontime-rv-playout	IP leg only
gapfill-with-silence	IP leg only
gapfill-with-prediction	IP leg only
gapfill-with-interpolation	IP leg only
gapfill-with-redundancy	IP leg only
lost-packets	IP leg only
early-packets	IP leg only
late-packets	IP leg only

To send all the VSAs to the accounting server use the **template callhistory-detail** command in global configuration mode. The list of VSAs includes both the default attributes and the new attributes introduced in Cisco IOS Release 12.2(2) XU. The Accounting Template, page 1-16 in Chapter 1, “An Overview of Dynamic Prompts, Accounting Templates, and Directing AAA Requests” includes the default and new VSAs. Refer to the “Using Callhistory-detail to Send All VSAs” section on page 2-34 for configuration details.

For the latest list of VSAs, refer to *RADIUS Vendor-Specific Attributes Voice Implementation Guide*.

To fine-tune your accounting packets based on your billing needs, you must create accounting templates using specific VSAs that are applicable to your accounting needs. For example, to target different accounting servers for incoming calls from different trunks, you must define multiple accounting templates and associate them with different sets of incoming dial peers. To create a template, remove the attributes that are not applicable by adding the # sign in front of each of those attributes.

To fine-tune your accounting packets, remove attributes that do not apply to your billing needs. Deleting these attributes creates a custom accounting template that acts as a filter, allowing only the defined attributes to be sent to the accounting server. To apply your customized template, first define the template using the **call accounting template voice** command in global configuration mode, and then apply it using either TCL scripts or the CLI. If you are using the CLI, you can apply the template either in global configuration or dial peer mode. Refer to the “Defining and Applying Customized Accounting Templates” section on page 2-35 for configuration details.

Specific VSAs that cannot be controlled by the accounting template are sent as attribute-value (AV) pairs through the *avlistSend* argument of the TCL verbs used in the script, and they are:

- h323-ivr-out
- h323-ivr-in
- h323-credit-amount
- h323-return-code
- h323-prompt-id
- h323-time-and-delay

- h323-redirect-number
- h323-preferred-lang
- h323-redirect-ip-addr
- h323-billing-model
- h323-currency

Configuration Tasks for Customizing Accounting Packets

Use the “Configuration Overview” section on page 2-31 to plan your customizing needs before you begin the applicable configuration tasks below.

Generate Accounting Packets by Enabling Voice Accounting

To automatically generate accounting packets by enabling voice accounting, enter the **gw-accounting aaa** command in global configuration mode.

```
Router(config)# gw-accounting aaa  
Router(gw-accounting aaa)# exit
```

Using Callhistory-detail to Send All VSAs

To send all VSAs (default and new) to the accounting server:

Step 1 Enter the **gw-accounting aaa** command to enter gw accounting aaa mode.

```
Router(config)# gw-accounting aaa
```

Step 2 Enter the **acct-template callhistory-detail** command in gw accounting aaa mode.

```
Router(config-gw-accounting-aaa)# acct-template callhistory-detail  
Router(config-gw-accounting-aaa)#
```

Defining and Applying Customized Accounting Templates

Defining a Customized Accounting Template

To define an accounting template:

- Step 1** Enter the **call accounting-template voice** command in global configuration mode. Enter the template name for *acctTempName*. The *url* is the address where you store the template. Always assign a .cdr extension to the filename in the URL.

```
Router(config)# call accounting-template voice acctTempName url
```

Example:

```
call accounting-template voice cdr1 tftp://highway/mjs/templates/cdr1.cdr
```



Note

After bootup, if the template file fails to load from the TFTP server, the system tries to automatically reload the file at five minute intervals.

Applying a Customized Accounting Template through the CLI in Global Configuration Mode

You can use an accounting template through the CLI (in global configuration or dial peer mode), or by using TCL verbs.

To use an accounting template through the CLI in global configuration mode, use the following commands:

- Step 1** Enter the **gw-accounting aaa** command to enter gw accounting aaa mode.

```
Router(config)# gw-accounting aaa
```

- Step 2** Enter the **acct-template** command. Assign your template name to *acctTempName*.

```
Router (config-gw-accounting-aaa)# acct-template acctTempName
```

Applying a Customized Accounting Template through the CLI in Dial Peer Mode:

To apply a customized accounting template through the CLI in dial peer mode, follow these steps:

- Step 1** Enter the **call accounting-template voice** command in global configuration mode. Assign your template name to *acctTempName* and your template address (usually your tftp address) to *url*.

```
Router(config)# call accounting-template voice acctTempName url
```

- Step 2** Enter the **voice class aaa** command in global configuration mode. Assign a numerical value to *tag*.

```
Router(config)# voice class aaa tag
```

- Step 3** Enter the **accounting-template** command in voice class aaa mode. Assign your template name to *acctTempName*.

```
Router(config-class)# accounting-template acctTempName
```

- Step 4** Change configuration mode from global to dial peer and using the **dial peer voice** command, enter the **voice class aaa** command in dial peer mode. The numerical value of *tag* is the same value of *tag* in Step 2 above.

```
Router(config)# dial peer voice number [pots|voip]
Router(config-dial-peer)# voice class aaa tag
```

Applying a Customized Accounting Template through a TCL Script

You can use the accounting template through TCL verbs as follows:

- Step 1** Use the **aaa accounting start** TCL verb. Assign an incoming or outgoing call leg, or assign an information tag. Assign your template name to *acctTemplateName*.

```
aaa accounting start {legID|info-tag} -t acctTemplateName
```

Adding Attributes to Accounting Packets through TCL scripts

To add attributes to accounting packets through TCL scripts, follow these steps:

- Step 1** Use the *avlistSend* argument in the TCL verbs to send the following attributes:

- h323-ivr-out
- h323-ivr-in
- h323-credit-amount
- h323-return-code
- h323-prompt-id
- h323-time-and-delay
- h323-redirect-number
- h323-preferred-lang
- h323-redirect-ip-addr
- h323-billing-model
- h323-currency

- Step 2** Use TCL verbs for authentication, authorization, and accounting.

- a.** For authentication, use the **aaa authenticate** TCL verb.

```
aaa authenticate account password [-a avlistSend]
```

- b.** For authorization, use the **aaa authorize** TCL verb.

```
aaa authorize account password ani destination {legID | info-tag} [-a avlistSend]
```

- c.** For accounting, use the **aaa accounting start** TCL verb.

```
aaa accounting start {legID | info-tag} [-a avlistSend]
```



Cisco IOS Commands

Command Reference

This section documents new or modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.2 command reference publications. All TCL verbs are documented in the *TCL IVR API Version 2.0 Programmer's Guide* and the VSAs are documented in the *RADIUS Vendor-Specific Attributes Voice Implementation Guide*.

New Commands:

- **accounting method**
- **accounting suppress**
- **accounting template**
- **acct-template**
- **attribute acct-session-id overloaded**
- **attribute h323-remote-id resolved**
- **authentication method**
- **authorization method**
- **call accounting-template voice**
- **call accounting-template voice reload**
- **gw-accounting aaa**
- **method**
- **show call accounting-template voice**
- **suppress**
- **voice class aaa**
- **voice-class aaa**

accounting method

To set an accounting method at login for calls coming into a dial peer, use the **accounting method** command in voice class AAA configuration mode. To disable the accounting method set at login, use the **no** form of this command.

accounting method *MethListName* [out-bound]

no accounting method *MethListName* [out-bound]

Syntax Description

<i>MethListName</i>	Defines an accounting method list name.
out-bound	Defines the outbound leg.

Defaults

When a specific accounting method is not set at login, the system uses **aaa accounting connection h323** as the default.

Command Modes

Voice class AAA configuration

Command History

Release	Modification
12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, Cisco 5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.

Usage Guidelines

- This command sets the accounting method for dial peers in voice class AAA configuration mode. To initially define a method list, refer to the *AAA Cisco IOS Security Configuration Guide, Release 12.2*.
- When the outbound option in the command is specified, the out-bound call leg on the dial peer uses the method list name specified in the command.
- If the method list name is not specified, then by default, the out-bound call leg uses the same method list name as the inbound call leg.

Examples

```
voice class aaa 1
  accounting method dp-out out-bound
```

Related Commands

Command	Description
voice class aaa	Enables dial peer based VoIP AAA configurations.
aaa accounting connection h323	Defines the accounting method list H.323 with RADIUS, using stop-only or start-stop accounting options.

accounting suppress

To disable accounting that is generated automatically by a service provider module for a specific dial peer, use the **accounting suppress** command in voice class AAA configuration mode. To allow accounting to be automatically generated, use the **no** form of this command.

accounting suppress [**in-bound**|**out-bound**]

no accounting suppress [**in-bound**|**out-bound**]

Syntax Description

in-bound	Defines call leg for incoming calls.
out-bound	Defines call leg for outbound calls.

Defaults

Accounting is automatically generated by the service provider module.

Command Modes

Voice class AAA configuration

Command History

Release	Modification
12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, Cisco AS5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.

Usage Guidelines

- If a call leg option is not specified in the command, accounting is disabled for both in-bound and outbound calls.
- For accounting to be automatically generated in the service provider module, you must first configure `gw-accounting aaa` in global configuration mode before configuring dial peer based accounting in voice class AAA mode.

Examples

In the example below, accounting is suppressed for the incoming call leg.

```
voice class aaa 1
  accounting suppress in-bound
```

Related Commands

Command	Description
voice class aaa	Enables dial peer based VoIP AAA configurations.
gw-accounting aaa	Enables VoIP gateway accounting.
suppress	Turns off accounting for a call leg on a pots or VoIP dial peer. The command is used in <code>gw-accounting aaa</code> configuration mode.

accounting template

To allow each dial peer to choose and send a customized accounting template to the RADIUS server, use the **accounting template** command in voice class AAA configuration mode. To disable the dial peer from choosing and sending a customized accounting template, use the **no** form of this command.

accounting template *acctTempName* [out-bound]

no accounting template *acctTempName* [out-bound]

Syntax Description

<i>acctTempName</i>	Name of the accounting template.
out-bound	Defines the outbound leg.

Defaults

The dial peer does not choose and send a customized accounting template to the RADIUS server.

Command Modes

Voice class AAA configuration

Command History

Release	Modification
12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, Cisco AS5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.

Usage Guidelines

- This command overrides the **acct-template** command in gw-accounting aaa mode when using a customized accounting template.
- If you use a TCL script, the TCL verb **aaa accounting start [-t acctTempName]** takes precedence over the **accounting template** command in voice class aaa configuration mode.

Examples

```
voice class aaa 1
  accounting template temp-dp out-bound
```

Related Commands

Command	Description
voice class aaa	Enables dial peer based VoIP AAA configurations.

acct-template

To send a selected group of voice accounting VSAs, use the **acct-template** command in gateway accounting AAA configuration mode. To disable sending that selected group of voice accounting VSAs, use the **no** form of this command.

```
acct-template { callhistory-detail | acctTemplateName }
```

```
no acct-template { callhistory-detail | acctTemplateName }
```

Syntax Description

<i>acctTemplateName</i>	Name of the custom accounting template created by deleting unwanted attributes.
callhistory-detail	Sends all voice attributes for accounting.

Defaults

No voice accounting VSAs are sent in gateway accounting AAA configuration mode.

Command Modes

Gateway accounting AAA configuration

Command History

Release	Modification
12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, AS5350, AS5400, AS5800, and AS5850.

Usage Guidelines

- If you do not want to create a custom template, use the **callhistory-detail** command to send all voice VSAs to the accounting server. These are voice VSAs introduced in Cisco IOS releases up to Cisco IOS Release 12.2(11)T. See the *RADIUS Vendor Specific Attributes Voice Implementation Guide* and the *Supplemental RADIUS Vendor Specific Attributes Voice Implementation Guide* for the current list of attributes.
- Use the **acct-template** command to send only those voice VSAs that are defined in the accounting template. The accounting template is a text file that you can create by selecting specific VSAs that are applicable to your billing needs. You must first use the **call accounting-template voice** command to define your accounting template before using the **acct-template** command. See the *RADIUS Vendor-Specific Attributes Voice Implementation Guide* for the latest list of attributes.
- When you send only those VSAs defined in your accounting template, the default call history records that are created by the service provider are automatically suppressed.

Examples

In the example below, the **acct-template** command is used to create temp-glob, a custom template.

```
gw-accounting aaa
!
acct-template temp-glob
```

Related Commands	Command	Description
	call accounting-template voice	Defines and applies your customized template.
	gw-accounting aaa	Enables VoIP gateway accounting.
	show call accounting-template voice	Displays VSAs sent through accounting templates.

attribute acct-session-id overloaded

To overload the acct-session-id attribute with voice VSAs, use the **attribute acct-session-id-overloaded** command in gateway accounting AAA configuration mode. To disable overloading the acct-session-id attribute with voice VSAs, use the **no** form of this command.

attribute acct-session-id overloaded

no attribute acct-session-id overloaded

Syntax Description

There are no arguments or keywords for this command.

Defaults

The acct-session-id attribute is not overloaded with voice VSAs.

Command Modes

Gateway accounting AAA configuration

Command History

Release	Modification
12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, Cisco AS5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.

Usage Guidelines

- acct-session-id is RADIUS attribute 44. For more information on this attribute, see the document, *RADIUS attribute 44 (Accounting Session ID) in Access Requests*.
- The **attribute acct-session-id overloaded** command replaces the **gw-accounting h323 vsa** command.
- Attributes that cannot be mapped to standard RADIUS attributes are packed into the acct-session-id attribute field as ASCII strings separated by the “/” character.
- The Accounting Session ID (acct-session-id) attribute contains the RADIUS account session ID, which is a unique identifier that links accounting records associated with the same login session for a user. This unique identifier makes it easy to match start and stop records in a log file.
- Accounting Session ID numbers restart at 1 each time the router is power-cycled or the software is reloaded.

Examples

```
gw-accounting aaa
attribute acct-session-id overloaded
```

Related Commands

Command	Description
gw-accounting aaa	Enables VoIP gateway accounting.
call accounting-template voice	Defines and loads the template file at the location defined by the url

attribute h323-remote-id resolved

To resolve the h323-remote-id attribute, use the **attribute h323-remote-id resolved** command in gw-accounting aaa configuration mode. To keep the h323-remote-id attribute unresolved, use the **no** form of this command.

attribute h323-remote -id resolved

no attribute h323-remote -id resolved

Syntax Description

There are no arguments or keywords for this command.

Defaults

The h323-remote-id attribute is not resolved.

Command Modes

gw-accounting aaa configuration

Command History

Release	Modification
12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, AS5350, AS5400, AS5800, and AS5850.

Usage Guidelines

- In Cisco IOS release 12.2(11)T, the **attribute h323-remote-id resolved** command replaces the **gw-accounting h323 resolve** command, and the h323-remote-id attribute has been added as a Cisco vendor specific attribute (VSA). This attribute is a string that indicates the DNS name or locally defined host name of the remote gateway.
- You can obtain the value of the h323-remote-id attribute by doing a DNS lookup of the h323-remote-address attribute. The h323-remote-address attribute indicates the IP address of the remote gateway.

Examples

```
gw-accounting aaa
  attribute h323-remote-id resolved
```

Related Commands

Command	Description
gw-accounting aaa	Enables VoIP gateway accounting.

authentication method

To set an authentication method at login for calls coming into a dial peer, use the **authentication method** command in voice class AAA mode. To disable the authentication method set at login, use the **no** form of this command.

authentication method *MethListName*

no authentication method *MethListName*

Syntax Description

<i>MethListName</i>	Defines an authentication method list name.
---------------------	---

Defaults

When a specific authentication method is not set at login, the system uses **aaa authentication login h323** as the default.

Command Modes

voice class AAA configuration

Command History

Release	Modification
12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, AS5350, AS5400, AS5800, and AS5850.

Usage Guidelines

- In voice class AAA configuration mode, use this command to direct authentication requests to a RADIUS server based on DNIS or trunk grouping.
- This command is used for directing dial peer based authentication requests. The method list must be defined during initial authentication setup.

Examples

In the example below, dp is the method list name used for authentication. The method list name is defined during initial authentication setup.

```
voice class aaa 1
 authentication method dp
```

Related Commands

Command	Description
voice class aaa	Enables dial peer based VoIP AAA configurations.
aaa authentication login	Sets AAA authentication at login.

authorization method

To set an authorization method at login for calls coming into a dial peer, use the **authorization method** command in voice class AAA configuration mode. To disable the authorization method set at login, use the **no** form of this command.

authorization method *MethListName*

no authorization method *MethListName*

Syntax Description

<i>MethListName</i>	Defines an authorization method list name.
---------------------	--

Defaults

When a specific authorization method is not set at login, the system uses **aaa authorization exec h323** as the default.

Command Modes

Voice class AAA configuration

Command History

Release	Modification
12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, AS5350, AS5400, AS5800, and AS5850.

Usage Guidelines

- In voice class AAA configuration mode, use this command to direct authorization requests to a RADIUS server based on DNIS or trunk grouping.
- This command is used for directing dial peer based authentication requests. The method list must be defined during initial authentication setup.

Examples

```
voice class aaa 1
  authorization method dp
```

Related Commands

Command	Description
voice class aaa	Enables dial peer based VoIP AAA configurations.
aaa authorization exec	Runs authorization to determine if the user is allowed to run an EXEC shell.

call accounting-template voice

To select an accounting template at a specific location, use the **call accounting-template voice** command in global configuration mode. To remove a specific accounting template, use the **no** form of this command.

call accounting-template voice *acctTempName url*

no call accounting-template voice *acctTempName url*

Syntax Description

<i>acctTempName</i>	Template name
<i>url</i>	Location of the template.

Defaults

No default behavior or values

Command Modes

Global configuration

Command History

Release	Modification
12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, Cisco AS5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.

Usage Guidelines

- The template name must have a .cdr extension.
- To select call records based on your accounting needs, and to specify the location of an accounting template that defines the applicable vendor specific attributes (VSAs) for generating those selected call records, use the **call accounting-template voice** command in global configuration mode.
- *acctTempName* refers to a specific accounting template file that you want to send to the RADIUS server. This template file defines only specific VSAs selected by you, to allow you to control your call records based on your accounting needs.

Examples

The example below shows the accounting template cdr1 selected from a specific TFTP address.

```
call accounting-template voice temp-ivr tftp://kyer/santac/cdr/cdr1.cdr
```

Related Commands

Command	Description
show call accounting-template voice	Displays template status and attribute names of a specific template. Displays status of dirty templates.
call accounting-template voice reload	Reloads the accounting template from the location where it is stored.

call accounting-template voice reload

To reload the accounting template, use the **call accounting-template voice reload** command in privileged EXEC mode.

call accounting-template voice reload *acctTemplateName*

Syntax Description	reload	Reloads the accounting template from the address (for example, a tftp address) where the template is stored.
	<i>acctTemplateName</i>	The name of the accounting template.

Defaults No default behavior or values

Command Modes Privileged EXEC

Command History	Release	Modification
	12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, Cisco AS5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.

Usage Guidelines

- Use the **call accounting-template voice reload** command to reload the template from the url defined in the **call accounting-template voice** command. After bootup, if the template file fails to load from the TFTP server, the system tries to automatically reload the file at five minute intervals.

Examples The example below shows how to reload accounting template cdr2.

```
call accounting-template voice reload cdr2
```

Related Commands	Command	Description
	gw-accounting aaa	Defines and loads the template file at the location defined by the url.

gw-accounting aaa

To enable VoIP gateway accounting through the AAA system, use the **gw-accounting aaa** command in global configuration mode. To disable VoIP gateway accounting, use the no form of this command.

gw-accounting aaa

no gw-accounting aaa

Syntax Description There are no arguments or keywords for this command.

Defaults VoIP gateway accounting is disabled.

Command Modes Global configuration

Command History	Release	Modification
	12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, Cisco AS5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.

Usage Guidelines

- The **gw-accounting aaa** command replaces the **gw-accounting h323** command.
- Enter the **gw-accounting aaa** command to configure commands in gateway accounting AAA mode. Commands that are configured in gateway accounting AAA mode are listed in the “Related Commands” section below.

Examples In the example below, gateway accounting AAA mode is first enabled before configuring the commands **method**, **attribute acct-session-id overloaded**, and **attribute h323-remote-id resolved**.

```
gw-accounting aaa
method voip
attribute acct-session-id overloaded
attribute h323-remote-id resolved
```

Related Commands	Command	Description
	attribute acct-session-id overloaded	Overloads the acct-session-id attribute with voice VSAs.
	attribute h323-remote-id resolved	Resolves the h323-remote-id attribute from the h323-remote-address attribute and sends it to the RADIUS server.
	acct-template	Sends all accounting voice attributes or only those attributes defined in a specific accounting template file.

Command	Description
method	Specifies the AAA method list name to be used.
suppress	Turns off accounting for a call leg on a POTS or VoIP dial peer.

method

To set a specific accounting method list, use the **method** command in gateway accounting AAA configuration mode.

```
method acctMethListName
```

Syntax Description	<i>acctMethListName</i> Defines a specific accounting method list.				
Defaults	h323 is the default accounting method list.				
Command Modes	gw-accounting aaa configuration.				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>12.2(11)T</td> <td>This command was introduced on the Cisco 3660, Cisco AS5300, Cisco AS5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.</td> </tr> </tbody> </table>	Release	Modification	12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, Cisco AS5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.
Release	Modification				
12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, Cisco AS5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.				

Usage Guidelines

- For information on setting AAA network security for your network, including setting method lists, refer to the *Authentication, Authorization, and Accounting Cisco IOS Security Configuration Guide, Release 12.2*.
- The **method** command sets the accounting method globally (not for a dial peer). To initially define the AAA method list name for accounting, use the **aaa accounting** command.
- The argument *acctMethListName* in the **method** command is the same name used to define the method list name under the **aaa accounting** command.

In the example below, the **method** command uses the method list name `klz_aaa6` which was previously defined using the AAA commands.

```
aaa new-model
!
aaa group server radius sg6
server 1.6.30.70 auth-port 1708 acct-port 1709
!
aaa authentication login klz_aaa6 group sg6
!klz_aaa6 is defined as the method list name
aaa authorization exec klz_aaa6 group sg6
aaa accounting connection klz_aaa6 start-stop group sg6
!
gw-accounting aaa
method klz_aaa6
The same method list name klz_aaa6 is used.
```

Related Commands

Command	Description
gw-accounting aaa	Enables VoIP gateway accounting.
aaa accounting	Enables accounting of requested services for billing or security purposes.

show call accounting-template voice

To view accounting template activity, use the **show call accounting-template voice** command in privileged EXEC mode.

show call accounting-template voice [*acctTemplateName* | **master** | **qdump** | **summary**]

Syntax Description		
	<i>acctTemplateName</i>	Defines the name of the accounting template.
	master	Displays all VSAs that are filtered by accounting templates.
	qdump	Displays template activity in the service and free queues.
	summary	Lists names of all the accounting templates and the number of attributes in each template currently being used.

Defaults No default behavior or values

Command Modes Privileged EXEC

Command History	Release	Modification
	12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, Cisco AS5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.

- Usage Guidelines**
- **show call accounting-template voice** displays the status and attributes defined in each template after it is configured.
 - **show call accounting-template voice** *acctTemplateName* displays the status of a specific template and the attributes (VSAs) that are defined for that template.
 - **show call accounting-template voice master** displays all the vendor specific attributes (VSAs) that can be filtered by accounting templates.
 - **show call accounting-template voice qdump** displays template activity in the service (svc) and free queues. It displays the template URL, the number of legs on which a template is active, and the state of a template.
 - After an accounting template is defined, it is put in the svc queue to serve new incoming calls. When a running accounting template is undefined or reloaded during an active call, the template is moved from the svc to the free queue, and can be reused after all the active calls stop referencing it. Templates that are reloaded or undefined while being referenced during an active call are considered to be in a dirty state, and are called dirty templates.
 - To ensure that start and stop records correspond on an active call that is referencing a dirty template, it is necessary to keep all dirty templates alive until all active calls referencing that dirty template are released. After all the active calls are released, the reloaded templates are applied to the next call.
 - **show call accounting-template voice summary** displays the current status of all the accounting templates that are configured. It shows if the template was loaded and running successfully.

Examples**show call accounting-template voice**

```

router# show call accounting-template voice
CDR template cdr1 is running
url: tftp://sanjoe/santa/merwan/Templates/cdr1.cdr
The last load was successful.
attr: h323-call-origin (56)
attr: h323-call-type (57)
attr: h323-gw-id (65)
attr: subscriber (79)
attr: in-portgrp-id (80)
attr: out-portgrp-id (81)
Totally 6 attrs defined.

```

```

CDR template cdr2 is running
url: tftp://sanjoe/santa/merwan/Templates/cdr2.cdr
The last load was successful.
attr: h323-call-origin (56)
attr: h323-call-type (57)
attr: h323-connect-time (59)
attr: h323-disconnect-time (64)
attr: h323-gw-id (65)
attr: h323-setup-time (76)
attr: h323-voice-quality (78)
Totally 7 attrs defined.

```

show call accounting-template voice acctTempName

In this example, the command displays details about a specific template cdr1.

```

router# show call accounting-template voice cdr1
CDR template cdr1 is running
url: tftp://sanjoe/santa/merwan/Templates/cdr1.cdr
The last load was successful.
attr: h323-call-origin (56)
attr: h323-call-type (57)
attr: h323-gw-id (65)
attr: subscriber (79)
attr: in-portgrp-id (80)
attr: out-portgrp-id (81)
Totally 6 attrs defined.

```

show call accounting-template voice master

In this example, the show call accounting-template voice master command displays all sixty four attributes that can be filtered by an accounting template.

```

router# show call accounting-template voice master
h323-call-origin
h323-call-type
h323-gw-id
h323-setup-time
h323-connect-time
h323-disconnect-time
h323-disconnect-cause
-----section of trace removed for viewing purposes-----

calling-party-category
originating-line-info
charge-number
transmission-medium-req
redirecting-number
backward-call-indicators
Totally 64 attributes are filterable.

```

show call accounting-template voice qdump

In the example shown below, the **show call accounting-template voice qdump** displays template activity in the service queue. Initially, no templates are in the dirty state.

```
route# show call accounting-template voice qdump
name          url                                     is_dirty  no_of_legs
=====
cdr1          tftp://sanjoe/santa/johndoe             0
cdr2          tftp://sanjoe/santa/johndoe             0
cdr3          tftp://sanjoe/santa/johndoe             0
```

After reloading the templates during active calls, the trace below shows cdr1 and cdr2 to be in a dirty state.

```
Templates in freeq
cdr1          tftp://sanjoe/santa/johndoe             dirty     1
cdr2          tftp://sanjoe/santa/johndoe             dirty     1
```

show call accounting-template voice summary

In the example below, the **show call accounting-template voice summary** command displays a summary of all configured accounting templates. cdr3 is not in running mode because it has either been rejected or it does not exist at the given URL.

```
router# show call accounting-template voice summary
name          url                                     last_load  is_running
=====
cdr1          tftp://sanjoe/santa/merwan             success    is running
cdr2          tftp://sanjoe/santa/merwan             success    is running
cdr3          tftp://sanjoe/santa/merwan             fail       is not running
```

Table Table 3-1 describes the fields shown in the **show call accounting-template voice** display.

Table 3-1 show call accounting-template voice Field Descriptions

Field	Description
name	Name of the accounting template.
url	Location of the accounting template.
last_load	Describes if the accounting template was successfully or unsuccessfully loaded from its location.
is_running	Describes if the accounting template has been activated after it is successfully loaded from its location.
is_dirty	Shows that the accounting template was reloaded during an active call.
no_of_legs	Number of call legs.
attr	Vendor specific attributes (VSAs) defined in an accounting template.

Related Commands

Command	Description
call accounting-template voice	Defines and configures a new accounting template.

suppress

To turn off accounting for a specific call leg, use the **suppress** command in gateway accounting AAA configuration mode. To keep accounting for a specific call leg, use the **no** form of this command.

suppress [pots][voip]

no suppress [pots][voip]

Syntax Description

pots	Identifies the POTS call leg.
voip	Identifies the VoIP call leg.

Defaults

Accounting is kept for the specified call leg. It is not turned off.

Command Modes

Gateway accounting AAA configuration

Command History

Release	Modification
12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, AS5350, AS5400, AS5800, and AS5850.

Usage Guidelines

- Use the **suppress** command to turn off accounting for a specific call leg.
- If both incoming and outgoing call legs of a call are of the same type, no accounting packets are generated.

Examples

The example below suppresses accounting for the POTS call leg.

```
suppress pots
```

Related Commands

Command	Description
gw-accounting aaa	Enables VoIP gateway accounting.

voice class aaa

To enable dial peer based VoIP AAA configurations, use the **voice class aaa** command in global configuration mode. To disable dial peer based VoIP AAA configurations, use the **no** form of this command.

voice class aaa tag

no voice class aaa tag

Syntax Description	<i>tag</i>	Specifies a number to identify voice class authentication, authorization, and accounting (AAA).
---------------------------	------------	---

Defaults	None
-----------------	------

Command Modes	Global configuration
----------------------	----------------------

Command History	Release	Modification
	12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, AS5350, AS5400, AS5800, and AS5850.

Usage Guidelines	<ul style="list-style-type: none"> The voice class aaa configuration command is a voice service class that allows you to perform dial peer based AAA configurations. Commands that are configured in voice class AAA configuration mode are listed in the “Related Commands” section below.
-------------------------	--

Examples	The example below shows AAA configurations in voice class AAA configuration mode. The number assigned to the tag is 1.
-----------------	--

```
voice class aaa 1
 authentication method dp
 authorization method dp
 accounting method dp
 in-bound
 accounting template temp-dp
```

The example below shows accounting configurations in voice class AAA configuration mode.

```
voice class aaa 2
 accounting method dp-out out-bound
 accounting template temp-dp out-bound
```

Related Commands	Command	Description
	authentication method	Specifies an authentication method for calls coming into the defined dial peer.
	authorization method	Specifies an authorization method for calls coming into the defined dial peer.
	method	Specifies an accounting method for calls coming into the defined dial peer.
	accounting suppress	Disables accounting that is automatically generated by the service provider module for a specific dial peer.
	voice-class aaa	Applies properties defined in the voice class to a specific dial peer.

voice-class aaa

To apply properties defined in the voice class to a dial peer, use the **voice-class aaa** command in dial peer configuration mode.

```
voice-class aaa tag
```

Syntax Description	<i>tag</i>	Specifies a number to identify the voice class.
---------------------------	------------	---

Defaults	None
-----------------	------

Command Modes	Dial peer configuration
----------------------	-------------------------

Command History	Release	Modification
	12.2(11)T	This command was introduced on the Cisco 3660, Cisco AS5300, Cisco AS5350, Cisco AS5400, Cisco AS5800, and Cisco AS5850.

Usage Guidelines	<ul style="list-style-type: none"> Properties that are configured in voice class aaa configuration mode can be applied to a dial peer by using the voice-class aaa command in dial peer mode.
-------------------------	---

Examples	The example below shows redirecting AAA requests using DNIS. You define a voice class to specify the AAA methods and then use the voice-class aaa command in dial-peer mode.
-----------------	---

```
voice class aaa 1
  authentication method kz
  authorization method kz
  accounting method kz
!
dial-peer voice 100 voip
  incoming called-number 50..
  session target ipv4:1.5.31.201
  voice-class aaa 1
```

Related Commands	Command	Description
	voice class aaa	Enables dial peer based VoIP AAA configurations.



Examples

This chapter includes Cisco IOS configuration examples and application scenarios of playing dynamic prompts, sending customized accounting templates to billing servers, and directing AAA requests based on account number, called number, and trunk grouping.

This chapter includes the following examples:

- Dynamic Prompts Playing System Time and Date using the Media Play Command, page 4-61
- Directing a AAA Request Based on Trunk Grouping, page 4-65
- Directing a AAA Request Using an Account Number, page 4-66
- Directing AAA Traffic Using Called Number, page 4-73
- Directing Accounting Templates Using Called Number, page 4-76

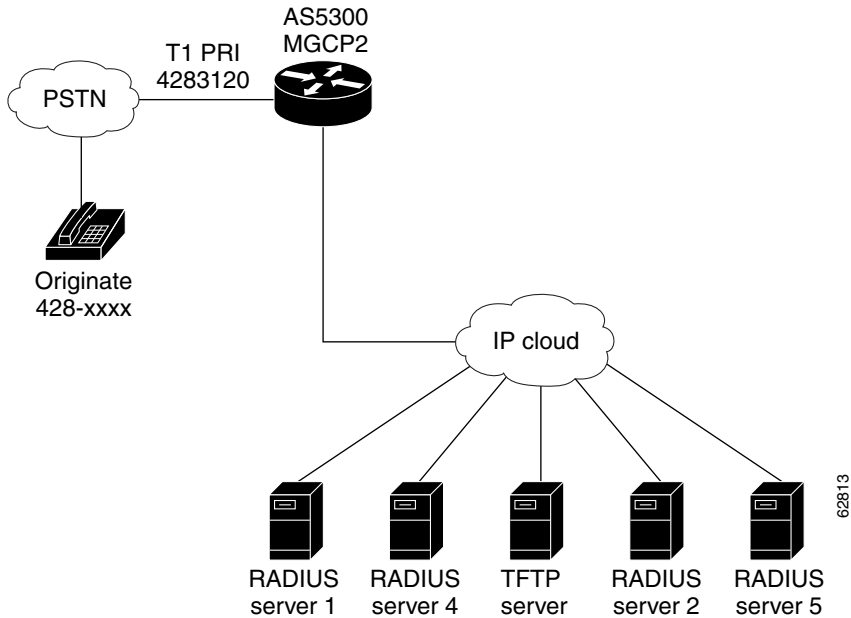
Dynamic Prompts Playing System Time and Date using the Media Play Command

In Figure 4-1 a phone call is placed to MGCP1 with a modified debit card application applied to an incoming POTS dial peer. The debit card application call flow is completed upon entering the destination number. The **debug voip ivr script** command displays the dynamic prompts that are played for ASCII characters along with the time and date.

Examples of dynamic prompts are shown below:

```
media play leg_incoming "%Cabcddef" // will play a, b, c, d, etc..
media play leg_incoming %T$time // will play 10 30 am
media play leg_incoming %W$week // will play Sunday
media play leg_incoming %D$date // will year, month and date
```

Figure 4-1 Topology for Dynamic Prompts



A Cisco IOS configuration example for dynamic prompts is shown below:

```

version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname mgcp1
!
aaa new-model
!
!
aaa group server radius sg1
 server 10.6.20.60 auth-port 1698 acct-port 1699
!
aaa group server radius sg4
 server 10.6.20.60 auth-port 1704 acct-port 1705
!
aaa group server radius sg6
 server 10.6.20.60 auth-port 1708 acct-port 1709
!
aaa authentication login sanjo_aaa1 group sg1
aaa authentication login sanjo_aaa4 group sg4
aaa authentication login sanjo_aaa6 group sg6
aaa authorization exec sanjo_aaa1 group sg1
aaa authorization exec sanjo_aaa4 group sg4
aaa authorization exec sanjo_aaa6 group sg6
aaa accounting connection sanjo_aaa1 start-stop group sg1
aaa accounting connection sanjo_aaa4 start-stop group sg4
aaa accounting connection sanjo_aaa6 start-stop group sg6
aaa session-id common
!
!
!
resource-pool disable

```

```
!
ip subnet-zero
trunk group 1
  carrier-id test
  hunt-scheme least-used both
!
isdn switch-type primary-5ess
!
voice class aaa 1
!
voice class aaa 6
  authentication method sanjo_aaa6
  authorization method sanjo_aaa6
  accounting method sanjo_aaa6
!
!
!
fax interface-type modem
mta receive maximum-recipients 0
!
controller T1 0
  framing sf
  linecode ami
!
controller T1 1
  framing sf
  clock source line secondary 1
  linecode ami
!
controller T1 2
  framing sf
  linecode ami

controller T1 3
  framing esf
  clock source line primary
  linecode b8zs
  pri-group timeslots 1-24
!
gw-accounting aaa
!
interface Ethernet0
  ip address 10.0.254.255
  no ip redirects
  no ip mroute-cache
  no cdp enable
!
interface Serial3:23
  no ip address
  trunk-group 1
  isdn switch-type primary-5ess
  isdn incoming-voice modem
  isdn T321 0
  no cdp enable
!
interface FastEthernet0
  ip address 10.1.2.3 254.254.255.0
  duplex auto
  speed auto
!
ip classless
ip route 254.255.1.0 223.254.10.0.1.5.0.1
no ip http server
!
```

```

radius-server host 10.6.20.60 auth-port 1708 acct-port 1709
radius-server host 10.6.20.60 auth-port 1704 acct-port 1705
radius-server host 10.6.20.60 auth-port 1698 acct-port 1699
radius-server host 10.6.43.255 auth-port 1645 acct-port 1646
radius-server host 10.6.37.10 auth-port 1645 acct-port 1646
radius-server retransmit 3
radius-server key cisco
radius-server vsa send accounting
radius-server vsa send authentication
call rsvp-sync
call accounting-template voice cdr1 tftp://10.223.254.255/johndoe/sanjose/cdr/cdr1.cdr
call accounting-template voice cdr2 tftp://10.223.254.255/johndoe/sanjose/cdr/cdr2.cdr
call language voice en tftp://milp/doi/scripts/multi-lang/en_translate.tcl
!
call application voice acct_redirect_debit
tftp://10.6.20.50/sanjose/apps/debitcard_acct_redirect.tcl
call application voice acct_redirect_debit uid-len 6
call application voice acct_redirect_debit language 1 en
call application voice acct_redirect_debit language 2 sp
call application voice acct_redirect_debit set-location en 0 tftp://10.6.20.50/prompts/
call application voice acct_redirect_debit set-location sp 0 tftp://10.6.20.50/prompts/
!
call application voice integ_debit
tftp://10.223.254.255/johndoe/sanjose/apps/debitcard_int_redirect.tcl
call application voice integ_debit uid-len 6
call application voice integ_debit language 1 en
call application voice integ_debit language 2 sp
call application voice integ_debit set-location en 0
tftp://10.223.254.255/johndoe/prompts/en/
call application voice integ_debit set-location sp 0 tftp://10.6.20.50/prompts/
!
call application voice plain_debit
tftp://10.223.254.255/johndoe/sanjose/apps/debitcard.tcl
call application voice plain_debit uid-len 6
call application voice plain_debit language 1 en
call application voice plain_debit language 2 sp
call application voice plain_debit set-location en 0
tftp://10.223.254.255/johndoe/prompts/en/
call application voice plain_debit set-location sp 0 tftp://10.6.20.50/prompts/
!
voice-port 3:D
!
!
mgcp profile default
!
dial-peer cor custom
dial-peer voice 101 voip
  destination-pabcern 1111234567
  session target ipv4:10.0.0.1
!
dial-peer voice 102 voip
  destination-pabcern 408.....
  session target ipv4:10.0.0.1
!
!
line con 0
  exec-timeout 0 0
line aux 0
line vty 0 4
!
end

```

Directing a AAA Request Based on Trunk Grouping

A Cisco IOS configuration example for directing a AAA request based on trunk grouping is shown below:

```
aaa new-model
aaa group server radius sg1
server 10.1.0.1 auth-port 1645 acct-port 1646
!
aaa group server radius sg2
server 10.20.0.1 auth-port 1645 acct-port 1646
!
aaa group server radius sg-def
server 10.0.50.50 auth-port 1645 acct-port 1646
!
aaa authentication login abc group sg1
aaa authentication login def group sg2
aaa authentication login h323 group sg-def
aaa authorization exec abc group sg1
aaa authorization exec def group sg2
aaa authorization exec h323 group sg-def
aaa accounting connection abc start-stop group sg1
aaa accounting connection def start-stop group sg2
aaa accounting connection h323 start-stop group sg-def
!
gw-accounting aaa
!
radius-server host 10.1.0.1 auth-port 1645 acct-port 1646 key abc
radius-server host 10.20.0.1 auth-port 1645 acct-port 1646 key ghi
radius-server host 10.0.50.50 auth-port 1645 acct-port 1646 key ghi
!
trunk group 101
!
interface Serial1/0/0:23
no ip address
no ip directed-broadcast
isdn switch-type primary-ni
isdn protocol-emulate network
isdn incoming-voice modem
no cdp enable
trunk-group 101
!
interface Serial1/0/1:23
no ip address
no ip directed-broadcast
isdn switch-type primary-ni
isdn protocol-emulate network
isdn incoming-voice modem
no cdp enable
trunk-group 101
!
voice-class aaa 1
authentication abc
authorization abc
accounting abc
!
voice-class aaa 1
authentication def
authorization def
accounting def
!
dial-peer voice 700 pots
destination-pabcern 1700.....
```

```

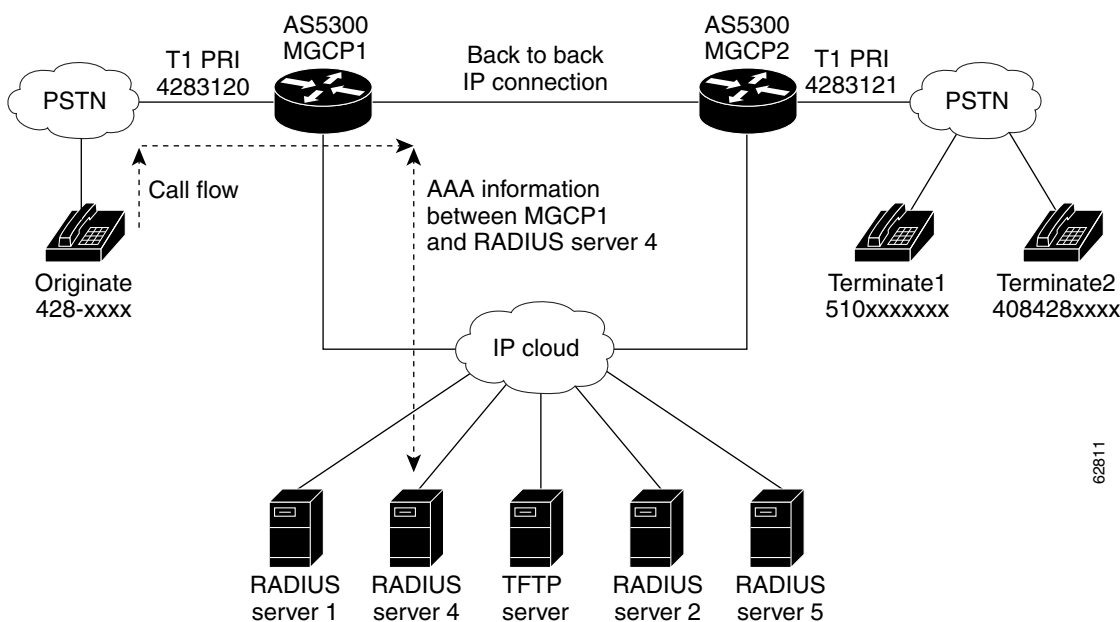
voice-class aaa 1
trunkgroup 101
!
dial-peer voice 900 pots
destination-pabcern 1900.....
voice-class aaa 2
trunkgroup 202
!

```

Directing a AAA Request Using an Account Number

In Figure 4-2, the caller places a call to MGCP 1 with a modified debit card application applied to an incoming POTS dial peer. After the caller enters the card number (for example, 555550001), AAA requests are directed to RADIUS 4.

Figure 4-2 AAA Redirect Using An Account Number : Scenario 1



A Cisco IOS configuration example for the topology in Figure 4-2 is shown below:

```

Radius protocol debugging is on
Radius packet hex dump debugging is off
Radius packet protocol debugging is on
mgcp1#
02:27:24: %ISDN-6-CONNECT: Interface Serial3:22 is now connected to 4111234567
02:27:30: %ISDN-6-CONNECT: Interface Serial3:22 is now connected to 4111234567
02:27:44: RADIUS/ENCODE(00000024): Unsupported AAA attribute timezone
02:27:44: RADIUS(00000024): Encoding nas-port...Only port-type av1b1
02:27:44: RADIUS(00000024): sending
02:27:44: RADIUS(00000024): Encoding nas-port...Only port-type av1b1
02:27:44: RADIUS/ENCODE(00000024): acct_session_id: 36
02:27:44: RADIUS(00000024): sending
02:27:44: RADIUS(00000024): Encoding nas-port...Only port-type av1b1
02:27:44: RADIUS/ENCODE(00000024): acct_session_id: 36
02:27:44: RADIUS(00000024): sending

```

```

02:27:44: RADIUS: Send to unknown id 10 10.5.20.60:1234, Accounting-Request, len 480 <--
Accounting request sent
02:27:44: RADIUS: authenticator CD F1 66 D1 C1 CB A1 68 - B7 3F 5C 2B 21 D6 B7 4B
to AAA server 4 instead
02:27:44: RADIUS: User-Name [1] 12 "4111234567" server 2.
02:27:44: RADIUS: Acct-Status-Type [40] 6 Start [1]
02:27:44: RADIUS: Acct-Session-Id [44] 10 "00000024"
02:27:44: RADIUS: Vendor, Cisco [26] 25
02:27:44: RADIUS: h323-gw-id [33] 19 "h323-gw-id=mgcpl."
02:27:44: RADIUS: Vendor, Cisco [26] 56
02:27:44: RADIUS: Conf-Id [24] 50 "h323-conf-id=2E17E6F2 8E6611D4 8048FAFD
CD27A5B5"
02:27:44: RADIUS: Vendor, Cisco [26] 65
02:27:44: RADIUS: Cisco AVpair [1] 59 "h323-incoming-conf-id=2E17E6F2 8E6611D4
8048FAFD CD27A5B5"
02:27:44: RADIUS: Vendor, Cisco [26] 38
02:27:44: RADIUS: Cisco AVpair [1] 32 "h323-ivr-out=account range: 55"
02:27:44: RADIUS: Vendor, Cisco [26] 33
02:27:44: RADIUS: Cisco AVpair [1] 27 "h323-ivr-out=color:violet"
02:27:44: RADIUS: Vendor, Cisco [26] 41
02:27:44: RADIUS: Cisco AVpair [1] 35 "h323-ivr-out=MethodName:sanjo_aaa4"
02:27:44: RADIUS: Vendor, Cisco [26] 38
02:27:44: RADIUS: Cisco AVpair [1] 32 "h323-ivr-out=account range: 55"
02:27:44: RADIUS: Vendor, Cisco [26] 33
02:27:44: RADIUS: Cisco AVpair [1] 27 "h323-ivr-out=color:red"
02:27:44: RADIUS: Vendor, Cisco [26] 41
02:27:44: RADIUS: Cisco AVpair [1] 35 "h323-ivr-out=MethodName:sanjo_aaa4"
02:27:44: RADIUS: NAS-Port-Type [61] 6 Async [0]
02:27:44: RADIUS: Vendor, Cisco [26] 19
02:27:44: RADIUS: cisco-nas-port [2] 13 "ISDN 0:D:23"
02:27:44: RADIUS: Calling-Station-Id [31] 12 "4111234567"
02:27:44: RADIUS: Called-Station-Id [30] 7 "13120"
02:27:44: RADIUS: Service-Type [6] 6 Login [1]
02:27:44: RADIUS: NAS-IP-Address [4] 6 10.6.20.500
02:27:44: RADIUS: Delay-Time [41] 6 0
02:27:44: RADIUS: Send to unknown id 20 10.6.20.60:1704, Access-Request, len 170 <--
Authentication request sent
02:27:44: RADIUS: authenticator 12 F5 47 5D 2D 07 74 A4 - 97 02 33 36 14 34 DE 07 to
server specified in
02:27:44: RADIUS: User-Name [1] 8 "555555" application and defined in
02:27:44: RADIUS: User-Password [2] 18 * CLI. NOTE: authentication
02:27:44: RADIUS: Vendor, Cisco [26] 56 Is not used in standard debit app
02:27:44: RADIUS: Conf-Id [24] 50 "h323-conf-id=2E17E6F2 8E6611D4 8048FAFD
CD27A5B5"
02:27:44: RADIUS: Vendor, Cisco [26] 37 but was included here to exercise
02:27:44: RADIUS: Cisco AVpair [1] 31 "h323-ivr-out=transactionID:20" AAA
authentication tcl verb.
02:27:44: RADIUS: NAS-Port-Type [61] 6 Async [0] Also
authentication
02:27:44: RADIUS: Vendor, Cisco [26] 19 done using account number
02:27:44: RADIUS: cisco-nas-port [2] 13 "ISDN 0:D:23" instead of ANI.
02:27:44: RADIUS: NAS-IP-Address [4] 6 10.6.20.500
02:27:44: RADIUS: Send to unknown id 21 10.6.20.60:1704, Access-Request, len 200 <--
Authorization request
02:27:44: RADIUS: authenticator CA 67 12 31 EE 78 19 F4 - 4E 4E 21 1B FB DB B2 06
02:27:44: RADIUS: User-Name [1] 8 "0555550"
02:27:44: RADIUS: User-Password [2] 18 *
02:27:44: RADIUS: Vendor, Cisco [26] 56
02:27:44: RADIUS: Conf-Id [24] 50 "h323-conf-id=2E17E6F2 8E6611D4 8048FAFD
CD27A5B5"
02:27:44: RADIUS: Vendor, Cisco [26] 37
02:27:44: RADIUS: Cisco AVpair [1] 31 "h323-ivr-out=transactionID:21"
02:27:44: RADIUS: Calling-Station-Id [31] 12 "4111234567"
02:27:44: RADIUS: NAS-Port-Type [61] 6 Async [0]

```

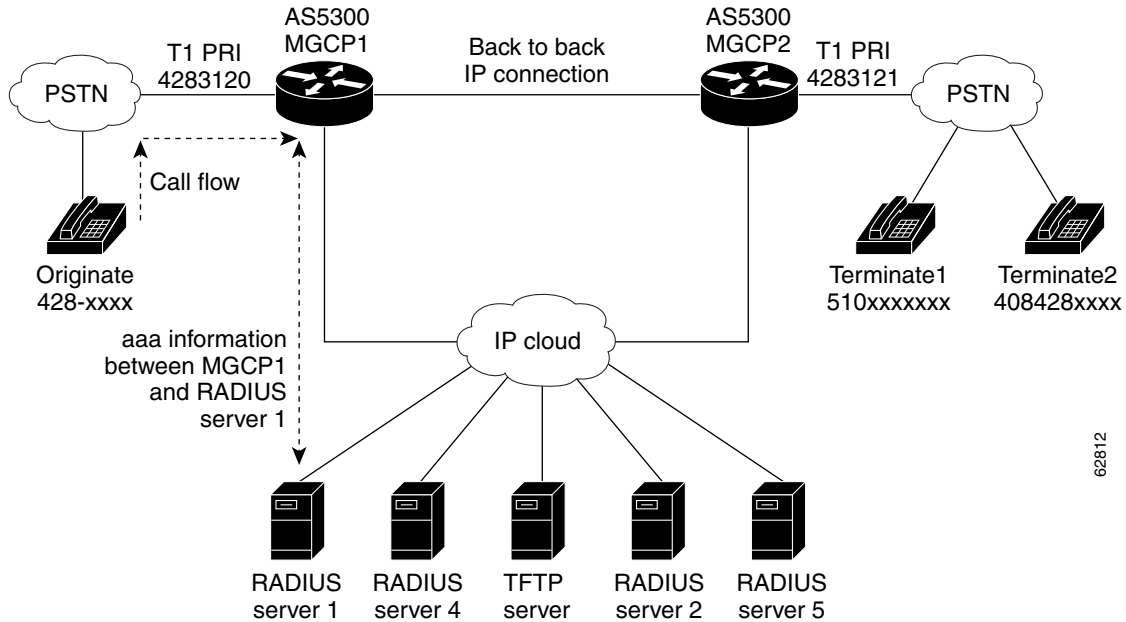
```

02:27:44: RADIUS: Vendor, Cisco [26] 19
02:27:44: RADIUS: cisco-nas-port [2] 13 "ISDN 0:D:23"
02:27:44: RADIUS: Calling-Station-Id [31] 12 "4111234567"
02:27:44: RADIUS: Service-Type [6] 6 Login [1]
02:27:44: RADIUS: NAS-IP-Address [4] 6 10.6.20.500
02:27:44: RADIUS: Received from id 10 10.5.20.60:1234, Accounting-response, len 20 <--
AccountingResponse from 02:27:44: RADIUS: authenticator E8 35 04 32 38 3E 78 78 - F1 D4
38 10 41 F3 EE F3 Radius observed
02:27:44: RADIUS: Received from id 20 10.6.20.60:1704, Access-Accept, len 200
<-- Response from Radius
02:27:44: RADIUS: authenticator 46 30 66 55 18 DC 82 A0 - 05 14 ED D8 3B 17 0C E7
02:27:44: RADIUS: Vendor, Cisco [26] 27
02:27:44: RADIUS: Cisco AVpair [1] 21 "h323-ivr-in=sanjose"
02:27:44: RADIUS: Vendor, Cisco [26] 34
02:27:44: RADIUS: Cisco AVpair [1] 28 "h323-credit-amount=5555.55"
02:27:44: RADIUS: Vendor, Cisco [26] 26
02:27:44: RADIUS: Cisco AVpair [1] 20 "h323-return-code=0"
02:27:44: RADIUS: Vendor, Cisco [26] 30
02:27:44: RADIUS: h323-credit-time [102] 24 "h323-credit-time=54123"
02:27:44: RADIUS: Vendor, Cisco [26] 33
02:27:44: RADIUS: h323-billing-model [109] 27 "h323-billing-model=prepay"
02:27:44: RADIUS: Vendor, Cisco [26] 24
02:27:44: RADIUS: h323-currency [110] 18 "h323-currency=US"
02:27:44: RADIUS: Idle-Timeout [28] 6 30
02:27:44: RADIUS: Received from id 24
02:27:44: RADIUS: Received from id 21 10.6.20.60:1704, Access-Accept, len 200
02:27:44: RADIUS: authenticator 0F 13 36 EA B1 FC B3 95 - 85 FC CC FE 1F 2F 95 D0
02:27:44: RADIUS: Vendor, Cisco [26] 27
02:27:44: RADIUS: Cisco AVpair [1] 21 "h323-ivr-in=sanjose"
02:27:44: RADIUS: Vendor, Cisco [26] 34
02:27:44: RADIUS: Cisco AVpair [1] 28 "h323-credit-amount=5555.55"
02:27:44: RADIUS: Vendor, Cisco [26] 26
02:27:44: RADIUS: Cisco AVpair [1] 20 "h323-return-code=0"
02:27:44: RADIUS: Vendor, Cisco [26] 30
02:27:44: RADIUS: h323-credit-time [102] 24 "h323-credit-time=54123"
02:27:44: RADIUS: Vendor, Cisco [26] 33
02:27:44: RADIUS: h323-billing-model [109] 27 "h323-billing-model=prepay"
02:27:44: RADIUS: Vendor, Cisco [26] 24
02:27:44: RADIUS: h323-currency [110] 18 "h323-currency=US"
02:27:44: RADIUS: Idle-Timeout [28] 6 30
02:27:44: RADIUS: Received from id 24

```

In Figure 4-3, the caller places a call to MGCP 1 with a modified debit card application applied to an incoming POTS dial peer. After the caller enters the card number (for example, 7777770001), the AAA requests are directed to RADIUS server 1.

Figure 4-3 AAA Redirect Using An Account Number: Scenario 2



Shown below are some Cisco IOS configuration examples for the topology in Figure 4-3:

```

version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname mgcp1
!
aaa new-model
!
!
aaa group server radius sg1
server 10.6.20.60 auth-port 1698 acct-port 1699
!
aaa group server radius sg4
server 10.6.20.60 auth-port 1704 acct-port 1705
!
aaa group server radius sg6
server 10.6.20.60 auth-port 1708 acct-port 1709
!
aaa authentication login sanjo_aaa1 group sg1
aaa authentication login sanjo_aaa4 group sg4
aaa authentication login sanjo_aaa6 group sg6
aaa authorization exec sanjo_aaa1 group sg1
aaa authorization exec sanjo_aaa4 group sg4
aaa authorization exec sanjo_aaa6 group sg6
aaa accounting connection sanjo_aaa1 start-stop group sg1
aaa accounting connection sanjo_aaa4 start-stop group sg4
aaa accounting connection sanjo_aaa6 start-stop group sg6
aaa session-id common
!
resource-pool disable
!
ip subnet-zero

```

```

ip host milp 10.223.254.255
!
isdn switch-type primary-5ess
!
fax interface-type modem
mta receive maximum-recipients 0
!
controller T1 3
  framing esf
  clock source line secondary
  linecode b8zs
  pri-group timeslots 1-24
!
gw-accounting aaa
!
interface Ethernet0
  ip address 10.0.254.255
  no ip redirects
  no ip mroute-cache
  no cdp enable
!
interface Serial0:23
  no ip address
  isdn switch-type primary-5ess
  isdn T321 0
  isdn T310 4000
  no cdp enable
!
interface Serial3:23
  no ip address
  trunk-group 1
  isdn switch-type primary-5ess
  isdn incoming-voice modem
  isdn T321 0
  no cdp enable
!
interface FastEthernet0
  ip address 10.1.2.3 254.254.255.0
  duplex auto
  speed auto
!
ip classless
ip route 254.255.1.0 223.254.10.0.1.5.0.1 <- Route to tftp server
no ip http server 10.223.254.255
radius-server host 10.6.20.60 auth-port 1704 acct-port 1705
radius-server host 10.6.20.60 auth-port 1698 acct-port 1699
radius-server retransmit 3
radius-server key cisco
radius-server vsa send accounting
radius-server vsa send authentication
call rsvp-sync
call accounting-template voice cdr1 tftp://10.223.254.255/johndoe/sanjose/cdr/cdr1.cdr
call accounting-template voice cdr2 tftp://10.223.254.255/johndoe/sanjose/cdr/cdr2.cdr
call language voice en tftp://milp/doescripts/multi-lang/en_translate.tcl
!
call application voice integ_debit
tftp://10.223.254.255/johndoe/sanjose/apps/debitcard_int_redirect.tcl
call application voice integ_debit uid-len 6
call application voice integ_debit language 1 en
call application voice integ_debit language 2 sp
call application voice integ_debit set-location en 0
tftp://10.223.254.255/johndoe/prompts/en/
call application voice integ_debit set-location sp 0 tftp://10.6.20.50/prompts/
!

```

```

call application voice plain_debit
tftp://10.223.254.255/johndoe/sanjose/apps/debitcard.tcl
call application voice plain_debit uid-len 6
call application voice plain_debit language 1 en
call application voice plain_debit language 2 sp
call application voice plain_debit set-location en 0
tftp://10.223.254.255/johndoe/prompts/en/
call application voice plain_debit set-location sp 0 tftp://10.6.20.50/prompts/
!
voice-port 3:D
!
voice-port 0:D
!
dial-peer cor custom
dial-peer voice 100 pots
  application integ_debit <----- !Modified debit app to play
  incoming called-number 13120      new dynamic prompts, do
dial-peer voice 101 voip            authentication,
  destination-pabcern 510.....      authorization,
  session target ipv4:10.0.0.1      accounting redirect
!                                     and use accounting
dial-peer voice 102 voip            template.
  destination-pabcern 408.....
  session target ipv4:10.0.0.1
!
!
line con 0
  exec-timeout 0 0
line aux 0
line vty 0 4
!
end

```

Debit Card Application for Directing AAA Requests Using an Account Number

A debit card application for directing AAA requests using an account number is shown below:

```

proc act_GotCardNumber { } {
  global count
  global retryCnt
  global promptFlag
  global account
  global pin
  global accountLen
  global cardLen
  global pinLen
  global ani
  global method
  global acct-template

  set status [infotag get evt_status]

  # Do we need to calculate len ???
  if {$status == "cd_005"} {
    set number [infotag get evt_dcdigits]
    set numberLen [ string length $number ]
    if { $numberLen == $cardLen } {
      set account [ string range $number 0 [expr $accountLen -1]]
      set pin [ string range $number $accountLen [expr $cardLen -1]]
    }
  }
}

```

```

#####
# Select Servertag based on first 2 #
# digits of account number.      #
#####
set spcode [ string range $account 0 1]

if { $spcode == 77 } {
set method "sanjo_aaa1"
set avList(h323-ivr-out,1) "account range: 77"
set avList(h323-ivr-out,2) "color:violet"
set avList(h323-ivr-out,3) "MethodName:sanjo_aaa1"
puts "note that accounting template cdr1 needs to be defined in IOS CLI"
set acct-template "cdr1"
puts "$spcode"
set method "sanjo_aaa4"
set avList(h323-ivr-out,1) "account range: 55"
set avList(h323-ivr-out,2) "color:red"
set avList(h323-ivr-out,3) "MethodName:sanjo_aaa4"
set acct-template "cdr2"
} else {
set method "h323"
set acct-template "none"
}

puts "THIS IS THE METHOD LIST USED: $method \r"
puts "THIS IS THE TEMPLATE USED : $template \r"

#Do accounting
if { $method != "h323" } {
aaa accounting start leg_incoming -a avList -s $method -t $template
set avList(h323-ivr-out,2) "color:purple"
aaa accounting update leg_incoming -a avList -s $method -t $template

# suppress service provide module automatically generating
# accounting records on outgoing call leg

infotag set leg_suppress_outgoing_auto_acct 1

#Do authenticate
puts "\r DOING AUTHENTICATION on account number and pin \r"
aaa authenticate $account $pin -s $method

puts "\r DOING AUTHORIZATION \r"
# DO authorize
aaa authorize $account $pin $ani "" leg_incoming -s $method

} else {
aaa accounting start leg_incoming -a avList -s $method
set avList(h323-ivr-out,2) "color:indigo"
aaa accounting update leg_incoming -a avList -s $method

# suppress service provide module automatically generating
# accounting records on outgoing call leg

infotag set leg_suppress_outgoing_auto_acct 1
infotag set leg_suppress_outgoing_auto_acct 1

#Do authenticate
puts "\r DOING AUTHENTICATION on account number and pin \r"
aaa authenticate $account $pin -s $method

puts "\r DOING AUTHORIZATION \r"
# DO authorize
aaa authorize $account $pin $ani "" leg_incoming -s $method

```

```

} else {
  aaa accounting start leg_incoming -a avList -s $method
  set avList(h323-ivr-out,2) "color:indigo"
  aaa accounting update leg_incoming -a avList -s $method

  # suppress service provide module automatically generating
  # accounting records on outgoing call leg

  infotag set leg_suppress_outgoing_auto_acct 1

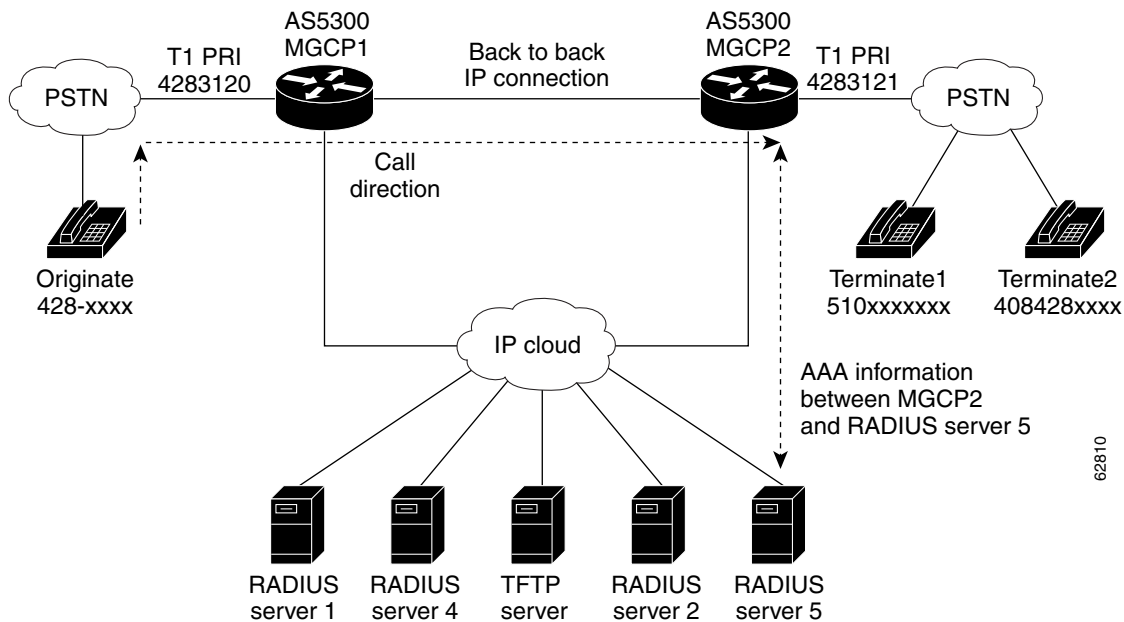
#Do authenticate for using default h323 method list
puts "\r DOING AUTHENTICATION \r"
aaa authenticate $account $pin -s $method
puts "\r DOING AUTHORIZATION \r"
  aaa authorize $account $pin $ani "" leg_incoming -s $method
}

```

Directing AAA Traffic Using Called Number

In Figure 4-4, the caller places a phone call to MGCP 1. A modified debit card application is applied to an incoming POTS dial peer. The caller enters the card number and the destination number sequence which is completed at MGCP 1. The destination number (for example 408-428-xxxx) is now dialed and directed to MGCP 2. Accounting information based on the called number is directed from MGCP 2 to RADIUS server 5.

Figure 4-4 Directing AAA Traffic Using Called Number



An example of a AAA redirect using the called number is shown below:

```

version 12.2
service timestamps debug uptime

```

```
service timestamps log uptime
no service password-encryption
!
hostname mgcp2
!
aaa new-model
!
!
aaa group server radius sg2
 server 10.6.20.60 auth-port 1700 acct-port 1701
!
aaa group server radius sg5
 server 10.6.20.60 auth-port 1706 acct-port 1707
!
aaa group server radius sg6
 server 10.6.20.60 auth-port 1708 acct-port 1709
!
aaa accounting connection sanjo_aaa5 start-stop group sg5
aaa accounting connection sanjo_aaa2 start-stop group sg2
aaa session-id common
!
username lab password 0 lab
!
!
resource-pool disable
!
ip subnet-zero
!
isdn switch-type primary-5ess
voice class aaa 2
 accounting method sanjo_aaa2
!
voice class aaa 5
 accounting method sanjo_aaa5
!
!
fax interface-type modem
mta receive maximum-recipients 0
!
controller T1 0
 framing sf
 clock source line primary
 linecode ami
!
controller T1 1
 framing sf
 clock source line secondary 1
 linecode ami
!
controller T1 2
 framing sf
 linecode ami
!
controller T1 3
 framing esf
 linecode b8zs
 pri-group timeslots 1-24
!
gw-accounting aaa
!
!
!
interface Ethernet0
 ip address 10.6.20.501 254.255.1.0
```

```

no cdp enable
interface Serial3:23
no ip address
isdn switch-type primary-5ess
isdn incoming-voice modem
no cdp enable
!
interface FastEthernet0
ip address 10.0.0.1 255.255.255.0
duplex auto
speed auto
!
ip classless
ip route 254.255.1.0 223.254.10.0.1.5.0.1
no ip http server
!
!
!
radius-server host 10.6.20.60 auth-port 1700 acct-port 1701 key cisco
radius-server host 10.6.20.60 auth-port 1706 acct-port 1707 key cisco
radius-server retransmit 3
radius-server key cisco
radius-server vsa send accounting
radius-server vsa send authentication

```

```

voice-port 3:D
!
!
mgcp profile default
!

```

On the terminating side, the incoming dial peers are VoIP. In this configuration, if the incoming called number begins with 510, VoIP dial peer 101 is applied. If the incoming called number begins with 408, VoIP dial peer 102 is applied.

```

dial-peer voice 100 pots
destination-pabcern 510 .....
port 3:D
prefix 91510 .....
```

!

```

dial-peer voice 101 voip
incoming called-number 510 .....
```

voice-class aaa 5

!

```

dial-peer voice 200 pots
destination-pabcern 408.....
port 3:D
prefix 9
!
```

```

dial-peer voice 102 voip
incoming called-number 408.....
voice-class aaa 2
!
```

```

dial-peer voice 300 pots
application integ_debit
incoming called-number .
port 3:D
!
!
line con 0
exec-timeout 0 0
line aux 0
line vty 0 4
!
end

```

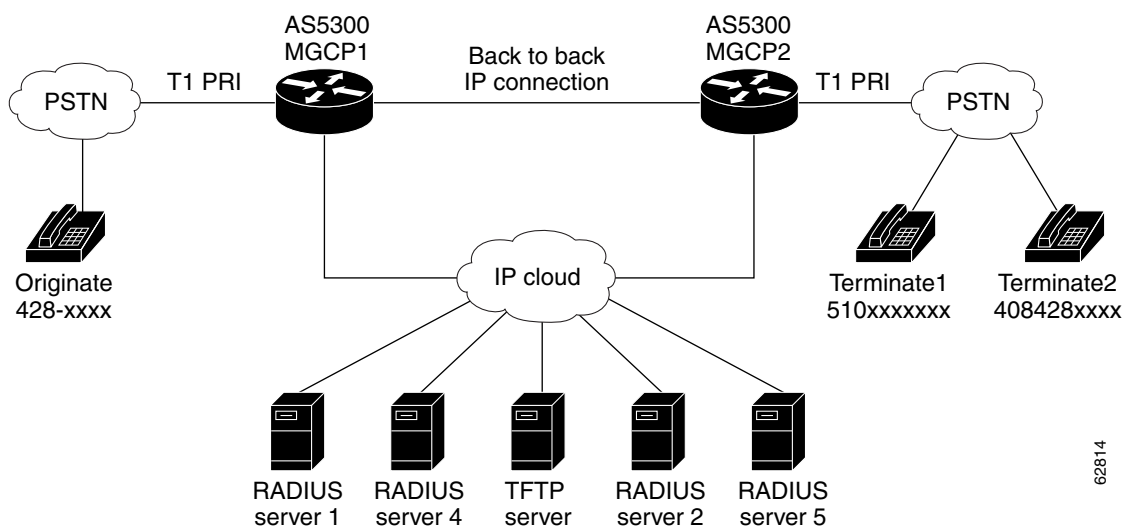
Directing Accounting Templates Using Called Number

In Figure 4-5 below, accounting template `cdr1` allows `h323-gw-id` av pair but does not allow `h323-call-origin`. Accounting template `cdr2` allows `h323-call-origin` but does not allow `h323-gw-id` av pair. The caller places a phone call to MGCP 1. A modified debit card application is applied to an incoming POTS dial peer.

Accounting template `cdr1` is selected using an account number (for example `7777770001`). To verify that `cdr1` was applied correctly, examine the accounting record on RADIUS server 1.

Accounting template `cdr2` is selected using an account number (for example `5555550001`). To verify that `cdr2` was applied correctly, examine the accounting record on RADIUS server 2.

Figure 4-5 Selecting Accounting Templates Using an Account Number



62814

Shown below is an example of directing an accounting template using an incoming called number:

```

version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname mgcp1
!
aaa new-model
!
!
aaa group server radius sg1
server 10.6.20.60 auth-port 1698 acct-port 1699
!
aaa group server radius sg4
server 10.6.20.60 auth-port 1704 acct-port 1705
!
aaa group server radius sg6
server 10.6.20.60 auth-port 1708 acct-port 1709
!

```

```
aaa authentication login sanjo_aaa1 group sg1
aaa authentication login sanjo_aaa4 group sg4
aaa authentication login sanjo_aaa6 group sg6
aaa authorization exec sanjo_aaa1 group sg1
aaa authorization exec sanjo_aaa4 group sg4
aaa authorization exec sanjo_aaa6 group sg6
aaa accounting connection sanjo_aaa1 start-stop group sg1
aaa accounting connection sanjo_aaa4 start-stop group sg4
aaa accounting connection sanjo_aaa6 start-stop group sg6
aaa session-id common
!
!
!
resource-pool disable
!
ip subnet-zero
ip host milp 10.223.254.255
trunk group 1
  carrier-id test
  hunt-scheme least-used both
!
isdn switch-type primary-5ess
!
voice class aaa 1
!
voice class aaa 6
  authentication method sanjo_aaa6
  authorization method sanjo_aaa6
  accounting method sanjo_aaa6
!
!
!
fax interface-type modem
mta receive maximum-recipients 0
!
controller T1 0
  framing sf
  linecode ami
!
controller T1 1
  framing sf
  clock source line secondary 1
  linecode ami
!
controller T1 2
  framing sf
  linecode ami
!
controller T1 3
  framing esf
  clock source line primary
  linecode b8zs
  pri-group timeslots 1-24
!
gw-accounting aaa
!
interface Ethernet0
  ip address 10.0.254.255
  no ip redirects
  no ip mroute-cache
  no cdp enable
!
interface Serial3:23
  no ip address
```

```

trunk-group 1
 isdn switch-type primary-5ess
 isdn incoming-voice modem
 isdn T321 0
 no cdp enable
!
interface FastEthernet0
 ip address 10.1.2.3 254.254.255.0
 duplex auto
 speed auto
!
ip classless
ip route 254.255.1.0 223.254.10.0.1.5.0.1
no ip http server
!
radius-server host 10.6.20.60 auth-port 1708 acct-port 1709
radius-server host 10.6.20.60 auth-port 1704 acct-port 1705
radius-server host 10.6.20.60 auth-port 1698 acct-port 1699
radius-server host 10.6.43.255 auth-port 1645 acct-port 1646
radius-server host 10.6.37.10 auth-port 1645 acct-port 1646
radius-server retransmit 3
radius-server key cisco
radius-server vsa send accounting
radius-server vsa send authentication
call rsvp-sync
call accounting-template voice cdr1 tftp://10.223.254.255/johndoe/sanjose/cdr/cdr1.cdr
call accounting-template voice cdr2 tftp://10.223.254.255/johndoe/sanjose/cdr/cdr2.cdr
call language voice en tftp://milp/doe/scripts/multi-lang/en_translate.tcl
!
call application voice acct_redirect_debit
tftp://10.6.20.50/sanjose/apps/debitcard_acct_redirect.tcl
call application voice acct_redirect_debit uid-len 6
call application voice acct_redirect_debit language 1 en
call application voice acct_redirect_debit language 2 sp
call application voice acct_redirect_debit set-location en 0 tftp://10.6.20.50/prompts/
call application voice acct_redirect_debit set-location sp 0 tftp://10.6.20.50/prompts/
!
call application voice integ_debit
tftp://10.223.254.255/johndoe/sanjose/apps/debitcard_int_redirect.tcl
call application voice integ_debit uid-len 6
call application voice integ_debit language 1 en
call application voice integ_debit language 2 sp
call application voice integ_debit set-location en 0
tftp://10.223.254.255/johndoe/prompts/en/
call application voice integ_debit set-location sp 0 tftp://10.6.20.50/prompts/
!
call application voice plain_debit
tftp://10.223.254.255/johndoe/sanjose/apps/debitcard.tcl
call application voice plain_debit uid-len 6
call application voice plain_debit language 1 en
call application voice plain_debit language 2 sp
call application voice plain_debit set-location en 0
tftp://10.223.254.255/johndoe/prompts/en/
call application voice plain_debit set-location sp 0 tftp://10.6.20.50/prompts/
!
voice-port 3:D
!
!
mgcp profile default
!
dial-peer cor custom
!
dial-peer voice 100 pots
 debitcard_acct_redirect.tcl

```

```
incoming called-number .
!
dial-peer voice 101 voip
 destination-pattern 1111234567
 session target ipv4:10.0.0.1
!
dial-peer voice 102 voip
 destination-pattern 408.....
 session target ipv4:10.0.0.1
!
!
line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
!
end
```




Cisco IOS Troubleshooting

Troubleshooting

This chapter contains the following sections:

- Using Debug Commands, page 5-81
- Using Show Commands, page 5-88

Using Debug Commands

debug radius

The output below is from troubleshooting AAA redirect using called number for an incoming POTS dial peer.

!In this example, an incoming call is set up using **dial-peer voice 1000 pots**. Applying **voice-class aaa 1** to **dial-peer voice 1000** redirects AAA requests to the server specified for method list sanj_aaa1:10.6.20.70 auth-port 1698 acct-port 1699.

```
aaa group server radius sg1
  server 10.6.20.70 auth-port 1698 acct-port 1699
!
aaa group server radius sg6
  server 10.6.20.70 auth-port 1704 acct-port 1705
!
aaa group server radius sg7
  server 10.6.20.70 auth-port 1720 acct-port 1721
!
aaa authentication login sanj_aaa1 group sg1
aaa authorization exec sanj_aaa1 group sg1
aaa accounting connection sanj_aaa1 start-stop group sg1
!
aaa authentication login sanj_aaa6 group sg6
aaa authorization exec sanj_aaa6 group sg6
aaa accounting connection sanj_aaa6 start-stop group sg6
!
aaa authentication login sanj_aaa7 group sg7
aaa authorization exec sanj_aaa7 group sg7
aaa accounting connection sanj_aaa7 start-stop group sg7
!
voice class aaa 1
  authentication method sanj_aaa1
  authorization method sanj_aaa1
```

```

    accounting method sanj_aaa1
    accounting template cdr1
!
voice class aaa 2
    authentication method sanj_aaa6
    authorization method sanj_aaa6
    accounting method sanj_aaa6
    accounting template cdr2
!
voice class aaa 3
    authentication method sanj_aaa7
    authorization method sanj_aaa7
    accounting method sanj_aaa7
!
dial-peer voice 1000 pots
    application plain_debit
    incoming called-number 12345
    voice-class aaa 1
    port 0:D
!
dial-peer voice 1001 pots
    application plain_debit
    incoming called-number 12346
    voice-class aaa 2
    port 1:D

```

debug radius**Radius protocol debugging is on****Radius packet hex dump debugging is off****Radius packet protocol debugging is on****debug isdn q931**

ISDN Q931 packets debugging is on

```

00:17:55: ISDN Se0:23: RX <- SETUP pd = 8  callref = 0x009D
00:17:55:      Bearer Capability i = 0x8090A2
00:17:55:      Channel ID i = 0xE1808397
00:17:55:      Calling Party Number i = 0x0080, '4081234567', Plan:Unknown,
Type:Unknown
00:17:55:      Called Party Number i = 0xE9, '12345', Plan:Private, Type:Abbreviated
00:17:55: RADIUS/ENCODE(0000000C): Unsupported AAA attribute timezone
00:17:55: RADIUS(0000000C): Encoding nas-port...Only port-type av1bl
00:17:55: RADIUS(0000000C): sending
00:17:55: RADIUS: Send to unknown id 4 10.6.20.70:1699, Accounting-Request, len 262
00:17:55: RADIUS:  authenticator 10 41 58 99 4C F2 B1 CD - 44 3E E3 60 5D 10 C3 A9
00:17:55: RADIUS:  Acct-Session-Id      [44] 10  "0000000C"
00:17:55: RADIUS:  Vendor, Cisco        [26] 56
00:17:55: RADIUS:  Conf-Id              [24] 50  "h323-conf-id=B8FE8B7F BF1711D3 800CE483
89ADC43B"
00:17:55: RADIUS:  Vendor, Cisco        [26] 31
00:17:55: RADIUS:  h323-call-origin     [26] 25  "h323-call-origin=answer"
00:17:55: RADIUS:  Vendor, Cisco        [26] 65
00:17:55: RADIUS:  Cisco AVpair        [1] 59  "h323-incoming-conf-id=B8FE8B7F BF1711D3
800CE483 89ADC43B"
00:17:55: RADIUS:  User-Name           [1] 12  "4081234567"
00:17:55: RADIUS:  Acct-Status-Type    [40] 6   Start                               [1]
00:17:55: RADIUS:  NAS-Port-Type       [61] 6   Async                                [0]
00:17:55: RADIUS:  Vendor, Cisco        [26] 19
00:17:55: RADIUS:  cisco-nas-port      [2] 13  "ISDN 0:D:23"
00:17:55: RADIUS:  Calling-Station-Id  [31] 12  "4081234567"
00:17:55: RADIUS:  Called-Station-Id   [30] 7   "12345"
00:17:55: RADIUS:  Service-Type        [6] 6   Login                                [1]
00:17:55: RADIUS:  NAS-IP-Address      [4] 6   10.5.20.100
00:17:55: RADIUS:  Delay-Time          [41] 6   0

```

```

00:17:55: ISDN Se0:23: TX -> CALL_PROC pd = 8 callref = 0x809D
00:17:55: Channel ID i = 0xA98397
00:17:55: ISDN Se0:23: TX -> CONNECT pd = 8 callref = 0x809D
00:17:55: RADIUS: Received from id 4 10.6.20.70:1699, Accounting-response, len 20
00:17:55: RADIUS: authenticator DC CD BA E8 7E 02 EA D1 - 12 67 DC 57 3C 73 56 75
00:17:55: ISDN Se0:23: RX <- CONNECT_ACK pd = 8 callref = 0x009D
00:17:55: ISDN Se0:23: CALL_PROGRESS: CALL_CONNECTED call id 0x63, bchan 22, dsl 0
00:17:55: %ISDN-6-CONNECT: Interface Serial0:22 is now connected to 4081234567
00:18:01: %ISDN-6-CONNECT: Interface Serial0:22 is now connected to 4081234567
00:18:06: RADIUS(0000000C): Encoding nas-port...Only port-type avlbl
00:18:06: RADIUS/ENCODE(0000000C): acct_session_id: 12
00:18:06: RADIUS(0000000C): sending
00:18:06: RADIUS: Send to unknown id 3 10.6.20.70:1698, Access-Request, len 199
00:18:06: RADIUS: authenticator 4B 2C 8C D7 12 54 45 3D - 51 44 30 05 C3 9B 44 B1
00:18:06: RADIUS: User-Name [1] 8 "777777"
00:18:06: RADIUS: User-Password [2] 18 *
00:18:06: RADIUS: Vendor, Cisco [26] 56
00:18:06: RADIUS: Conf-Id [24] 50 "h323-conf-id=61A46F2C 00000003 62E66E40
62E3A5C8"
00:18:06: RADIUS: Vendor, Cisco [26] 36
00:18:06: RADIUS: Cisco AVpair [1] 30 "h323-ivr-out=transactionID:3"
00:18:06: RADIUS: Calling-Station-Id [31] 12 "4081234567"
00:18:06: RADIUS: NAS-Port-Type [61] 6 Async [0]
00:18:06: RADIUS: Vendor, Cisco [26] 19
00:18:06: RADIUS: cisco-nas-port [2] 13 "ISDN 0:D:23"
00:18:06: RADIUS: Calling-Station-Id [31] 12 "4081234567"
00:18:06: RADIUS: Service-Type [6] 6 Login [1]
00:18:06: RADIUS: NAS-IP-Address [4] 6 10.5.20.100
00:18:06: RADIUS: Received from id 3 10.6.20.70:1698, Access-Accept, len 200
00:18:06: RADIUS: authenticator 9C AA 9E 4C 64 02 13 3A - 72 8C 3F D9 72 D0 3B 06
00:18:06: RADIUS: Vendor, Cisco [26] 27
00:18:06: RADIUS: Cisco AVpair [1] 21 "h323-ivr-in=sanjose"
00:18:06: RADIUS: Vendor, Cisco [26] 34
00:18:06: RADIUS: Cisco AVpair [1] 28 "h323-credit-amount=7777.77"
00:18:06: RADIUS: Vendor, Cisco [26] 26
00:18:06: RADIUS: Cisco AVpair [1] 20 "h323-return-code=0"
00:18:06: RADIUS: Vendor, Cisco [26] 30
00:18:06: RADIUS: h323-credit-time [102] 24 "h323-credit-time=54329"
00:18:06: RADIUS: Vendor, Cisco [26] 33
00:18:06: RADIUS: h323-billing-model [109] 27 "h323-billing-model=prepay"
00:18:06: RADIUS: Vendor, Cisco [26] 24
00:18:06: RADIUS: h323-currency [110] 18 "h323-currency=US"
00:18:06: RADIUS: Idle-Timeout [28] 6 30
00:18:06: RADIUS: Received from id C
00:18:27: ISDN Se0:23: RX <- DISCONNECT pd = 8 callref = 0x009D
00:18:27: Cause i = 0x8290 - Normal call clearing
00:18:27: %ISDN-6-DISCONNECT: Interface Serial0:22 disconnected from 4081234567 , call
lasted 32 seconds
00:18:27: ISDN Se0:23: TX -> RELEASE pd = 8 callref = 0x809D
00:18:27: ISDN Se0:23: RX <- RELEASE_COMP pd = 8 callref = 0x009D
00:18:27: RADIUS/ENCODE(0000000C): Unsupported AAA attribute timezone
00:18:27: RADIUS(0000000C): Encoding nas-port...Only port-type avlbl
00:18:27: RADIUS(0000000C): sending
00:18:27: RADIUS: Send to unknown id 5 10.6.20.70:1699, Accounting-Request, len 327
00:18:27: RADIUS: authenticator 2D 65 1C 38 6D 5B B3 DD - C8 57 D6 02 B4 4F E4 4E
00:18:27: RADIUS: Acct-Session-Id [44] 10 "0000000C"
00:18:27: RADIUS: Vendor, Cisco [26] 56
00:18:27: RADIUS: Conf-Id [24] 50 "h323-conf-id=B8FE8B7F BF1711D3 800CE483
89ADC43B"
00:18:27: RADIUS: Vendor, Cisco [26] 31
00:18:27: RADIUS: h323-call-origin [26] 25 "h323-call-origin=answer"
00:18:27: RADIUS: Vendor, Cisco [26] 65
00:18:27: RADIUS: Cisco AVpair [1] 59 "h323-incoming-conf-id=B8FE8B7F BF1711D3
800CE483 89ADC43B"

```

```

00:18:27: RADIUS: Acct-Input-Octets [42] 6 0
00:18:27: RADIUS: Acct-Output-Octets [43] 6 148000
00:18:27: RADIUS: Acct-Input-Packets [47] 6 0
00:18:27: RADIUS: Acct-Output-Packets [48] 6 925
00:18:27: RADIUS: Acct-Session-Time [46] 6 32
00:18:27: RADIUS: Vendor, Cisco [26] 35
00:18:27: RADIUS: Cisco AVpair [1] 29 "h323-ivr-out=Tariff:Unknown"
00:18:27: RADIUS: User-Name [1] 12 "4081234567"
00:18:27: RADIUS: Acct-Status-Type [40] 6 Stop [2]
00:18:27: RADIUS: NAS-Port-Type [61] 6 Async [0]
00:18:27: RADIUS: Vendor, Cisco [26] 19
00:18:27: RADIUS: cisco-nas-port [2] 13 "ISDN 0:D:23"
00:18:27: RADIUS: Calling-Station-Id [31] 12 "4081234567"
00:18:27: RADIUS: Called-Station-Id [30] 7 "12345"
00:18:27: RADIUS: Service-Type [6] 6 Login [1]
00:18:27: RADIUS: NAS-IP-Address [4] 6 10.5.20.100
00:18:27: RADIUS: Delay-Time [41] 6 0
00:18:27: RADIUS: Received from id 5 10.6.20.70:1699, Accounting-response, len 20
00:18:27: RADIUS: authenticator E5 B1 ED 3B AD A8 5B 5C - 49 83 63 BA DF 02 B2 00

```

An incoming call is set up using dial-peer voice 1001 pots. dial-peer voice 1001 has voice-class aaa 2 applied which should redirect AAA requests to the server specified for method list sanj_aaa6: 10.6.20.70 auth-port 1708 acct-port 1709.

```

00:30:05: ISDN Se1:23: RX <- SETUP pd = 8 callref = 0x0004
00:30:05: Bearer Capability i = 0x8090A2
00:30:05: Channel ID i = 0xE1808397
00:30:05: Calling Party Number i = 0x0080, '4081234567', Plan:Unknown,
Type:Unknown
00:30:05: Called Party Number i = 0xE9, '12346', Plan:Private, Type:Abbreviated
00:30:05: RADIUS/ENCODE(0000000E): Unsupported AAA attribute timezone
00:30:05: RADIUS(0000000E): Encoding nas-port...Only port-type avlbl
00:30:05: RADIUS(0000000E): sending
00:30:05: RADIUS: Send to unknown id 6 10.6.20.70:1709, Accounting-Request, len 262
00:30:05: RADIUS: authenticator 2F 3A 09 3D 6B C4 10 D2 - F6 68 D6 F4 36 35 C3 DE
00:30:05: RADIUS: Acct-Session-Id [44] 10 "0000000E"
00:30:05: RADIUS: Vendor, Cisco [26] 56
00:30:05: RADIUS: Conf-Id [24] 50 "h323-conf-id=6C29BC16 BF1911D3 8010E483
89ADC43B"
00:30:05: RADIUS: Vendor, Cisco [26] 31
00:30:05: RADIUS: h323-call-origin [26] 25 "h323-call-origin=answer"
00:30:05: RADIUS: Vendor, Cisco [26] 65
00:30:05: RADIUS: Cisco AVpair [1] 59 "h323-incoming-conf-id=6C29BC16 BF1911D3
8010E483 89ADC43B"
00:30:05: RADIUS: User-Name [1] 12 "4081234567"
00:30:05: RADIUS: Acct-Status-Type [40] 6 Start [1]
00:30:05: RADIUS: NAS-Port-Type [61] 6 Async [0]
00:30:05: RADIUS: Vendor, Cisco [26] 19
00:30:05: RADIUS: cisco-nas-port [2] 13 "ISDN 1:D:23"
00:30:05: RADIUS: Calling-Station-Id [31] 12 "4081234567"
00:30:05: RADIUS: Called-Station-Id [30] 7 "12346"
00:30:05: RADIUS: Service-Type [6] 6 Login [1]
00:30:05: RADIUS: NAS-IP-Address [4] 6 10.5.20.100
00:30:05: RADIUS: Delay-Time [41] 6 0
00:30:05: ISDN Se1:23: TX -> CALL_PROC pd = 8 callref = 0x8004
00:30:05: Channel ID i = 0xA98397
00:30:05: ISDN Se1:23: TX -> CONNECT pd = 8 callref = 0x8004
00:30:05: ISDN Se1:23: RX <- CONNECT_ACK pd = 8 callref = 0x0004
00:30:05: ISDN Se1:23: CALL_PROGRESS: CALL_CONNECTED call id 0x64, bchan 22, dsl 1
00:30:05: %ISDN-6-CONNECT: Interface Serial1:22 is now connected to 4081234567
00:30:06: RADIUS: Received from id 6 10.6.20.70:1709, Accounting-response, len 20
00:30:06: RADIUS: authenticator E1 AD 70 9F DC 09 29 32 - 74 47 96 9F 3F 77 27 82
00:30:11: %ISDN-6-CONNECT: Interface Serial1:22 is now connected to 4081234567
00:30:19: RADIUS(0000000E): Encoding nas-port...Only port-type avlbl

```

```

00:30:19: RADIUS/ENCODE(0000000E): acct_session_id: 14
00:30:19: RADIUS(0000000E): sending
00:30:19: RADIUS: Send to unknown id 4 10.6.20.70:1708, Access-Request, len 199
00:30:19: RADIUS: authenticator CE 16 21 8D A5 59 56 9F - B7 E9 CA 5C EC C5 89 A0
00:30:19: RADIUS: User-Name [1] 8 "777777"
00:30:19: RADIUS: User-Password [2] 18 *
00:30:19: RADIUS: Vendor, Cisco [26] 56
00:30:19: RADIUS: Conf-Id [24] 50 "h323-conf-id=61A46F2C 00000003 62E66E40
634A0A64"
00:30:19: RADIUS: Vendor, Cisco [26] 36
00:30:19: RADIUS: Cisco AVpair [1] 30 "h323-ivr-out=transactionID:4"
00:30:19: RADIUS: Calling-Station-Id [31] 12 "4081234567"
00:30:19: RADIUS: NAS-Port-Type [61] 6 Async [0]
00:30:19: RADIUS: Vendor, Cisco [26] 19
00:30:19: RADIUS: cisco-nas-port [2] 13 "ISDN 1:D:23"
00:30:19: RADIUS: Calling-Station-Id [31] 12 "4081234567"
00:30:19: RADIUS: Service-Type [6] 6 Login [1]
00:30:19: RADIUS: NAS-IP-Address [4] 6 10.5.20.100
00:30:20: RADIUS: Received from id 4 10.6.20.70:1708, Access-Accept, len 173
00:30:20: RADIUS: authenticator FF 0D 40 72 0D 80 12 26 - 44 13 D5 0E C4 BB 71 BE
00:30:20: RADIUS: Vendor, Cisco [26] 34
00:30:20: RADIUS: Cisco AVpair [1] 28 "h323-credit-amount=7777.77"
00:30:20: RADIUS: Vendor, Cisco [26] 26
00:30:20: RADIUS: Cisco AVpair [1] 20 "h323-return-code=0"
00:30:20: RADIUS: Vendor, Cisco [26] 30
00:30:20: RADIUS: h323-credit-time [102] 24 "h323-credit-time=54329"
00:30:20: RADIUS: Vendor, Cisco [26] 33
00:30:20: RADIUS: h323-billing-model [109] 27 "h323-billing-model=prepay"
00:30:20: RADIUS: Vendor, Cisco [26] 24
00:30:20: RADIUS: h323-currency [110] 18 "h323-currency=US"
00:30:20: RADIUS: Idle-Timeout [28] 6 30
00:30:20: RADIUS: Received from id E
00:30:43: ISDN Se1:23: RX <- DISCONNECT pd = 8 callref = 0x0004
00:30:43: Cause i = 0x8290 - Normal call clearing
00:30:43: %ISDN-6-DISCONNECT: Interface Serial1:22 disconnected from 4081234567 , call
lasted 37 seconds
00:30:43: ISDN Se1:23: TX -> RELEASE pd = 8 callref = 0x8004
00:30:43: ISDN Se1:23: RX <- RELEASE_COMP pd = 8 callref = 0x0004
00:30:43: RADIUS/ENCODE(0000000E): Unsupported AAA attribute timezone
00:30:43: RADIUS(0000000E): Encoding nas-port...Only port-type avlbl
00:30:43: RADIUS(0000000E): sending
00:30:43: RADIUS: Send to unknown id 7 10.6.20.70:1709, Accounting-Request, len 327
00:30:43: RADIUS: authenticator 99 5A B4 45 67 C0 F4 91 - 9B 4B C3 1D 7E DE 7D D1
00:30:43: RADIUS: Acct-Session-Id [44] 10 "0000000E"
00:30:43: RADIUS: Vendor, Cisco [26] 56
00:30:43: RADIUS: Conf-Id [24] 50 "h323-conf-id=6C29BC16 BF1911D3 8010E483
89ADC43B"
00:30:43: RADIUS: Vendor, Cisco [26] 31
00:30:43: RADIUS: h323-call-origin [26] 25 "h323-call-origin=answer"
00:30:43: RADIUS: Vendor, Cisco [26] 65
00:30:43: RADIUS: Cisco AVpair [1] 59 "h323-incoming-conf-id=6C29BC16 BF1911D3
8010E483 89ADC43B"
00:30:43: RADIUS: Acct-Input-Octets [42] 6 0
00:30:43: RADIUS: Acct-Output-Octets [43] 6 161920
00:30:43: RADIUS: Acct-Input-Packets [47] 6 0
00:30:43: RADIUS: Acct-Output-Packets [48] 6 1012
00:30:43: RADIUS: Acct-Session-Time [46] 6 37
00:30:43: RADIUS: Vendor, Cisco [26] 35
00:30:43: RADIUS: Cisco AVpair [1] 29 "h323-ivr-out=Tariff:Unknown"
00:30:43: RADIUS: User-Name [1] 12 "4081234567"
00:30:43: RADIUS: Acct-Status-Type [40] 6 Stop [2]
00:30:43: RADIUS: NAS-Port-Type [61] 6 Async [0]
00:30:43: RADIUS: Vendor, Cisco [26] 19
00:30:43: RADIUS: cisco-nas-port [2] 13 "ISDN 1:D:23"

```

```

00:30:43: RADIUS: Calling-Station-Id [31] 12 "4081234567"
00:30:43: RADIUS: Called-Station-Id [30] 7 "12346"
00:30:43: RADIUS: Service-Type [6] 6 Login [1]
00:30:43: RADIUS: NAS-IP-Address [4] 6 10.5.20.100
00:30:43: RADIUS: Delay-Time [41] 6 0
00:30:43: RADIUS: Received from id 7 10.6.20.70:1709, Accounting-response, len 20
00:30:43: RADIUS: authenticator 78 80 AB D1 82 75 ED ED - E4 1F 12 25 D8 83 F9 6

```

!voice class aaa 3 is applied to **dial-peer voice 1000 pots** and a call is made. **voice class aaa 3** uses server 10.6.20.70 with auth port 1720 and acct port 1721. The radius daemon has not started. AAA accounting and AAA authorization requests are sent to the appropriate server but no acknowledgement is received. Retries are attempted.

```

00:37:03: %SYS-5-CONFIG_I: Configured from console by console
00:37:11: ISDN Se0:23: RX <- SETUP pd = 8 callref = 0x009E
00:37:11: Bearer Capability i = 0x8090A2
00:37:11: Channel ID i = 0xE1808397
00:37:11: Calling Party Number i = 0x0080, '4081234567', Plan:Unknown,
Type:Unknown
00:37:11: Called Party Number i = 0xE9, '12345', Plan:Private, Type:Abbreviated
00:37:11: RADIUS/ENCODE(00000010): Unsupported AAA attribute timezone
00:37:11: RADIUS(00000010): Encoding nas-port...Only port-type avlbl
00:37:11: RADIUS(00000010): sending
00:37:11: RADIUS: Send to unknown id 8 10.6.20.70:1721, Accounting-Request, len 414
00:37:11: RADIUS: authenticator EC F7 FD AB ED 0D 26 BF - F0 A4 D2 88 91 1E D9 22
00:37:11: RADIUS: Acct-Session-Id [44] 10 "00000010"
00:37:11: RADIUS: Vendor, Cisco [26] 56
00:37:11: RADIUS: h323-setup-time [25] 50 "h323-setup-time=*00:37:09.095 UTC Sat
Jan 1 2000"
00:37:11: RADIUS: Vendor, Cisco [26] 34
00:37:11: RADIUS: h323-gw-id [33] 28 "h323-gw-id=router."
00:37:11: RADIUS: Vendor, Cisco [26] 56
00:37:11: RADIUS: Conf-Id [24] 50 "h323-conf-id=69EAABEB BF1A11D3 8014E483
89ADC43B"
00:37:11: RADIUS: Vendor, Cisco [26] 31
00:37:11: RADIUS: h323-call-origin [26] 25 "h323-call-origin=answer"
00:37:11: RADIUS: Vendor, Cisco [26] 32
00:37:11: RADIUS: h323-call-type [27] 26 "h323-call-type=Telephony"
00:37:11: RADIUS: Vendor, Cisco [26] 65
00:37:11: RADIUS: Cisco AVpair [1] 59 "h323-incoming-conf-id=69EAABEB BF1A11D3
8014E483 89ADC43B"
00:37:11: RADIUS: Vendor, Cisco [26] 30
00:37:11: RADIUS: Cisco AVpair [1] 24 "subscriber=RegularLine"
00:37:11: RADIUS: User-Name [1] 12 "4081234567"
00:37:11: RADIUS: Acct-Status-Type [40] 6 Start [1]
00:37:11: RADIUS: NAS-Port-Type [61] 6 Async [0]
00:37:11: RADIUS: Vendor, Cisco [26] 19
00:37:11: RADIUS: cisco-nas-port [2] 13 "ISDN 0:D:23"
00:37:11: RADIUS: Calling-Station-Id [31] 12 "4081234567"
00:37:11: RADIUS: Called-Station-Id [30] 7 "12345"
00:37:11: RADIUS: Service-Type [6] 6 Login [1]
00:37:11: RADIUS: NAS-IP-Address [4] 6 10.5.20.100
00:37:11: RADIUS: Delay-Time [41] 6 0
00:37:11: ISDN Se0:23: TX -> CALL_PROC pd = 8 callref = 0x809E
00:37:11: Channel ID i = 0xA98397
00:37:11: ISDN Se0:23: TX -> CONNECT pd = 8 callref = 0x809E
00:37:11: ISDN Se0:23: RX <- CONNECT_ACK pd = 8 callref = 0x009E
00:37:11: ISDN Se0:23: CALL_PROGRESS: CALL_CONNECTED call id 0x65, bchan 22, dsl 0
00:37:11: %ISDN-6-CONNECT: Interface Serial0:22 is now connected to 4081234567
00:37:16: RADIUS: Retransmit id 8
00:37:16: RADIUS: acct-delay-time for 4021D9EC (at 4021DB84) now 5
00:37:17: %ISDN-6-CONNECT: Interface Serial0:22 is now connected to 4081234567
00:37:21: RADIUS: Retransmit id 1

```

```

00:37:21: RADIUS: acct-delay-time for 4021D9EC (at 4021DB84) now 10
00:37:26: RADIUS: Retransmit id 2
00:37:26: RADIUS: acct-delay-time for 4021D9EC (at 4021DB84) now 15
00:37:31: RADIUS: Tried all servers.
00:37:31: RADIUS: No valid server found. Trying any viable server
00:37:31: RADIUS: Tried all servers.
00:37:31: RADIUS: No response for id 3
00:37:31: RADIUS/DECODE: parse response no app start; FAIL
00:37:31: RADIUS/DECODE: parse response; FAIL
00:37:35: RADIUS(00000010): Encoding nas-port...Only port-type avlbl
00:37:35: RADIUS/ENCODE(00000010): acct_session_id: 16
00:37:35: RADIUS(00000010): sending
00:37:35: RADIUS: Send to unknown id 5 10.6.20.70:1720, Access-Request, len 199
00:37:35: RADIUS: authenticator 4B 6E 67 9F D4 1E 73 37 - 45 D3 CD 7C 70 FD C7 12
00:37:35: RADIUS: User-Name [1] 8 "777777"
00:37:35: RADIUS: User-Password [2] 18 *
00:37:35: RADIUS: Vendor, Cisco [26] 56
00:37:35: RADIUS: Conf-Id [24] 50 "h323-conf-id=61A46F2C 00000003 62E66E40
634A0A64"
00:37:35: RADIUS: Vendor, Cisco [26] 36
00:37:35: RADIUS: Cisco AVpair [1] 30 "h323-ivr-out=transactionID:5"
00:37:35: RADIUS: Calling-Station-Id [31] 12 "4081234567"
00:37:35: RADIUS: NAS-Port-Type [61] 6 Async [0]
00:37:35: RADIUS: Vendor, Cisco [26] 19
00:37:35: RADIUS: cisco-nas-port [2] 13 "ISDN 0:D:23"
00:37:35: RADIUS: Calling-Station-Id [31] 12 "4081234567"
00:37:35: RADIUS: Service-Type [6] 6 Login [1]
00:37:35: RADIUS: NAS-IP-Address [4] 6 10.5.20.100
00:37:40: RADIUS: Retransmit id 5
00:37:45: RADIUS: Retransmit id 5
00:37:50: RADIUS: Retransmit id 5
00:37:55: RADIUS: Tried all servers.
00:37:55: RADIUS: No valid server found. Trying any viable server
00:37:55: RADIUS: Tried all servers.
00:37:55: RADIUS: No response for id 5
00:37:55: RADIUS/DECODE: parse response no app start; FAIL
00:37:55: RADIUS/DECODE: parse response; FAIL
00:38:00: %ISDN-6-DISCONNECT: Interface Serial0:22 disconnected from 4081234567 , call
lasted 48 seconds
00:38:00: ISDN Se0:23: TX -> DISCONNECT pd = 8 callref = 0x809E
00:38:00: Cause i = 0x8090 - Normal call clearing
00:38:00: RADIUS/ENCODE(00000010): Unsupported AAA attribute timezone
00:38:00: RADIUS(00000010): Encoding nas-port...Only port-type avlbl
00:38:00: RADIUS(00000010): sending
00:38:00: RADIUS: Send to unknown id 9 10.6.20.70:1721, Accounting-Request, len 660
00:38:00: RADIUS: authenticator C5 79 B7 D3 92 75 37 D0 - E7 5C 5B 84 99 6E 97 17
00:38:00: RADIUS: Acct-Session-Id [44] 10 "00000010"
00:38:00: RADIUS: Vendor, Cisco [26] 56
00:38:00: RADIUS: h323-setup-time [25] 50 "h323-setup-time=*00:37:09.095 UTC Sat
Jan 1 2000"
00:38:00: RADIUS: Vendor, Cisco [26] 34
00:38:00: RADIUS: h323-gw-id [33] 28 "h323-gw-id=router."
00:38:00: RADIUS: Vendor, Cisco [26] 56
00:38:00: RADIUS: Conf-Id [24] 50 "h323-conf-id=69EAABEB BF1A11D3 8014E483
89ADC43B"
00:38:00: RADIUS: Vendor, Cisco [26] 31
00:38:00: RADIUS: h323-call-origin [26] 25 "h323-call-origin=answer"
00:38:00: RADIUS: Vendor, Cisco [26] 32
00:38:00: RADIUS: h323-call-type [27] 26 "h323-call-type=Telephony"
00:38:00: RADIUS: Vendor, Cisco [26] 65
00:38:00: RADIUS: Cisco AVpair [1] 59 "h323-incoming-conf-id=69EAABEB BF1A11D3
8014E483 89ADC43B"
00:38:00: RADIUS: Vendor, Cisco [26] 30
00:38:00: RADIUS: Cisco AVpair [1] 24 "subscriber=RegularLine"

```

```

00:38:00: RADIUS: Acct-Input-Octets [42] 6 0
00:38:00: RADIUS: Acct-Output-Octets [43] 6 112160
00:38:00: RADIUS: Acct-Input-Packets [47] 6 0
00:38:00: RADIUS: Acct-Output-Packets [48] 6 701
00:38:00: RADIUS: Acct-Session-Time [46] 6 49
00:38:00: RADIUS: Vendor, Cisco [26] 58
00:38:00: RADIUS: h323-connect-time [28] 52 "h323-connect-time=*00:37:09.109 UTC Sat
Jan 1 2000"
00:38:00: RADIUS: Vendor, Cisco [26] 61
00:38:00: RADIUS: h323-disconnect-tim[29] 55 "h323-disconnect-time=*00:37:57.739 UTC
Sat Jan 1 2000"
00:38:00: RADIUS: Vendor, Cisco [26] 34
00:38:00: RADIUS: h323-disconnect-cau[30] 28 "h323-disconnect-cause=10 "
00:38:00: RADIUS: Vendor, Cisco [26] 35
00:38:00: RADIUS: Cisco AVpair [1] 29 "h323-ivr-out=Tariff:Unknown"
00:38:00: RADIUS: Vendor, Cisco [26] 28
00:38:00: RADIUS: h323-voice-quality [31] 22 "h323-voice-quality=0"
00:38:00: RADIUS: User-Name [1] 12 "4081234567"
00:38:00: RADIUS: Acct-Status-Type [40] 6 Stop [2]
00:38:00: RADIUS: NAS-Port-Type [61] 6 Async [0]
00:38:00: RADIUS: Vendor, Cisco [26] 19
00:38:00: RADIUS: cisco-nas-port [2] 13 "ISDN 0:D:23"
00:38:00: RADIUS: Calling-Station-Id [31] 12 "4081234567"
00:38:00: RADIUS: Called-Station-Id [30] 7 "12345"
00:38:00: RADIUS: Service-Type [6] 6 Login [1]
00:38:00: RADIUS: NAS-IP-Address [4] 6 10.5.20.100
00:38:00: RADIUS: Delay-Time [41] 6 0
00:38:00: ISDN Se0:23: RX <- RELEASE pd = 8 callref = 0x009E
00:38:00: ISDN Se0:23: TX -> RELEASE_COMP pd = 8 callref = 0x809E
00:38:05: RADIUS: Retransmit id 9
00:38:05: RADIUS: acct-delay-time for 4021D9EC (at 4021DC7A) now 5
00:38:10: RADIUS: Retransmit id 4
00:38:10: RADIUS: acct-delay-time for 4021D9EC (at 4021DC7A) now 10
00:38:15: RADIUS: Retransmit id 5
00:38:15: RADIUS: acct-delay-time for 4021D9EC (at 4021DC7A) now 15
00:38:20: RADIUS: Tried all servers.
00:38:20: RADIUS: No valid server found. Trying any viable server
00:38:20: RADIUS: Tried all servers.
00:38:20: RADIUS: No response for id 6
00:38:20: RADIUS/DECODE: parse response no app start; FAIL
00:38:20: RADIUS/DECODE: parse response; FAIL

```

Using Show Commands

show call accounting voice summary

Show call accounting voice summary shows the status of all accounting templates that are defined, loaded.

```

show call accounting voice summary
name          url                                     last_load  is_running
=====
cdr1          tftp://10.255.255.255/johndoe/sanjose/ success    is running
cdr2          tftp://10.255.255.255/johndoe/sanjose/ success    is running

```

show call accounting-template voice <template name>

show call accounting-template voice <template name> shows the VSAs that are contained in the accounting template.

```
show call accounting-template voice cdr1
CDR template cdr1 is running
  url: tftp://10.255.255.255/johndoe/sanjose/cdr/cdr1.cdr
The last load was successful.
```

```
  attr: h323-call-origin (56)
```

```
Totally 1 attrs defined.
```

```
show call accounting-template voice cdr2
CDR template cdr2 is running
  url: tftp://10.255.255.255/johndoe/sanjose/cdr/cdr2.cdr
The last load was successful.
```

```
  attr: h323-call-origin (56)
```

```
Totally 1 attrs defined.
```

!The output below results from defining a template that does not exist or that cannot be reached.

```
router(config)#$://10.255.255.255/johndoe/sanjose/cdr/cdr4000.cdr
Reading cdr template cdr10 fail, put it on retry queue.
```

```
01:15:46: hifs ifs could not open file
```

!The output below is for a template with an invalid VSA.

```
sh call accounting-template voice cdr1
CDR template cdr1 is running
  url: tftp://10.255.255.255/johndoe/sanjose/cdr/cdr1.cdr
  The last load was successful.
```

```
  attr: h323-call-origin (56)
```

```
Totally 1 attrs defined.
```

!Template cdr1.cdr is modified on the tftp server to enable an invalid VSA (for example h323-call-origin) to be put into the template.

```
call accounting-template voice reload cdr1
Loading johndoe/sanjose/cdr/cdr1.cdr from 10.255.255.255 (via Ethernet0): !
[OK - 88/4096 bytes]
cam: Fail to reload cdr template cdr1, unloading ...
```

```
02:27:29: hifs ifs file read succeeded. size=88,
url=tftp://10.255.255.255/johndoe/sanjose/cdr/cdr1.cdr
02:27:29: Error: attr name invalid-vs-a-h323-call-origin (0) is not valid in line 3.
```

```
sh call accounting-template voice cdr1
CDR template cdr1 is running
  url: tftp://10.255.255.255/johndoe/sanjose/cdr/cdr1.cdr
Last load returned errno=8, Exec format error
```

```
  attr: h323-call-origin (56)
```

```
Totally 1 attrs defined.
```

The template has been rejected, and previous template still applied.

show call aaa attributes

show call aaa attributes displays the VSAs that are supported. Mandatory VSAs that are sent to the accounting server are not displayed.

sh call aaa attributes

```
AAA ATTRIBUTE LIST:
  Name=disc-cause-ext           Format=Enum
  Name=Acct-Status-Type        Format=Enum
  Name=acl                     Format=Ulong
  Name=addr                    Format=IP v4 Address
  .....
  Name=gw-password             Format=Binary
  Name=h323-billing-model      Format=String
  Name=h323-call-origin        Format=String
  .....
  .....
```

!Use the **show call accounting-template voice summary** command to check if a template is loaded and running.

!The output below shows two templates successfully loaded and running, and a template that failed to load.

show call accounting-template voice summary

```
name          url                                          last_load  is_running
=====
cdr1          tftp://10.255.255.255/johndoe/sanjose/  success    is running
cdr2          tftp://10.255.255.255/johndoe/sanjose/  success    is running
cdr10         tftp://10.255.255.255/johndoe/sanjose/  fail       is not running
```

!The output below shows reloading template cdr1 after modifying it.

!Initially, the original template cdr1 is loaded as shown:

show call accounting-template voice cdr1

```
CDR template cdr1 is running
url: tftp://10.255.255.255/johndoe/sanjose/cdr/cdr1.cdr
The last load was successful.
```

```
attr: h323-call-origin (56)
```

Totally 1 attrs defined.

!Additional VSAs are added to modify cdr1 on the tftp server as shown:

call accounting

call accounting-template voice reload cdr1

```
Loading johndoe/sanjose/cdr/cdr1.cdr from 10.255.255.255 (via Ethernet0): !
[OK - 1848/3072 bytes]
```

cam: Reload cdr template cdr1 success.

```
01:35:58: hifs ifs file read succeeded. size=1848,
url=tftp://10.255.255.255/johndoe/sanjose/cdr/cdr1.cdr
```

show call accounting-template voice cdr1

```
CDR template cdr1 is running
url: tftp://10.255.255.255/johndoe/sanjose/cdr/cdr1.cdr
The last load was successful.
attr: h323-call-origin (56)
attr: h323-call-type (57)
attr: h323-connect-time (59)
attr: h323-disconnect-cause (63)
attr: h323-disconnect-time (64)
```

```
attr: h323-gw-id (65)
attr: h323-remote-address (73)
attr: h323-remote-id (74)
attr: h323-setup-time (76)
attr: h323-voice-quality (78)
attr: subscriber (79)
attr: in-portgrp-id (80)
attr: out-portgrp-id (81)
attr: charged-units (82)
attr: disconnect-text (83)
attr: info-type (84)
attr: logical-if-index (85)
attr: peer-address (86)
attr: peer-id (87)
attr: peer-if-index (88)
attr: acom-level (89)
attr: tx-duration (90)
attr: voice-tx-duration (91)
attr: fax-tx-duration (92)
attr: noise-level (94)
attr: codec-bytes (95)
attr: coder-type-rate (96)
attr: early-packets (97)
attr: late-packets (98)
attr: lost-packets (99)
attr: gapfill-with-interpolation (100)
attr: gapfill-with-prediction (101)
attr: gapfill-with-redundancy (102)
attr: gapfill-with-silence (103)
attr: lowater-playout-delay (104)
attr: hiwater-playout-delay (105)
attr: ontime-rv-playout (106)
attr: receive-delay (107)
attr: round-trip-delay (108)
attr: remote-udp-port (109)
attr: session-protocol (110)
attr: vad-enable (111)
```

Totally 42 attrs defined.

debug radius accounting

In the output below, cdr1 includes h323-call-origin but does not include VSA h323-gw-id. cdr2 includes h323-gw-id but does not include h323-call-origin.

```
show call accounting-template voice cdr1
CDR template cdr1 is running
url: tftp://10.255.255.255/johndoe/sanjose/cdr/cdr1.cdr
The last load was successful.
```

```
attr: h323-call-origin (56)
```

Totally 1 attrs defined.

```
show call accounting-template voice cdr2
CDR template cdr2 is running
url: tftp://10.255.255.255/johndoe/sanjose/cdr/cdr2.cdr
The last load was successful.
```

```
attr: h323-gw-id (65)
```

```
Totally 1 attrs defined.
```

```
!The output below is from a call that uses cdr1.cdr which allows only h323-call-origin.
```

```
debug radius accounting
```

```
Radius protocol debugging is on
```

```
Radius packet hex dump debugging is off
```

```
Radius packet protocol (authentication) debugging is off
```

```
Radius packet protocol (accounting) debugging is on
```

```
02:41:32: RADIUS/ENCODE(00000023): Unsupported AAA attribute timezone
02:41:32: RADIUS(00000023): Encoding nas-port...Only port-type avlbl
02:41:32: RADIUS(00000023): sending
02:41:32: RADIUS: Send to unknown id 26 10.6.20.70:1699, Accounting-Request, len
262
02:41:32: RADIUS:  authenticator 84 6E A0 C0 0F 27 79 03 - 59 96 FC 6C F4 17 05
4D
02:41:32: RADIUS:  Acct-Session-Id      [44] 10 "00000023"
02:41:32: RADIUS:  Vendor, Cisco        [26] 56
02:41:32: RADIUS:  Conf-Id              [24] 50 "h323-conf-id=C925CD59 BF2B11D3
8038E483 89ADC43B"
02:41:32: RADIUS:  Vendor, Cisco        [26] 31
02:41:32: RADIUS:  h323-call-origin     [26] 25 "h323-call-origin=answer"
02:41:32: RADIUS:  Vendor, Cisco        [26] 65
02:41:32: RADIUS:  Cisco AVpair        [1] 59 "h323-incoming-conf-id=C925CD59
BF2B11D3 8038E483 89ADC43B"
02:41:32: RADIUS:  User-Name            [1] 12 "4081234567"
02:41:32: RADIUS:  Acct-Status-Type     [40] 6  Start                               [1]
02:41:32: RADIUS:  NAS-Port-Type       [61] 6  Async                               [0]
02:41:32: RADIUS:  Vendor, Cisco        [26] 19
02:41:32: RADIUS:  cisco-nas-port      [2] 13 "ISDN 0:D:23"
02:41:32: RADIUS:  Calling-Station-Id  [31] 12 "4081234567"
02:41:32: RADIUS:  Called-Station-Id   [30] 7  "12345"
02:41:32: RADIUS:  Service-Type        [6] 6  Login                               [1]
02:41:32: RADIUS:  NAS-IP-Address      [4] 6  10.5.20.100
02:41:32: RADIUS:  Delay-Time          [41] 6  0
02:41:32: RADIUS: Received from id 26 10.6.20.70:1699, Accounting-response, len
20
02:41:32: RADIUS:  authenticator 90 AD C8 09 60 D7 26 01 - DE E0 BC DC C1 F8 CA
2F
02:41:32: %ISDN-6-CONNECT: Interface Serial0:22 is now connected to 4081234567
02:41:38: %ISDN-6-CONNECT: Interface Serial0:22 is now connected to 4081234567
02:41:52: RADIUS(00000023): Encoding nas-port...Only port-type avlbl
02:41:59: %ISDN-6-DISCONNECT: Interface Serial0:22 disconnected from 4081234567
, call lasted 26 seconds
02:41:59: RADIUS/ENCODE(00000023): Unsupported AAA attribute timezone
02:41:59: RADIUS(00000023): Encoding nas-port...Only port-type avlbl
02:41:59: RADIUS(00000023): sending
02:41:59: RADIUS: Send to unknown id 27 10.6.20.70:1699, Accounting-Request, len
327
02:41:59: RADIUS:  authenticator 13 B7 10 EE 1C 55 7A D2 - 0F 4A A5 2F 1F 85 0E
3A
02:41:59: RADIUS:  Acct-Session-Id     [44] 10 "00000023"
02:41:59: RADIUS:  Vendor, Cisco       [26] 56
02:41:59: RADIUS:  Conf-Id            [24] 50 "h323-conf-id=C925CD59 BF2B11D3
8038E483 89ADC43B"
02:41:59: RADIUS:  Vendor, Cisco       [26] 31
02:41:59: RADIUS:  h323-call-origin    [26] 25 "h323-call-orig-in=answer"
02:41:59: RADIUS:  Vendor, Cisco       [26] 65
02:41:59: RADIUS:  Cisco AVpair        [1] 59 "h323-incoming-conf-id=C925CD59
BF2B11D3 8038E483 89ADC43B"
02:41:59: RADIUS:  Acct-Input-Octets   [42] 6  0
02:41:59: RADIUS:  Acct-Output-Octets  [43] 6  121600
```

```

02:41:59: RADIUS: Acct-Input-Packets [47] 6 0
02:41:59: RADIUS: Acct-Output-Packets [48] 6 760
02:41:59: RADIUS: Acct-Session-Time [46] 6 27
02:41:59: RADIUS: Vendor, Cisco [26] 35
02:41:59: RADIUS: Cisco AVpair [1] 29 "h323-ivr-out=Tariff:Unknown"
02:41:59: RADIUS: User-Name [1] 12 "4081234567"
02:41:59: RADIUS: Acct-Status-Type [40] 6 Stop [2]
02:41:59: RADIUS: NAS-Port-Type [61] 6 Async [0]
02:41:59: RADIUS: Vendor, Cisco [26] 19
02:41:59: RADIUS: cisco-nas-port [2] 13 "ISDN 0:D:23"
02:41:59: RADIUS: Calling-Station-Id [31] 12 "4081234567"
02:41:59: RADIUS: Called-Station-Id [30] 7 "12345"
02:41:59: RADIUS: Service-Type [6] 6 Login [1]
02:41:59: RADIUS: NAS-IP-Address [4] 6 10.5.20.100
02:41:59: RADIUS: Delay-Time [41] 6 0
02:41:59: RADIUS: Received from id 27 10.6.20.70:1699, Accounting-response, len
20
02:41:59: RADIUS: authenticator 7F B2 88 3A 4A 96 05 C6 - D5 81 19 D8 25 3B 4D CB

```

!The output below is from the **show debug** command.

show debug

Radius protocol debugging is on

Radius packet protocol (accounting) debugging is on

!The output below is from a call that uses cdr2 which allows h323-gw-id, but does not allow h323-call-origin.

```

ADIUS/ENCODE(00000025): Unsupported AAA attribute timezone
02:51:35: RADIUS(00000025): Encoding nas-port...Only port-type avlbl
02:51:35: RADIUS(00000025): sending
02:51:35: RADIUS: Send to unknown id 28 10.6.20.70:1709, Accounting-Request, len
265
02:51:35: RADIUS: authenticator 15 F0 7E AB 75 07 10 70 - 5E 3C 54 78 09 18 83
E5
02:51:35: RADIUS: Acct-Session-Id [44] 10 "00000025"
02:51:35: RADIUS: Vendor, Cisco [26] 34
02:51:35: RADIUS: h323-gw-id [33] 28 "h323-gw-id=router."
02:51:35: RADIUS: Vendor, Cisco [26] 56
02:51:35: RADIUS: Conf-Id [24] 50 "h323-conf-id=306F55DD BF2D11D3
803CE483 89ADC43B"
02:51:35: RADIUS: Vendor, Cisco [26] 65
02:51:35: RADIUS: Cisco AVpair [1] 59 "h323-incoming-conf-id=306F55DD
BF2D11D3 803CE483 89ADC43B"
02:51:35: RADIUS: User-Name [1] 12 "4081234567"
02:51:35: RADIUS: Acct-Status-Type [40] 6 Start [1]
02:51:35: RADIUS: NAS-Port-Type [61] 6 Async [0]
02:51:35: RADIUS: Vendor, Cisco [26] 19
02:51:35: RADIUS: cisco-nas-port [2] 13 "ISDN 1:D:23"
02:51:35: RADIUS: Calling-Station-Id [31] 12 "4081234567"
02:51:35: RADIUS: Called-Station-Id [30] 7 "12346"
02:51:35: RADIUS: Service-Type [6] 6 Login [1]
02:51:35: RADIUS: NAS-IP-Address [4] 6 10.5.20.100
02:51:35: RADIUS: Delay-Time [41] 6 0
02:51:35: %ISDN-6-CONNECT: Interface Serial1:22 is now connected to 4081234567
02:51:35: RADIUS: Received from id 28 10.6.20.70:1709, Accounting-response, len
20
02:51:35: RADIUS: authenticator D3 D8 59 42 2B 48 96 8D - 5E 2E D8 61 9A 9D 0D
5F
02:51:41: %ISDN-6-CONNECT: Interface Serial1:22 is now connected to 4081234567
02:51:43: %ISDN-6-DISCONNECT: Interface Serial1:22 disconnected from 4081234567
, call lasted 8 seconds
02:51:43: RADIUS/ENCODE(00000025): Unsupported AAA attribute timezone
02:51:43: RADIUS(00000025): Encoding nas-port...Only port-type avlbl
02:51:43: RADIUS(00000025): sending

```

```

02:51:43: RADIUS: Send to unknown id 29 10.6.20.70:1709, Accounting-Request, len
330
02:51:43: RADIUS: authenticator 55 35 AB CC 20 64 69 4B - 3F EE 79 04 11 E8 AE
4F
02:51:43: RADIUS: Acct-Session-Id [44] 10 "00000025"
02:51:43: RADIUS: Vendor, Cisco [26] 34
02:51:43: RADIUS: h323-gw-id [33] 28 "h323-gw-id=router."
02:51:43: RADIUS: Vendor, Cisco [26] 56
02:51:43: RADIUS: Conf-Id [24] 50 "h323-conf-id=306F55DD BF2D11D3
803CE483 89ADC43B"
02:51:43: RADIUS: Vendor, Cisco [26] 65
02:51:43: RADIUS: Cisco AVpair [1] 59 "h323-incoming-conf-id=306F55DD
BF2D11D3 803CE483 89ADC43B"
02:51:43: RADIUS: Acct-Input-Octets [42] 6 0
02:51:43: RADIUS: Acct-Output-Octets [43] 6 50240
02:51:43: RADIUS: Acct-Input-Packets [47] 6 0
02:51:43: RADIUS: Acct-Output-Packets [48] 6 314
02:51:43: RADIUS: Acct-Session-Time [46] 6 8
02:51:43: RADIUS: Vendor, Cisco [26] 35
02:51:43: RADIUS: Cisco AVpair [1] 29 "h323-ivr-out=Tariff:Unknown"
02:51:43: RADIUS: User-Name [1] 12 "4081234567"
02:51:43: RADIUS: Acct-Status-Type [40] 6 Stop [2]
02:51:43: RADIUS: NAS-Port-Type [61] 6 Async [0]
02:51:43: RADIUS: Vendor, Cisco [26] 19
02:51:43: RADIUS: cisco-nas-port [2] 13 "ISDN 1:D:23"
02:51:43: RADIUS: Calling-Station-Id [31] 12 "4081234567"
02:51:43: RADIUS: Called-Station-Id [30] 7 "12346"
02:51:43: RADIUS: Service-Type [6] 6 Login [1]
02:51:43: RADIUS: NAS-IP-Address [4] 6 10.5.20.100
02:51:43: RADIUS: Delay-Time [41] 6 0
02:51:43: RADIUS: Received from id 29 10.6.20.70:1709, Accounting-response, len
20
02:51:43: RADIUS: authenticator 45 31 ED 45 F4 06 ED 54 - 5E 6F 83 64 4D 2D 34
90

```



ASCII Table

ASCII Table

Table 1 Prompt Name for ASCII Characters

Value (Hex)	Character	Name	Value (Hex)	Character	Name
20		Space	21	!	Exclamation mark
22	“	Double quote	23	#	Pound
24	\$	Dollar	25	%	Percent
26	&	Ampersand	27	‘	Right single quote
28	(Left parenthesis	29)	Right parenthesis
2A	*	Astrick	2B	+	Plus
2C	,	Comma	2D	-	Hyphen
2E	.	Dot	2F	/	Slash
30	0	Zero	31	1	One
32	2	Two	33	3	Three
34	4	Four	35	5	Five
36	6	Six	37	7	Seven
38	8	Eight	39	9	Nine
3A	:	Colon	3B	;	Semi-colon
3C	<	Less than	3D	=	Equal
3E	>	Greater than	3F	?	Question mark
40	@	at	41	A	a
42	B	b	43	C	c
44	D	d	45	E	e
46	F	f	47	G	g
48	H	h	49	I	i
4A	J	j	4B	K	k

Table 1 Prompt Name for ASCII Characters (continued)

Value (Hex)	Character	Name	Value (Hex)	Character	Name
4C	L	l	4D	M	m
4E	N	n	4F	O	o
50	P	p	51	Q	q
52	R	r	53	S	s
54	T	t	55	U	u
56	V	v	57	W	w
58	X	x	59	Y	y
5A	Z	z	5B	[Left bracket
5C	\	Backslash	5D]	Right bracket
5E	^	Caret	5F	_	Underscore
60	'	Left single quote	61	a	a
62	b	b	63	c	c
64	d	d	65	e	e
66	f	f	67	g	g
68	h	h	69	i	i
6A	j	j	6B	k	k
6C	l	l	6D	m	m
6E	n	n	6F	o	o
70	p	p	71	q	q
72	r	r	73	s	s
74	t	t	75	u	u
76	v	v	77	w	w
78	x	x	79	y	y
7A	z	z	7B	{	Left brace
7C		Pipe	7D	}	Right brace
7E	~	Tilde			



GLOSSARY

A

- AAA** Authentication, Authorization, and Accounting. AAA is a suite of network security services that provides the primary framework through which you can set up access control on your Cisco router or gateway.
- ANI** Automatic number identification. Same as calling party.

D

- DNIS** Dialed number identification service. Same as the called number.

G

- gatekeeper** A gatekeeper maintains a registry of devices in the multimedia network. The devices register with the gatekeeper at startup and request admission to a call from the gatekeeper. An H.323 gateway is an endpoint on the LAN that provides real-time, two-way communications between H.323 terminals on the LAN and other ITU-T terminals in the WAN or to another H.323 gateway.
- gateway** A gateway allows H.323 terminals to communicate with non-H.323 terminals by converting protocols. A gateway is the point where a circuit-switched call is encoded and repackaged into IP packets.

I

- IFS** Cisco IOS file system.
- IVR** Interactive voice response. When someone dials in, IVR responds with a prompt to get a personal identification number (PIN), and so on.

P

- POTS** Plain old telephone service. Basic telephone service supplying standard single line telephones, telephone lines, and access to the PSTN.
- PSTN** Public Switched Telephone Network. PSTN refers to the local telephone company.

V

VoIP Voice over IP. The ability to carry normal telephone-style voice signals over an IP-based network with POTS-like functionality, reliability, and voice quality. VoIP is a blanket term that generally refers to the Cisco open standards-based (for example, H.323) approach to IP voice traffic.

For a list of networking terms and acronyms, refer to *Internetworking Terms and Acronyms*.



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