



---

Net-Net® 9000  
Accounting Guide

Release Version S-D7.10

---

Acme Packet, Inc.  
100 Crosby Drive  
Bedford, MA 01730  
t 781-328-4400  
f 781-425-5077  
<http://www.acmepacket.com>

Last updated: May 1, 2013  
Document Number: 400-0078-71 Rev. 1.21

## Notices

©2013 Acme Packet, Inc., Bedford, Massachusetts. All rights reserved. Acme Packet, Session Aware Networking, Net-Net, and related marks are trademarks of Acme Packet, Inc. All other brand names are trademarks, registered trademarks, or service marks of their respective companies or organizations.

Patents Pending, Acme Packet, Inc.

The Acme Packet Documentation Set and the Net-Net systems described therein are the property of Acme Packet, Inc. This documentation is provided for informational use only, and the information contained within the documentation is subject to change without notice.

Acme Packet, Inc. shall not be liable for any loss of profits, loss of use, loss of data, interruption of business, nor for indirect, special, incidental, consequential, or exemplary damages of any kind, arising in any way in connection with the Acme Packet software or hardware, third party software or hardware, or the documentation. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusions may not apply. These limitations are independent from all other provisions and shall apply notwithstanding the failure of any remedy provided herein.

Copying or reproducing the information contained within this documentation without the express written permission of Acme Packet, Inc., 100 Crosby Drive, Bedford, MA 01730, USA is prohibited. No part may be reproduced or retransmitted.

Acme Packet Net-Net products are protected by one or more of the following patents: United States: 7072303, 7028092, 7002973, 7133923, 7031311, 7142532, 7151781. France: 1342348, 1289225, 1280297, 1341345, 1347621. Germany: 1342348, 1289225, 1280297, 1341345, 1347621. United Kingdom: 1342348, 1289225, 1280297, 1341345, 1347621. Other patents are pending.

# About this Guide

The *Net-Net 9000 Accounting Guide* describes the Net-Net™ SBC's support for:

- Accounting based on Remote Authentication Dial-in User Service (RADIUS)
- Local CDR storage and FTP file push

It includes a dictionary of the standard RADIUS attributes supported by the Net-Net SBC, the Acme Packet accounting Vendor-Specific Attributes (VSAs), and the Cisco Systems, Inc.™ VSAs supported by the Net-Net SBC. This reference guide indicates the Cisco Systems' VSAs supported by Acme Packet's Net-Net products.

This guide also includes RADIUS-related statistics and alarm information and associated Acme Packet Command Line Interface (ACLI) configuration element examples. Appendix A of this guide contains a selection of examples of RADIUS logs for purposes of reference.

## Who is Acme Packet?

---

Acme Packet (NASDAQ: APKT), the leader in session delivery network solutions, enables the trusted, first-class delivery of next-generation voice, data and unified communications services and applications across IP networks. Our Net-Net product family fulfills demanding security, service assurance and regulatory requirements in service provider, enterprise and contact center networks. Based in Bedford, Massachusetts, Acme Packet designs and manufactures its products in the USA. For more information, visit [www.acmepacket.com](http://www.acmepacket.com).

## Related Documentation

---

The following table lists related documents.

Document Name	Document Description
Net-Net 9200 Hardware Installation Guide (400-0073-00)	Contains information about the components and installation of the Net-Net SBC.
Net-Net 9000 Configuration Guide (400-0074-00)	Contains information about the administration and software configuration of the Net-Net SBC.
Net-Net 9000 ACLI Reference Guide (400-0076-00)	Contains explanations of how to use the ACLI, as an alphabetical listings and descriptions of all ACLI commands and configuration parameters.

Document Name	Document Description
Net-Net 9000 Maintenance and Troubleshooting Guide (400-0079-00)	Contains information about Net-Net SBC logs, performance announcements, system management, inventory management, upgrades, working with configurations, and managing backups and archives.
Net-Net 9000 MIB Reference Guide (400-0077-00)	Contains information about Management Information Base (MIBs), Acme Packet's enterprise MIBs, general trap information, including specific details about standard traps and enterprise traps, Simple Network Management Protocol (SNMP) GET query information (including standard and enterprise SNMP GET query names, object identifier names and numbers, and descriptions), examples of scalar and table objects.

## Technical Assistance

If you need technical assistance with Acme Packet products, you can obtain it on-line by going to <https://support.acmepacket.com>. With your customer identification number and password, you can access Acme Packet's on-line resources 24 hours a day. If you do not have the information required to access the site, send an email to [tac@acmepacket.com](mailto:tac@acmepacket.com) requesting a login.

In the event that you are experiencing a critical service outage and require live assistance, you can contact the Acme Packet Technical Assistance Center emergency hotline:

- From the United States, Canada, and Mexico call: 1 866 226 3758
- From all other locations, call: +1 781 756 6920

Please note that a valid support/service contract with Acme Packet is required to obtain technical assistance.

## Customer Questions, Comments, or Suggestions

Acme Packet is committed to providing our customers with reliable documentation. If you have any questions, comments, or suggestions regarding our documentation, please contact your Acme Packet customer support representative directly or email [support@acmepacket.com](mailto:support@acmepacket.com).

## Contact Us

Acme Packet  
 100 Crosby Drive  
 Bedford, MA 01730  
 t 781 328 4400  
 f 781 425 5077  
<http://www.acmepacket.com>

## Revision History

---

This section contains a revision history for this document.

<b>Date</b>	<b>Revision Number</b>	<b>Description</b>
October 18, 2010	Revision 1.00	<ul style="list-style-type: none"><li>• Initial Release</li></ul>
May 31, 2012	Revision 1.10	<ul style="list-style-type: none"><li>• Corrects typographical error in the Using Radius with the Net-Net SBC chapter, H.323 Errors and Events, second sentence: Changed "of" to "or", "...Either Q.850 Cause or RelCompReason is mandatory...."</li><li>• Corrects typographical error in Q.850 Cause to H.323 Release Complete Reason Mapping: Changed numeric code for Q.850 Cause: Normal Unspecified and H.323 Release Complet Reason: Undefined Reason to <b>31</b>.</li></ul>
February 28, 2012	Revision 1.20	<ul style="list-style-type: none"><li>• Updated Local CDR File Format Consistency section</li></ul>
May 1, 2013	Revision 1.21	<ul style="list-style-type: none"><li>• Fixes max-files upper range</li></ul>



# Contents

<b>About this Guide</b> .....	<b>iii</b>
Who is Acme Packet? .....	iii
Related Documentation .....	iii
Technical Assistance .....	iv
Customer Questions, Comments, or Suggestions .....	iv
Contact Us .....	iv
Revision History .....	v
<b>1 Using RADIUS with the Net-Net SBC</b> .....	<b>11</b>
<b>Introduction</b> .....	<b>11</b>
Licensing .....	11
<b>Overview</b> .....	<b>11</b>
<b>Standard RADIUS Attributes</b> .....	<b>11</b>
Standard RADIUS Attributes Dictionary .....	12
RADIUS Accounting Termination Causes .....	14
<b>VSAs</b> .....	<b>14</b>
Acme Packet RADIUS VSAs .....	14
Notes on Media Flow Attributes .....	15
Notes on Transcoding Attributes .....	15
Acme Packet VSA Values .....	29
Cisco Systems RADIUS Decodes .....	30
<b>Mappings and Disconnect Cause Values</b> .....	<b>31</b>
SIP, H.323, and Q.850 Mappings .....	31
SIP Status to H.323 Disconnect Reason Mapping .....	31
SIP Status to H.323 RAS Error Mapping .....	32
SIP Status to H.323 Release Complete Reason Error Mapping .....	32
Q.850 Cause to H.323 Release Complete Reason Mapping .....	33
SIP-SIP Calls .....	33
SIP-H.323 Calls with Interworking .....	34

SIP Events and Errors . . . . .	34
H.323 Events and Errors . . . . .	35
H.225 RAS Errors . . . . .	36
<b>2 Configuring Accounting . . . . .</b>	<b>37</b>
<b>Overview . . . . .</b>	<b>37</b>
<b>Accounting for SIP and H.323 . . . . .</b>	<b>37</b>
Call Detail Records . . . . .	37
RAS Overview . . . . .	37
RADIUS Accounting Client . . . . .	38
Session Accounting . . . . .	39
Interim RADIUS Records for Recursive Attempts . . . . .	39
RADIUS Messages . . . . .	40
Session Termination . . . . .	41
ACLI Instructions and Examples . . . . .	41
Accessing the Accounting and Accounting Servers Configuration . . . . .	41
Setting Up the Account Configuration . . . . .	41
Setting Up Accounting Servers . . . . .	43
<b>Per Realm Accounting Control . . . . .</b>	<b>45</b>
ACLI Instructions and Examples . . . . .	45
<b>Configurable Intermediate Period . . . . .</b>	<b>45</b>
<b>RADIUS CDR Content Control . . . . .</b>	<b>46</b>
ACLI Instructions and Examples . . . . .	46
Preventing Duplicate RADIUS Attributes . . . . .	46
RADIUS Attribute Selection . . . . .	47
<b>Custom RADIUS CDR VSAs for SIP . . . . .</b>	<b>47</b>
About User-Defined VSAs for SIP Calls . . . . .	47
HMR Adaptations . . . . .	48
HMR String Variable . . . . .	48
ACLI Instructions and Examples: User-Defined VSAs . . . . .	48
ACLI Instructions and Examples: String Variable . . . . .	51
Trunk-Group VSA Generation . . . . .	51
ACLI Instructions and Examples . . . . .	52
<b>SSH RADIUS Authentication VSA Support . . . . .</b>	<b>52</b>
<b>Accounting Configuration Example . . . . .</b>	<b>53</b>
<b>Local CDR Storage and FTP Push . . . . .</b>	<b>54</b>
Local CDR File Format . . . . .	54
Local CDR File Format Consistency . . . . .	54
Local CDR File Naming Convention . . . . .	55
CSV Filename Sequence Numbering . . . . .	55



Downgrade Warning .....	55
Local CDR File Storage Directories.....	56
Local CDR File Size and Rotation .....	56
More About File Rotation Time .....	56
RADIUS CDR Redundancy .....	56
FTP Push .....	56
Deprecated ACLI Configuration .....	56
Multiple Push Receivers .....	57
Push Receivers.....	57
Secure FTP Push .....	57
FTP/SFTP Server Upload Verification.....	57
Server Requirements.....	58
ACLI Instructions and Examples.....	58
Accessing the Accounting Configuration .....	58
Enabling Local CDR Storage .....	58
Configuring a Push Receiver Fallback Method .....	59
Setting the CSV Sequence Number .....	59
Enabling FTP Push .....	60
<b>Local CDR Monitoring .....</b>	<b>61</b>
Monitoring CDR Push Receivers.....	61
SNMP Support .....	61
<b>3 RADIUS Accounting Management .....</b>	<b>63</b>
<b>Overview .....</b>	<b>63</b>
<b>Alarm Generation and Monitoring.....</b>	<b>63</b>
RADIUS Alarms .....	63
<b>Status and Statistics Monitoring.....</b>	<b>64</b>
ACLI Show RADIUS Display .....	64
<b>4 Compact Flash for Local CDR Storage .....</b>	<b>69</b>
<b>Using Compact Flash Card for CDR Storage .....</b>	<b>69</b>
Compact Flash Memory Specifications.....	69
Compact Flash Standby Replication .....	69
Local CDR Storage Directory.....	69
FTP Push Backup .....	69
Local CDR File Compression.....	69
CDR Decompression .....	70
ACLI Configuration and Examples .....	70
<b>Compact Flash Module Management .....</b>	<b>71</b>
Identifying compact flash module Volumes.....	71

Viewing Directories and Files .....	71
Viewing Standby Directories and Files .....	71
<b>Compact Flash Module Monitoring .....</b>	<b>71</b>
Low Disk Space Warning .....	71
Low Disk Space Threshold Alarm .....	72
Low Disk Space Threshold SNMP Trap .....	72
ACLI Configuration and Examples .....	72
<b>Appendix A .....</b>	<b>75</b>
<b>Overview .....</b>	<b>75</b>
<b>RADIUS CDR Samples .....</b>	<b>75</b>
CDR Samples for SIP .....	75
Basic Successful SIP Call .....	75
Unsuccessful SIP Call .....	78
SIP Call On Hold .....	79
SIP Call Transfer .....	89
CDR Samples for H.323 .....	93
H.323 Successful Call .....	93
CDR Samples for IWF .....	96
H.323 to SIP Call .....	96
SIP to H.323 Call .....	103
Sample CDR for Transcoding .....	109
<b>Appendix B .....</b>	<b>113</b>
<b>Net-Net 9000 D7.0 RADIUS Dictionary .....</b>	<b>113</b>
<b>Appendix C .....</b>	<b>117</b>
<b>Local File Format .....</b>	<b>117</b>
Start Record CSV Placement .....	117
Interim Record CSV Placement .....	121
Interim (unsuccessful attempt) Record CSV Placement .....	126
Stop Record CSV Placement .....	131

# 1 Using RADIUS with the Net-Net SBC

## Introduction

---

RADIUS is an accounting, authentication, and authorization (AAA) system. In general, RADIUS servers are responsible for receiving user connection requests, authenticating users, and returning all configuration information necessary for the client to deliver service to the user.

You can configure your Net-Net SBC to send call accounting information to one or more RADIUS servers. This information can help you to see usage and QoS metrics, monitor traffic, and even troubleshoot your system. For more information about QoS, refer to the *Admission Control and QoS* chapter of the *Net-Net 9000 ACLI Configuration Guide*.

For information about how to configure the Net-Net SBC for RADIUS accounting use, refer to this guide's [Configuring Accounting \(37\)](#) chapter.

## Licensing

In order to use RADIUS with your Net-Net SBC, you must have the accounting license installed and activated on your system. For more information about licensing, see the "Software Licensing" section of the *Net-Net 9000 ACLI Configuration Guide's Getting Started* chapter. This chapter provides details about Acme Packet software licensing, including instructions for how to obtain and install licenses.

## Overview

---

For SIP calls, you can obtain sets of records that contain information to help you with accounting and that provide a quantitative and qualitative measurement of the call. The Net-Net SBC generates one set of records for each SIP call.

You can use the RADIUS records generated by your Net-Net SBC to assist you with:

- Usage accounting—See the calling and called parties for a call, the protocol used, the realm the call traversed (as well as local and remote IP address and port information), and the codec used
- Traffic monitoring—You can see information about the setup, connect, and disconnect times, as well as the SIP disconnect cause
- SLA monitoring—The Net-Net SBC supports RADIUS attributes that provide information about jitter, latency, and loss for SIP calls
- Troubleshooting—Obtain information about calls that can help you to identify and address issues with quality and how calls are setup and torn down.

## Standard RADIUS Attributes

---

This section describes the standard RADIUS attributes that the Net-Net SBC supports. These attributes appear along with VSAs (Vendor-Specific Attributes) in the CDRs that the Net-Net SBC generates.

The [Standard RADIUS Attributes Dictionary \(12\)](#) is a dictionary of the standard RADIUS attributes included in Accounting Request messages sent by the Net-Net SBC to the RADIUS server. The CDR event information determines which messages

are generated and which RADIUS attributes are included in the messages. Standard RADIUS messages and attributes are used whenever possible; however, RADIUS does not have attributes to record all important session information.

Possible messages are:

- Start—Marks the start of service delivery and describes the type of service being delivered and the user to whom it is being delivered
- Interim-Update—Indicates to the accounting server that the session parameters have changed
- Stop—
  - Marks the end of service delivery
  - Describes the type of service that was delivered
  - Sometimes describes statistics such as elapsed time, input and output octets, or input and output packets
- On—Marks the start of accounting
- Off—Marks the end of accounting

VSA's are used to record the necessary session information missing from this list of standard RADIUS attributes.

For more information about RADIUS, see to the following Internet Engineering Task Force Request for Comments (IETF RFCs):

- RFC 2865, "Remote Authentication Dial In User Service (RADIUS)," Rigney, et al., June 2000 (<http://www.ietf.org/rfc/rfc2865.txt>)
- RFC 2866, "RADIUS Accounting," C. Rigney, June 2000 (<http://www.ietf.org/rfc/rfc2866.txt>)

## Standard RADIUS Attributes Dictionary

The table below lists and describes standard RADIUS attributes.

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
NAS-IP-Address	IP address of the SIP proxy signaling address.	4	IP address	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> <li>• On</li> <li>• Off</li> </ul>
NAS-Port	SIP proxy port call signaling RAS port.	5	integer	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> <li>• On</li> <li>• Off</li> </ul>
Called-Station-Id	"To" field value of the SIP INVITE message (a type of message used to initiate a session).	30	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Calling-Station-Id	"From" field value of the SIP INVITE message.	31	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
NAS-Identifier	<p>Value, if any, set in the optional NAS-ID field for the accounting server that you configure as part of the accounting configuration. This identifier sets the value that the remote server (the accounting server) uses to identify the Net-Net SBC so that RADIUS messages can be transmitted.</p> <p>The remote server to which the accounting configuration will send messages uses at least one of two pieces of information for identification:</p> <ul style="list-style-type: none"> <li>• NAS IP address: always included in the accounting message</li> <li>• NAS identifier: configured in the NAS-ID parameter of the accounting server; if configured, the NAS identifier is sent to the remote server</li> </ul> <p>This attribute only appears if a value is configured in the NAS-ID field.</p>	32	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> <li>• On</li> <li>• Off</li> </ul>
Acct-Status-Type	Whether this Accounting Request marks the beginning of the RADIUS message (Start), the middle (Interim-Update), or the end (Stop), and whether the accounting function is on or off (Accounting-On or Accounting-Off).	40	integer	<ul style="list-style-type: none"> <li>• Start (1)</li> <li>• Interim-Update</li> <li>• Stop (2)</li> <li>• On</li> <li>• Off</li> </ul>
Acct-Session-Id	Either the "Call-ID" field value of the SIP INVITE message.	44	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> <li>• On</li> <li>• Off</li> </ul>
Acct-Session-Time	How much time in seconds the user has received service.	46	integer	<ul style="list-style-type: none"> <li>• Interim-Update</li> <li>• Stop</li> <li>• Off</li> </ul>
Acct-Terminate-Cause	How or why the session ended.	49	integer	<ul style="list-style-type: none"> <li>• Stop</li> <li>• Off</li> </ul>

## RADIUS Accounting Termination Causes

The table below describes the possible session termination causes for the Acct-Terminate-Cause RADIUS attribute.

RADIUS Termination Cause	Related Integer Value (per RFC 2059)	Termination Event	Message
User Request	1	A SIP BYE message.	• Stop
User Error	17	Input from user is erroneous; for example, SIP signaling failed to establish the session. Used in combination with the Cisco Systems Disconnect Cause.	• Stop
Lost Service	3	Service cannot be sustained for reasons such as a lost connection.	• Stop
Admin Reset	6	Net-Net SBC hard reset occurred: A hard reset occurs when you use the front panel's orange Reset button; it reboots the Net-Net SBC.	• Off
Admin Reboot	7	Net-Net SBC gracefully rebooted.	• Off
NAS Request	10	RADIUS server is disabled; session terminated for non-error reason.	• Off

## VSAs

This section describes the VSAs that the Net-Net SBC supports. These attributes appear along with standard RADIUS attributes in the CDRs that the Net-Net SBC generates.

VSAs are defined by vendors of remote access servers in order to customize how RADIUS works on their servers. This section describes the accounting VSAs for Acme Packet and for Cisco Systems.

## Acme Packet RADIUS VSAs

Acme Packet's vendor identification number is 9148. This number refers to the 4-octet VSA Vendor-ID field. The high-order octet is 0 and the low-order 3 octets are the SMI Network Management Private Enterprise Code of the Vendor in network byte order, defined in the Assigned Numbers RFC (<http://www.faqs.org/rfcs/rfc1700.html>; Reynolds, J. and J. Postel, "Assigned Numbers", STD 2, RFC 1700, October 1994).

The table in this section is a dictionary of Acme Packet's accounting VSAs. You can use this information to translate the Acme Packet VSAs in Net-Net SBC RADIUS messages into human-readable form. Acme Packet maintains VSA dictionary definition files for the most popular RADIUS distributions; ask your Acme Packet account representative for details.

Grouped according to attribute function, this table contains the following sections:

- General Flow Attributes—Overall traits of the media flow, these attributes appear in all CDRs regardless of the session's protocol; these attribute fields are only populated if there are media flows
- Inbound Flow Attributes—Detailed traits of the inbound media flow (including realm, remote IP address and port, and local IP address and port); these attribute fields are only populated if there are media flows

- Outbound Flow Attributes—Detailed traits of the outbound media flow (including realm, remote IP address and port, and local IP address and port); these attribute field are only populated if there are media flows
- Session Attributes—Information about the protocol type, ingress and egress realms used, and an identifier
- QoS Attributes—RADIUS call records are instantiated by individual signaling applications on the Net-Net SBC. The Net-Net SBC writes the following additional parameters to the call record for QoS (Quality of Service):
  - RTP Lost packets
  - RTP Jitter
  - RTP Maximum Jitter
  - RTCP Lost packets
  - RTCP Jitter
  - RTCP Latency
  - RTCP Maximum Latency
  - RTP Total Packets
  - RTP Total Octets

Only RADIUS Stop records contain QoS information. For non-QoS calls, the attributes appear in the record, but their values are always be zero (0). When you review the list of QoS VSAs, please note that “calling” in the attribute name means the information is sent by the calling party and “called” in the attribute name means the information is sent by the called party.

Examples of how this information appears in CDRs appears in [Appendix A \(75\)](#) of this guide. Please note that the contents of Interim-Update messages do not depend on what events cause a Start message to be generated.

**Note:** The Net-Net 9200 only reports (includes) known information at the time a CDR is created. For Start and Interim records, therefore, some information might be incomplete. Stop records contain all relevant data.

### Notes on Media Flow Attributes

The Net-Net SBC records media flow attributes in RADIUS CDRs, and there can be multiple flows per session. In order to distinguish between the two flows that appear for a basic session (forward and reverse), the Net-Net SBC supports unique media flow attribute names.

The term “flow-set” represents a pair of media flows, where one is the forward flow and one is the reverse. The flow attributes described in the table below have the designation FS1 or FS2, which identifies it as either the first or the second flow-set. In addition, all non-QoS attributes have a direction indicator: F for forward, and R for reverse.

### Notes on Transcoding Attributes

In Net-Net D6.0, VSAs have been added to support transcoding functionality. Specifically, these attributes record:

- Type of call—These attributes indicate if the call is a audio, video, fax or other type of session. VSAs are provided for each flow, forward (F) and reverse (R).
- Codec ptime—These attributes reflect the SDP ptime parameter for each flow, forward (F) and reverse (R).

- Media process—This attribute reflects the media processing for the session: none, transcoded, transrated, or transparent (transparently handled, i.e., no transcoding resources involved).

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
<b>General Attributes</b>				
Acme-CDR-Sequence-Number	Sequence number (that increases by 1) the Net-Net SBC generates; recorded in each CDR.	59	integer	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-Intermediate-Time	Time interval at which periodic interim records are generated during a call.	63	string	<ul style="list-style-type: none"> <li>• Interim-Update</li> </ul>
Acme-Local-Time-Zone	Local GMT/UTC time zone that is provisioned on the Net-Net SBC.	57	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-Firmware-Version	Current software version running on the Net-Net SBC.	56	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-User-Class	Identifies the type user on the Net-Net SBC; used for RADIUS authentication only and does not apply to accounting.	254	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Stop</li> </ul>
<b>General Flow Attributes</b>				
Acme-FlowID_FS1_F	<p>Unique identifier for every media flow processed by the Net-Net SBC, flow-set 1 forward direction.</p> <p>This VSA always prefaces other flow information.</p>	1	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> <li>• On</li> <li>• Off</li> </ul>
Acme-FlowID_FS1_R	<p>Unique identifier for every media flow processed by the Net-Net SBC, flow-set 1 reverse direction.</p> <p>This VSA always prefaces other flow information.</p>	78	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> <li>• On</li> <li>• Off</li> </ul>
Acme-FlowID_FS2_F	<p>Unique identifier for every media flow processed by the Net-Net SBC, flow-set 2 forward direction.</p> <p>This VSA always prefaces other flow information.</p>	90	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> <li>• On</li> <li>• Off</li> </ul>
Acme-FlowID_FS2_R	<p>Unique identifier for every media flow processed by the Net-Net SBC, flow-set 2 reverse direction.</p> <p>This VSA always prefaces other flow information.</p>	112	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> <li>• On</li> <li>• Off</li> </ul>
Acme-FlowType_FS1_F	Codec that describes the flow, flow-set 1 forward direction: PCMU, PCMA, G726, G723, G728, G729, H261, H263, T38.	2	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> <li>• On</li> <li>• Off</li> </ul>



Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-FlowType_FS1_R	Codec that describes the flow, flow-set 1 reverse direction: PCMU, PCMA, G726, G723, G728, G729, H261, H263, T38.	79	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> <li>• On</li> <li>• Off</li> </ul>
Acme-FlowType_FS2_F	Codec that describes the flow, flow-set 2 forward direction: PCMU, PCMA, G726, G723, G728, G729, H261, H263, T38.	91	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> <li>• On</li> <li>• Off</li> </ul>
Acme-FlowType_FS2_R	Codec that describes the flow, flow-set 2 reverse direction: PCMU, PCMA, G726, G723, G728, G729, H261, H263, T38.	113	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> <li>• On</li> <li>• Off</li> </ul>

Inbound Flow Attributes				
Acme-Flow-In-Realm_FS1_F	Inbound realm identifier for flow-set 1, forward direction.	10	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-Flow-In-Realm_FS1_R	Inbound realm identifier for flow-set 1, reverse direction.	80	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-Flow-In-Realm_FS2_F	Inbound realm identifier for flow-set 2, forward direction.	92	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-Flow-In-Realm_FS2_R	Inbound realm identifier for flow-set 2, reverse direction.	114	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-Flow-In-Src-Addr_FS1_F	Inbound source address (remote) information for flow-set 1, forward direction.	11	IP address	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-Flow-In-Src-Addr_FS1_R	Inbound source address (remote) information for flow-set 1, reverse direction.	81	IP address	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-Flow-In-Src-Addr_FS2_F	Inbound source address (remote) information for flow-set 2, forward direction.	93	IP address	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-Flow-In-Src-Addr_FS2_R	Inbound source address (remote) information for flow-set 2, reverse direction.	115	IP address	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-Flow-In-Src-Port_FS1_F	Inbound source (remote) port information for flow-set 1, forward direction.	12	integer	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-Flow-In-Src-Port_FS1_R	Inbound source (remote) port information for flow-set 1, reverse direction.	82	integer	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>
Acme-Flow-In-Src-Port_FS2_F	Inbound source (remote) port information for flow-set 2, forward direction.	94	integer	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim-Update</li> <li>• Stop</li> </ul>

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Flow-In-Src-Port_FS2_R	Inbound source (remote) port information for flow-set 2, reverse direction.	116	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-In-Dst-Addr_FS1_F	Inbound destination (local) address information (the IPv4 address field value of the steering pool configuration) for flow-set 1, forward direction.	13	IP address	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-In-Dst-Addr_FS1_R	Inbound destination (local) address information (the IPv4 address field value of the steering pool configuration) for flow-set 1, reverse direction.	83	IP address	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-In-Dst-Addr_FS2_F	Inbound destination (local) address information (the IPv4 address field value of the steering pool configuration) for flow-set 2, forward direction.	95	IP address	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-In-Dst-Addr_FS2_R	Inbound destination (local) address information (the IPv4 address field value of the steering pool configuration) for flow-set 2, reverse direction.	117	IP address	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-In-Dst-Port_FS1_F	Inbound destination (local) port information (a port in the range between the start port and end port field values of the steering pool configuration) for flow-set 1, forward direction.	14	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-In-Dst-Port_FS1_R	Inbound destination (local) port information (a port in the range between the start port and end port field values of the steering pool configuration) for flow-set 1, reverse direction.	84	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-In-Dst-Port_FS2_F	Inbound destination (local) port information (a port in the range between the start port and end port field values of the steering pool configuration) for flow-set 2, forward direction.	96	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-In-Dst-Port_FS2_R	Inbound destination (local) port information (a port in the range between the start port and end port field values of the steering pool configuration) for flow-set 2, reverse direction.	118	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
<b>Outbound Flow Attributes</b>				
Acme-Flow-Out-Realm_FS1_F	Outbound realm identifier for flow-set 1, forward direction.	20	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Realm_FS1_R	Outbound realm identifier for flow-set 1, reverse direction.	85	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Realm_FS2_F	Outbound realm identifier for flow-set 2, forward direction.	97	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Flow-Out-Realm_FS2_R	Outbound realm identifier for flow-set 2, reverse direction.	119	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Src-Addr_FS1_F	Outbound source (local) address information (the IPv4 address field value of the steering port configuration) for flow-set 1, forward direction.	21	IP address	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Src-Addr_FS1_R	Outbound source (local) address information (the IPv4 address field value of the steering port configuration) for flow-set 1, reverse direction.	86	IP address	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Src-Addr_FS2_F	Outbound source (local) address information (the IPv4 address field value of the steering port configuration) for flow-set 2, forward direction.	98	IP address	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Src-Addr_FS2_R	Outbound source (local) address information (the IPv4 address field value of the steering port configuration) for flow-set 2, reverse direction.	120	IP address	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Src-Port_FS1_F	Outbound source (local) port information for flow-set 1, forward direction (a port in the range between the start port and end port field values of the steering port configuration).	22	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Src-Port_FS1_R	Outbound source (local) port information for flow-set 1, reverse direction (a port in the range between the start port and end port field values of the steering port configuration).	87	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Src-Port_FS2_F	Outbound source (local) port information for flow-set 2, forward direction (a port in the range between the start port and end port field values of the steering port configuration).	99	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Src-Port_FS2_R	Outbound source (local) port information for flow-set 2, reverse direction (a port in the range between the start port and end port field values of the steering port configuration).	121	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Dst-Addr_FS1_F	Outbound destination (remote) address information for flow-set 1, forward direction.	23	IP address	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Dst-Addr_FS1_R	Outbound destination (remote) address information for flow-set 1, reverse direction.	88	IP address	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Dst-Addr_FS2_F	Outbound destination (remote) address information for flow-set 2, forward direction.	100	IP address	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Dst-Addr_FS2_R	Outbound destination (remote) address information for flow-set 2, reverse direction.	122	IP address	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Flow-Out-Dst-Port_FS1_F	Outbound destination (remote) port information for flow-set 1, forward direction.	24	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Dst-Port_FS1_R	Outbound destination (remote) port information for flow-set 1, reverse direction.	89	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Dst-Port_FS2_F	Outbound destination (remote) port information for flow-set 2, forward direction.	101	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Flow-Out-Dst-Port_FS2_R	Outbound destination (remote) port information for flow-set 2, reverse direction.	123	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
<b>Session Attributes</b>				
Acme-Session-Generic-Id	<p>Common ID shared by legs of a session. This attribute is a combination of a time stamp (measured in seconds) and a monotonically increasing 16-bit integer, followed by an at-sign (@) and the MAC address of the rear interface (wancom).</p> <p>This VSA is not configurable; all CDRs contain this attribute.</p>	40	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Session-Ingress-CallId	Call ID generated by the originating device.	3	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Session-Egress-CallId	Call ID generated by the Net-Net SBC to represent a two-way transaction.	4	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Session-Ingress-Realm	<p>Explicitly identifies the ingress realm, and contains the name of the ingress realm for the session. All CDRs contain this attribute.</p> <p>This VSA is not configurable; all CDRs contain this attribute.</p>	41	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Session-Egress-Realm	<p>Explicitly identifies the egress realm, and contains the name of the egress realm for the session. All CDRs contain this attribute.</p> <p>This VSA is not configurable. All CDRs contain this attribute, but it is only populated if an egress realm is found; a call without a route does not have an egress realm.</p>	42	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Session-Protocol-Type	<p>Signaling protocol used for a particular leg of a session (in the case of IWF, there may be two legs). This attribute contains the signaling protocol type; for example, SIP.</p> <p>This VSA is not configurable; all CDRs contain this attribute.</p>	43	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Session-Charging-Vector	<p>Appears when the Net-Net SBC inserts, passes, or deletes the P-Charging-Vector header (SIP).</p> <p>This attribute is only populated for SIP CDRs, and is not populated if the Net-Net SBC does not have P-Charging-Vector information.</p>	54	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Session-Charging-Function_Address	<p>Appears when the Net-Net SBC inserts, passes, or deletes the P-Charging-Function-Address.</p> <p>This attribute is only populated for SIP CDRs, and is not populated if the Net-Net SBC does not have P-Charging-Function-Address information.</p>	55	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Session-Disposition	<p>Status of the call attempt as it progresses from being initiated (using a SIP INVITE) to being either answered or failing to be answered.</p>	60	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Post-Dial-Delay	<p>Amount of time between session initiation and an alerting event.</p>	58	integer	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-P-Asserted-ID	<p>P-Asserted ID as described in RFC 3325.</p>	69	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-SIP-Diversion	<p>SIP Diversion header; communicates to the called party from whom and why a call diverted.</p>	70	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Primary-Routing-Number	<p>Primary routing number and phone context (or ingress SIP Request-URI).</p>	64	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Egress-Final-Routing-Number	<p>Final routing number and phone context (or egress SIP Request-URI).</p>	134	integer	<ul style="list-style-type: none"> <li>Stop</li> </ul>
Acme-Disconnect-Initiator	<p>Initiator of a call disconnect.</p>	61	integer	<ul style="list-style-type: none"> <li>Stop</li> </ul>
Acme-Disconnect-Cause	<p>Q.850 cause code value.</p>	62	integer	<ul style="list-style-type: none"> <li>Stop</li> </ul>
Acme-SIP-Status	<p>SIP status code for RFC 3326 support.</p>	71	integer	<ul style="list-style-type: none"> <li>Stop</li> </ul>
Acme-Originating-Trunk-Group	<p>Originating trunk group.</p>	65	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Originating-Trunk-Context	Originating trunk group context.	67	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Terminating-Trunk-Group	Terminating trunk group.	66	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Terminating-Trunk-Context	Terminating trunk group context.	68	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Ingress-Local-Addr	Signaling IP address and port of the ingress Net-Net SBC signaling interface.	74	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Ingress-Remote-Addr	Signaling IP address and port of the ingress remote signaling element.	75	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Egress-Local-Addr	Signaling IP address and port of the egress Net-Net SBC signaling interface.	76	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Egress-Remote-Addr	Signaling IP address and port of the destination signaling element.	77	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim-Update</li> <li>Stop</li> </ul>
Acme-Session-Ingress-RPH	RPH value received in the incoming call (e.g., ets.1).  Only populated for NSEP calls.	135	string	Start Interim-Update Stop
Acme-Session-Egress-RPH	RPH value sent in the outgoing call (e.g., ets.3).  Only populated for NSEP calls.	136	string	Start Interim-Update Stop
Acme-Ingress-Network-Interface-Id	To differentiate overlapping IP address spaces (with the Acme-Ingress-Vlan-Tag-Value), gives the ID of the ingress network interface.	137	string	Start Interim-Update Stop
Acme-Ingress-Vlan-Tag-Value	To differentiate overlapping IP address spaces (with the Acme-Ingress-Network-Interface-Id), gives the VLAN tag.	138	integer	Start Interim-Update Stop
Acme-Egress-Network-Interface-Id	To differentiate overlapping IP address spaces (with the Acme-Egress-Vlan-Tag-Value), gives the ID of the ingress network interface.	139	string	Start Interim-Update Stop
Acme-Egress-Vlan-Tag-Value	To differentiate overlapping IP address spaces (with the Acme-Egress-Network-Interface-Id), gives the VLAN tag.	140	integer	Start Interim-Update Stop
<b>QoS Attributes</b>				
Acme-Calling-RTCP-Packets-Lost_FS1	Total lost packets reported via Real-time Transport Protocol Control Protocol (RTCP), flow-set 1.  Populated only if QoS is enabled.	32	integer	<ul style="list-style-type: none"> <li>Stop</li> </ul>

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Calling-RTCP-Packets-Lost_FS2	Total lost packets measured on RTP packets in milliseconds, flow-set 2.  Populated only if QoS is enabled.	104	integer	• Stop
Acme-Calling-RTCP-Avg-Jitter_FS1	Average jitter reported via RTCP measured in milliseconds, flow-set 1.  Populated only if QoS is enabled.	33	integer	• Stop
Acme-Calling-RTCP-Avg-Jitter_FS2	Average jitter reported via RTCP measured in milliseconds, flow-set 2.  Populated only if QoS is enabled.	105	integer	• Stop
Acme-Calling-RTCP-Avg-Latency_FS1	Average latency reported by comparing the timestamps in RTCP packets for each direction of a call, flow-set 1.  Populated only if QoS is enabled.	34	integer	• Stop
Acme-Calling-RTCP-Avg-Latency_FS2	Average latency reported by comparing the timestamps in RTCP packets for each direction of a call, flow-set 2.  Populated only if QoS is enabled.	106	integer	• Stop
Acme-Calling-RTCP-MaxJitter_FS1	Maximum amount of jitter value reported via RTCP measured in milliseconds, flow-set 1.  Populated only if QoS is enabled.	35	integer	• Stop
Acme-Calling-RTCP-MaxJitter_FS2	Maximum amount of jitter value reported via RTCP measured in milliseconds, flow-set 3.  Populated only if QoS is enabled.	107	integer	• Stop
Acme-Calling-RTCP-MaxLatency_FS1	Maximum latency value measured in milliseconds as observed through RTCP, flow-set 1.  Populated only if QoS is enabled.	36	integer	• Stop
Acme-Calling-RTCP-MaxLatency_FS2	Maximum latency value measured in milliseconds as observed through RTCP, flow-set 2.  Populated only if QoS is enabled.	108	integer	• Stop
Acme-Calling-Octets_FS1	Bytes of RTP traffic for this call, flow-set 1.  Populated only if QoS is enabled.	28	integer	• Stop
Acme-Calling-Octets_FS2	Bytes of RTP traffic for this call, flow-set 2.  Populated only if QoS is enabled.	102	integer	• Stop

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Calling-Packets_FS1	RTP packets for this call, flow-set 1. Populated only if QoS is enabled.	29	integer	• Stop
Acme-Calling-Packets_FS2	RTP packets for this call, flow-set 2. Populated only if QoS is enabled.	103	integer	• Stop
Acme-Calling-RTP-Packets-Lost_FS1	Total lost packets measured on RTP packets in milliseconds, flow-set 1. Populated only if QoS is enabled.	37	integer	• Stop
Acme-Calling-RTP-Packets-Lost_FS2	Total lost packets measured on RTP packets in milliseconds, flow-set 2. Populated only if QoS is enabled.	109	integer	• Stop
Acme-Calling-RTP-Avg-Jitter_FS1	Total jitter measured on RTP packets in milliseconds, flow-set 1. Populated only if QoS is enabled.	38	integer	• Stop
Acme-Calling-RTP-Avg-Jitter_FS2	Total jitter measured on RTP packets in milliseconds, flow-set 2. Populated only if QoS is enabled.	110	integer	• Stop
Acme-Calling-RTP-MaxJitter_FS1	Maximum jitter measured on RTP packets in milliseconds, flow-set 1. Populated only if QoS is enabled.	39	integer	• Stop
Acme-Calling-RTP-Avg-MaxJitter_FS2	Maximum jitter measured on RTP packets in milliseconds, flow-set 2. Populated only if QoS is enabled.	111	integer	• Stop
Acme-Called-Octets_FS1	Bytes of RTP traffic for the ingress side of the call, flow-set 1. Populated only if QoS is enabled.	44	integer	• Stop
Acme-Called-Octets_FS2	Bytes of RTP traffic for the ingress side of the call, flow-set 2. Populated only if QoS is enabled.	124	integer	• Stop
Acme-Called-Packets_FS1	RTP packets for the ingress side of the call, flow-set 1. Populated only if QoS is enabled.	45	integer	• Stop
Acme-Called-Packets_FS2	RTP packets for the ingress side of the call, flow-set 2. Populated only if QoS is enabled.	125	integer	• Stop
Acme-Called-RTCP-Packets-Lost_FS1	Total lost packets measured on RTCP packets in milliseconds for the ingress side of the call, flow-set 1. Populated only if QoS is enabled.	46	integer	• Stop



Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Called-RTCP-Packets-Lost_FS2	Total lost packets measured on RTCP packets in milliseconds for the ingress side of the call, flow-set 2.  Populated only if QoS is enabled.	126	integer	• Stop
Acme-Called-RTCP-Avg-Jitter_FS1	Average jitter reported via RTCP measured in milliseconds for the ingress side of the call, flow-set 1.  Populated only if QoS is enabled.	47	integer	• Stop
Acme-Called-RTCP-Avg-Jitter_FS2	Average jitter reported via RTCP measured in milliseconds for the ingress side of the call, flow-set 2.  Populated only if QoS is enabled.	127	integer	• Stop
Acme-Called-Avg-Latency_FS1	Average latency reported via RTCP measured in milliseconds for the ingress side of the call, flow-set 1.  Populated only if QoS is enabled.	48	integer	• Stop
Acme-Called-Avg-Latency_FS2	Average latency reported via RTCP measured in milliseconds for the ingress side of the call, flow-set 2.  Populated only if QoS is enabled.	128	integer	• Stop
Acme-Called-RTCP-MaxJitter_FS1	Maximum amount of jitter reported via RTCP measured in milliseconds for the ingress side of the call, flow-set 1.  Populated only if QoS is enabled.	49	integer	• Stop
Acme-Called-RTCP-MaxJitter_FS2	Maximum amount of jitter reported via RTCP measured in milliseconds for the ingress side of the call, flow-set 2.  Populated only if QoS is enabled.	129	integer	• Stop
Acme-Called-RTCP-MaxLatency_FS1	Maximum amount of latency reported via RTCP measured in milliseconds for the ingress side of the call, flow-set 1.  Populated only if QoS is enabled.	50	integer	• Stop
Acme-Called-RTCP-MaxLatency_FS2	Maximum amount of latency reported via RTCP measured in milliseconds for the ingress side of the call, flow-set 2.  Populated only if QoS is enabled.	130	integer	• Stop
Acme-Called-RTP-Packets-Lost_FS1	Total lost packets measured on RTP packets in milliseconds for the ingress side of the call, flow-set 1.  Populated only if QoS is enabled.	51	integer	• Stop

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Called-RTP-Packets-Lost_FS2	Total lost packets measured on RTP packets in milliseconds for the ingress side of the call, flow-set 2.  Populated only if QoS is enabled.	131	integer	• Stop
Acme-Called-RTP-Avg-Jitter_FS1	Average jitter reported via RTP measured in milliseconds for the ingress side of the realm, flow-set 1.  Populated only if QoS is enabled.	52	integer	• Stop
Acme-Called-RTP-Avg-Jitter_FS2	Average jitter reported via RTP measured in milliseconds for the ingress side of the realm, flow-set 2.  Populated only if QoS is enabled.	132	integer	• Stop
Acme-Called-RTP-MaxJitter_FS1	Maximum amount of jitter reported via RTP measured in milliseconds for the ingress side of the call, flow-set1.  Populated only if QoS is enabled.	53	integer	• Stop
Acme-Called-RTP-MaxJitter_FS2	Maximum amount of jitter reported via RTP measured in milliseconds for the ingress side of the call, flow-set 2.  Populated only if QoS is enabled.	133	integer	• Stop
<b>Transcoding Attributes</b>				
Acme-FlowMediaType_FS1_F	Indicates if the call is audio, video, fax, or another type of session for flow-set one, forward direction.	142	string	• Start • Interim • Stop
Acme-FlowMediaType_FS1_R	Indicates if the call is audio, video, fax, or another type of session for flow-set one, reverse direction.	143	string	• Start • Interim • Stop
Acme-FlowMediaType_FS2_F	Indicates if the call is audio, video, fax, or another type of session for flow-set two, forward direction.	144	string	• Start • Interim • Stop
Acme-FlowMediaType_FS2_R	Indicates if the call is audio, video, fax, or another type of session for flow-set two, reverse direction.	145	string	• Start • Interim • Stop
Acme-Flow-PTime_FS1_F	Reflects the SDP ptime parameter flow-set one, forward direction.	146	integer	• Start • Interim • Stop
Acme-Flow-PTime_FS1_R	Reflects the SDP ptime parameter flow-set one, reverse direction.	147	integer	• Start • Interim • Stop
Acme-Flow-PTime_FS2_F	Reflects the SDP ptime parameter flow-set two, forward direction.	148	integer	• Start • Interim • Stop
Acme-Flow-PTime_FS2_R	Reflects the SDP ptime parameter flow-set two, reverse direction.	149	integer	• Start • Interim • Stop

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Session-Media-Process	Media processing type for the session: none, transparent, transrated, or transcoded.	150	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
<b>SIP Custom VSAs</b>				
Acme-Custom-VSA-200	SIP Custom VSA 200 <i>**To use this feature, refer to this guide's Configuring RADIUS chapter.**</i>	200	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-201	SIP Custom VSA 201	201	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-202	SIP Custom VSA 202	202	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-203	SIP Custom VSA 203	203	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-204	SIP Custom VSA 204	204	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-205	SIP Custom VSA 205	205	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-206	SIP Custom VSA 206	206	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-207	SIP Custom VSA 207	207	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-208	SIP Custom VSA 208	208	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-209	SIP Custom VSA 209	209	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-210	SIP Custom VSA 210	210	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-211	SIP Custom VSA 211	211	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-212	SIP Custom VSA 212	212	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-213	SIP Custom VSA 213	213	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Custom-VSA-214	SIP Custom VSA 214	214	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-215	SIP Custom VSA 215	215	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-216	SIP Custom VSA 216	216	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-217	SIP Custom VSA 217	217	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-218	SIP Custom VSA 218	218	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-219	SIP Custom VSA 219	219	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-220	SIP Custom VSA 220	220	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-221	SIP Custom VSA 221	221	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-222	SIP Custom VSA 222	222	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-223	SIP Custom VSA 223	223	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-224	SIP Custom VSA 224	224	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-225	SIP Custom VSA 225	225	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-226	SIP Custom VSA 226	226	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-227	SIP Custom VSA 227	227	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-228	SIP Custom VSA 228	228	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>
Acme-Custom-VSA-229	SIP Custom VSA 229	229	string	<ul style="list-style-type: none"> <li>• Start</li> <li>• Interim</li> <li>• Stop</li> </ul>

## Acme Packet VSA Values

The table below defines the possible values for several Acme Packet VSAs.

Acme Packet VSA Name	Attribute Value	Possible Values
Acme-PostDial-Delay	58	Unit value in milliseconds
Acme-Session-Disposition	60	<ul style="list-style-type: none"> <li>• 0=unknown</li> <li>• 1=call_attempt</li> <li>• 2=ringing</li> <li>• 3=answered</li> </ul>
Acme-Disconnect-Initiator	61	<ul style="list-style-type: none"> <li>• 0=UNKNOWN_DISCONNECT_INITIATOR</li> <li>• 1=CALLING_PARTY_DISCONNECT</li> <li>• 2=CALLED_PARTY_DISCONNECT</li> <li>• 3=INTERNAL_DISCONNECT</li> </ul>
Acme-Disconnect-Cause	62	<ul style="list-style-type: none"> <li>• 34=No circuit/channel available</li> <li>• 47=Resource unavailable</li> <li>• 3=No route destination</li> <li>• 31=Normal, unspecified</li> <li>• 88=Incompatible destination</li> <li>• 111=Interworking, unspecified</li> <li>• 38=Network out of order</li> <li>• 42=Switching equip congestion</li> <li>• 28=Invalid number format</li> <li>• 41=Temporary failure</li> <li>• 17=User busy</li> <li>• 16=Normal call clearing</li> <li>• 20=Subscriber absent</li> <li>• 31=Normal call clearing</li> </ul>

Acme Packet VSA Name	Attribute Value	Possible Values
Acme-SIP-Diversion	70	SIP Diversion header based on this RFC draft: draft-levy-sip-diversion-05.txt
Acme-SIP-Status	71	<p>This is a complete list of support status codes; only a subset would be reported in a Stop record:</p> <ul style="list-style-type: none"> <li>• RESP_STATUS_TRYING 100</li> <li>• RESP_STATUS_RINGING 180</li> <li>• RESP_STATUS_FORWARD 181</li> <li>• RESP_STATUS_QUEUED 182</li> <li>• RESP_STATUS_PROGRESS 183</li> <li>• RESP_STATUS_OK 200</li> <li>• RESP_STATUS_CREATED 201</li> <li>• RESP_STATUS_ACCEPTED 202</li> <li>• RESP_STATUS_PART 206</li> <li>• RESP_STATUS_MAX_OK 299</li> <li>• RESP_STATUS_MULTIPLE 300</li> <li>• RESP_STATUS_MOVED 301</li> <li>• RESP_STATUS_MOVED_TMP 302</li> <li>• RESP_STATUS_USE_PROXY 305</li> <li>• RESP_STATUS_ALTERNATE 380</li> <li>• RESP_STATUS_BAD 400</li> <li>• RESP_STATUS_UNAUTH 401</li> <li>• RESP_STATUS_PAY_REQ 402</li> <li>• RESP_STATUS_FORBIDDEN 403</li> <li>• RESP_STATUS_NOT_FOUND 404</li> <li>• RESP_STATUS_NOT_ALLOW 405</li> <li>• RESP_STATUS_NOT_ACCEPT 406</li> <li>• RESP_STATUS_AUTH_REQ 407</li> <li>• RESP_STATUS_REQ_TMO 408</li> <li>• RESP_STATUS_CONFLICT 409</li> <li>• RESP_STATUS_GONE 410</li> <li>• RESP_STATUS_LEN_REQ 411</li> <li>• RESP_STATUS_TOO_BIG 413</li> <li>• RESP_STATUS_URI_TOO_BIG 414</li> <li>• RESP_STATUS_MEDIA 415</li> <li>• RESP_STATUS_URI_SCHEME 416</li> <li>• RESP_STATUS_BAD_EXT 420</li> <li>• RESP_STATUS_EXT_REQ 421</li> <li>• RESP_STATUS_TOO_SMALL 422</li> <li>• RESP_STATUS_TOO_BRIEF 423</li> <li>• RESP_STATUS_TMP_UNAVAIL 480</li> <li>• RESP_STATUS_NO_EXIST 481</li> <li>• RESP_STATUS_LOOP 482</li> <li>• RESP_STATUS_TOOMNY_HOPS 483</li> <li>• RESP_STATUS_ADDR_INCMPL 484</li> <li>• RESP_STATUS_AMBIGUOUS 485</li> <li>• RESP_STATUS_BUSY_HERE 486</li> <li>• RESP_STATUS_CANCELLED 487</li> <li>• RESP_STATUS_NOT_HERE 488</li> <li>• RESP_STATUS_BAD_EVENT 489</li> <li>• RESP_STATUS_PENDING 491</li> <li>• RESP_STATUS_UNDECIPH 493</li> <li>• RESP_STATUS_INT_ERR 500</li> <li>• RESP_STATUS_NOT_IMPL 501</li> <li>• RESP_STATUS_BAD_GTWY 502</li> <li>• RESP_STATUS_SVC_UNAVAIL 503</li> <li>• RESP_STATUS_GTWY_TMO 504</li> <li>• RESP_STATUS_BAD_VER 505</li> <li>• RESP_STATUS_MSG_TOO_BIG 513</li> <li>• RESP_STATUS_PRE_FAIL 580</li> <li>• RESP_STATUS_BUSY 600</li> <li>• RESP_STATUS_DECLINE 603</li> <li>• RESP_STATUS_DONT_EXIST 604</li> <li>• RESP_STATUS_NOTACCEPT 606</li> </ul>

**Cisco Systems RADIUS Decodes**

The following table is a dictionary of the Cisco Systems (vendor identification number is 9) accounting VSAs. These attribute names are vendor-specific and subject to change without notice.

You can use the information in this table to translate the Cisco Systems VSAs that sometimes appear in Net-Net SBC RADIUS messages into a more human-readable form.

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Setup Time	Time that a SIP INVITE message was received. The SETUP message is used to request a connection (and therefore corresponds with the SIP INVITE).	25	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim</li> <li>Stop</li> </ul>
Connect Time	Time that a SIP session was accepted. This is the time a 200 OK SIP response to the SIP INVITE message was received.	28	string	<ul style="list-style-type: none"> <li>Start</li> <li>Interim</li> <li>Stop</li> </ul>
Disconnect Time	Time that a SIP BYE message was received or the session terminated. This is the time a SIP INVITE transaction terminates for any reason.	29	string	<ul style="list-style-type: none"> <li>Stop</li> </ul>
Disconnect Cause	SIP Reasons for Disconnection (normal, redirection, client error, network error, global error, time-out, or user abandon).	30	string	<ul style="list-style-type: none"> <li>Stop</li> </ul>

For more information, refer to this guide's [Mappings and Disconnect Cause Values \(31\)](#) section.

## Mappings and Disconnect Cause Values

This section provides information about H.323 and SIP disconnect cause values for RADIUS CDRs generated by the Net-Net SBC.

### SIP, H.323, and Q.850 Mappings

This section provides tables that show the mappings between SIP Status and: H.323 Disconnect Reason, H.323 Release Complete Reason, and RAS error. It also shows the mapping for Q.850 cause to H.323 Release Complete Reason.

#### SIP Status to H.323 Disconnect Reason Mapping

SIP Status	H.323 Disconnect Reason
480 Temporarily Unavailable	No Bandwidth
404 Not Found	Gatekeeper Resource
404 Not Found	Unreachable Destination
603 Decline	Destination Rejection
505 Version Not Supported	Invalid Revision
401 Unauthorized	No Permission
503 Service Unavailable	Unreachable Gatekeeper
480 Temporarily Unavailable	Gateway Resource
400 Bad Request	Bad Format Request
486 Busy Here	Adaptive Busy

SIP Status	H.323 Disconnect Reason
486 Busy Here	In Conference
500 Internal Server Error	Undefined Reason
486 Busy Here	Facility Call Deflection
401 Unauthorized	Security Denied

**SIP Status to H.323 RAS Error Mapping**

SIP Status	H.323 RAS Error
404 Not Found	Gatekeeper Resource
401 Unauthorized	Invalid Permission
503 Service Unavailable	Request Denied
500 Internal Server Error	Undefined
401 Unauthorized	Caller Not Registered
305 User Proxy	Route Call to Gatekeeper
500 Internal Server Error	Invalid Endpoint ID
503 Service Unavailable	Resource Unavailable
401 Unauthorized	Security Denial
501 Not Implemented	QoS Control Not Supported
484 Address Incomplete	Incomplete Address
302 Moved Temporarily	Route Call to SCN
485 Ambiguous	Aliases Inconsistent
401 Unauthorized	Not Currently Registered

**SIP Status to H.323 Release Complete Reason Error Mapping**

SIP Status	H.323 RAS Error
300 Multiple Choices	Undefined Reason
401 Unauthorized	Security Denied
402 Payment Required	Undefined Reason
403 Forbidden	No Permission
404 Not Found	Unreachable Destination
405 Method Not Allowed	Undefined Reason
606 Not Acceptable	Undefined Reason
407 Proxy Authentication Required	Security Denied
408 Request Timeout	Adaptive Busy
409 Conflict	Undefined Reason



SIP Status	H.323 RAS Error
410 Gone	Unreachable Destination
411 Length Required	Undefined Reason
414 Request-URI Too Large	Bad Format Address
415 Unsupported Media Type	Undefined Reason
420 Bad Extension	Bad Format Address
480 Temporarily Unavailable	Adaptive Busy
481 Call/Transaction Does Not Exist	Undefined Reason
482 Loop Detected	Undefined Reason
483 Too Many Hops	Undefined Reason
484 Address Incomplete	Bad Format Address

### Q.850 Cause to H.323 Release Complete Reason Mapping

The table below describes how the Q.850 Causes and the H.323 release complete reasons are mapped internally on the Net-Net SBC.

Q.850 Cause	Numeric Code	H.323 Release Complete Reason
Not Route To Destination	3	Unreachable Destination
Normal Call Clearing	16	Destination Rejection
User Busy	17	In Conference
Subscriber Absent	20	Called Party Not Registered
Invalid Number Format	28	Bad Format Address
Normal Unspecified	31	Undefined Reason
No Circuit/Channel Available	34	No Bandwidth
Network Out of Order	38	Unreachable Gatekeeper
Temporary Failure	41	Adaptive Busy
Switching Equipment Congestion	42	Gateway Resource
Resource Unavailable	47	Gatekeeper Resource
Incompatible Destination	88	Invalid Revision
Interworking Unspecified	111	No Permission

### SIP-SIP Calls

The Net-Net SBC maps SIP status codes and events to disconnect cause attribute values used by Cisco Systems Proxy Server (CSPS) accounting services.

SIP Status Category/Event	CDR Disconnect Cause	Description
Undetermined reason	0	Undetermined reason
BYE	1	Normal clearing
3xx: Redirection	2	Redirection

SIP Status Category/Event	CDR Disconnect Cause	Description
4xx: Client Error	3	Client error
5xx: Server Error	4	Server error
6xx: Global Failure	5	Global error

### SIP-H.323 Calls with Interworking

For calls that require SIP-H.323 interworking, the Net-Net SBC generates two sets of RADIUS CDRs: one for the SIP call-leg and one for the H.323 call leg. The values recorded in RADIUS Stop records for the disconnect cause depend on the nature and source of the call disconnect or rejection.

### SIP Events and Errors

For calls rejected or disconnected because of SIP events and errors, the Net-Net SBC records Q.850 cause values mapped from the SIP event/status code in the SIP CDR. For the H.323 CDR, the SIP status categories and events are mapped to Q.850 cause codes.

The entries in this table are determined by the [SIP Status to H.323 Release Complete Reason Error Mapping \(32\)](#).

SIP Status Category/Event	SIP CDR Disconnect Cause	H.323 Disconnect Cause Value (Q.850)
BYE	16—Normal call clearing	16—Normal call clearing
3xx	23—Redirection to new destination	16—Normal call clearing
404 Not Found	21—Call rejected	3—No route to destination
410 Gone	21—Call rejected	3—No route to destination
403 Forbidden	21—Call rejected	111—Interworking unspecified
413 Request Entity Too Big	21—Call rejected	28—Invalid number format
414 Request URI Too Large	21—Call rejected	28—Invalid number format
420 Bad Extension	21—Call rejected	28—Invalid number format
484 Address Incomplete	21—Call rejected	28—Invalid number format
408 Request Timeout	21—Call rejected	41—Temporary failure
480 Temporarily unavailable	21—Call rejected	41—Temporary failure
486 Busy Here	21—Call rejected	17—User Busy
401 Unauthorized	21—Call rejected	32—Normal unspecified
407 Proxy Authentication Required	21—Call rejected	32—Normal unspecified
All other 4xx	21—Call rejected	16—Normal unspecified
502 Bad Gateway	38—Network out of order	28—Invalid number format
505 Bad Version	38—Network out of order	88—Incompatible destination

SIP Status Category/Event	SIP CDR Disconnect Cause	H.323 Disconnect Cause Value (Q.850)
All other 5xx	38—Network out of order	16—Normal unspecified
600 Busy Everywhere	31—Normal unspecified	41—Temporary failure
603 Decline	31—Normal unspecified	31—Normal unspecified
604 Does Not Exist Anywhere	31—Normal unspecified	3—No route to destination
All other 6xx	31—Normal unspecified	31—Normal unspecified

### H.323 Events and Errors

The Q.850 cause code value is recorded for the disconnect cause in the CDR for the H.323 call leg if the Q.850 cause is received. H.323 recommendations state that either Q.850 Cause or RelCompReason is mandatory for the RELEASE COMPLETE; the Cause information element (IE) is optional everywhere. The Cause IE and the ReleaseCompleteReason (part of the release complete message) are mutually exclusive.

If a Q.850 cause code is not received, the Net-Net SBC records a Q.850 cause value mapped from the received ReleaseCompleteReason as defined in the table below.

The entries in this table are determined by the [SIP Status to H.323 Disconnect Reason Mapping \(31\)](#).

H.323 ReleaseCompleteReason	H.323 CDR Disconnect Cause	SIP Status	SIP CDR Disconnect Cause
No Bandwidth	34—No channel/circuit available	480 Temporarily Unavailable	21—Call rejected
Gatekeeper Resource	47—Resource unavailable	404 Not Found	21—Call rejected
Unreachable Destination	3—No route to destination	404 Not Found	21—Call rejected
Destination Rejected	31—Normal unspecified	603 Decline	31—Normal unspecified
Invalid Revision	88—Incompatible destination	505 Version Not Supported	38—Network out of order
No Permission	111—Interworking unspecified	401 Unauthorized	21—Call rejected
Unreachable Gatekeeper	38—Network out of order	503 Service Unavailable	38—Network out of order
Gateway Resource	42—Switching equipment congestion	480 Temporarily unavailable	21—Call rejected
Bad Format Request	28—Invalid number format	400 Bad request	21—Call rejected
Adaptive Busy	41—Temporary failure	486 Busy Here	21—Call rejected
In Conference	17—User busy	486 Busy Here	21—Call rejected

<b>H.323 ReleaseCompleteReason</b>	<b>H.323 CDR Disconnect Cause</b>	<b>SIP Status</b>	<b>SIP CDR Disconnect Cause</b>
Undefined Reason	16—Normal unspecified	500 Internal Server Error	38—Network out of order
Called Party Not Registered	20—Subscriber absent	404 Not Found	21—Call rejected
Caller Not Registered	31—Normal call clearing		
New Connection Needed	47—Resource Unavailable	401 Unauthorized	21—Call rejected

**H.225 RAS Errors**

For calls that are rejected because of H.225 RAS, there is no CDR generated for the H.323 call leg as no Setup message is generated. The Net-Net SBC maps RAS errors to SIP Status as specified in the table below. The SIP CDR disconnect cause values are the same as the CSPS disconnect cause values already mentioned and defined.

The entries in this table are determined by the [SIP Status to H.323 RAS Error Mapping \(32\)](#).

<b>H.225 RAS Error</b>	<b>SIP Status</b>	<b>SIP CDR Disconnect Cause</b>
Called Party Not Registered	404 Not Found	21—Call Rejected
Invalid Permission	401 Unauthorized	21—Call Rejected
Request Denied	503 Service Unavailable	38—Network out of order
Undefined	500 Internal Server Error	38—Network out of order
Caller Not Registered	401 Unauthorized	21—Call Rejected
Route Call to Gatekeeper	305 Use Proxy	23—Redirection to new destination
Invalid Endpoint ID	500 Internal Server Error	38—Network out of order
Resource Unavailable	503 Service Unavailable	38—Network out of order
Security Denial	401 Unauthorized	21—Call Rejected
QoS Control Not Supported	501 Not Implemented	38—Network out of order
Incomplete Address	484 Address Incomplete	21—Call Rejected
Route Call to SCN	302 Moved Temporarily	2—Redirection
Aliases Inconsistent	485 Ambiguous	21—Call Rejected
Not Currently Registered	401 Unauthorized	21—Call Rejected

## Overview

---

This chapter provides you with information about configuring RADIUS accounting on your Net-Net SBC.

The Net-Net products support Net-Net SBC RADIUS accounting, including these essential configurations and specialized features:

- Accounting for SIP
- Local CDR storage on the Net-Net SBC, including CSV file format settings
- The ability to send CDRs via FTP to a RADIUS sever
- Per-realm accounting control
- Configurable intermediate period
- RADIUS CDR content control
- Custom RADIUS CDR VSAs for SIP

## Accounting for SIP and H.323

---

This section explains SIP and H.323 accounting using the RADIUS Accounting System (RAS).

For accounting purposes, the Net-Net SBC uses RADIUS to send accounting messages. These messages are transmitted to one of a predefined list of accounting servers using a predefined forwarding strategy. RAS provides a mechanism for temporarily storing session initiation and completion statistics and for delivering these statistics to accounting servers located elsewhere in the network.

### Call Detail Records

The Net-Net SBC supports CDRs through RADIUS reporting with additional VSAs to include information that is not available with the standard RADIUS session information. CDRs provide billing information on sessions traversed through a system, as well as troubleshooting information, fraud detection, fault diagnostics, and service monitoring.

CDRs can contain information about recent system usage such as the identities of sources (points of origin), the identities of destinations (endpoints), the duration of each call, the amount billed for each call, the total usage time in the billing period, the total free time remaining in the billing period, and the running total charged during the billing period. VSAs are defined by vendors of remote access servers in order to customize how RADIUS works on their servers.

### RAS Overview

The RAS acts as a RADIUS client. It provides a mechanism for generating accounting information in CDRs. The CDRs are transmitted to a RADIUS server in UDP datagrams, using RADIUS Accounting Request messages.

The RAS receives RADIUS accounting messages when different events occur. The event and CDR event trigger list information determines which RADIUS messages,

if any, are included, as well as which RADIUS attributes are included. The library adds RADIUS messages to the waiting queue only when the message is ready to be sent. The SIP proxy needs to populate the CDR as session information becomes available so, by the time the session ends, it contains the information necessary to generate all of the messages.

The RADIUS accounting client process manages its queue and a list of servers. The servers each have a UDP connection and manage their own pending message queues. Changes in the state of the server connection might cause interaction with the client process waiting queue.

When RADIUS messages are added to the RAS waiting queue, the RAS sends them to a server based on strategy. If the RAS is configured to transmit all the messages when the session ends, all the messages are sent to the same server. Each session continues logging messages according to the event logging scheme in effect when the session began (for example, when the CDR was created).

The RAS notifies the RADIUS server with Accounting-On/Off messages when the RAS's entry for that server is enabled/disabled. The response to the Accounting-On message is the RAS's first determination of RTT, and serves as notification that the server is reachable. Until the Accounting-On response is received, the server cannot send other messages.

## **RADIUS Accounting Client**

The RADIUS accounting client process has a local socket at which it accepts RADIUS messages. RADIUS messages received on the local socket are added to the waiting queue for transmission to a RADIUS server. The waiting queue is a first-in, first-out (FIFO) queue.

The RADIUS accounting client process sends messages to a server queue based on the configuration (servers configured/enable/connected, as well as the strategy). Messages that return from a server (due to server failure/disabling) are first in the FIFO queue.

The RADIUS accounting client process interfaces with the RADIUS accounting servers using the RADIUS protocol with the VSAs outlined above.

The RADIUS server collects a variety of information that can be used for accounting and for reporting on network activity. The RADIUS client sends information to designated RADIUS servers when the user logs on and logs off. The RADIUS client might send additional usage information on a periodic basis while the session is in progress. The requests sent by the client to the server to record logon/logoff and usage information are generally called accounting requests.

RADIUS accounting permits a RADIUS server to track when users commence and terminate their connections. Typical accounting information includes the following:

- Full user name
- RAS identification name or IP address
- RAS port number
- Time connection started

When a client is configured to use RADIUS accounting, it generates an Accounting Start packet describing the type of service being delivered and the user it is being delivered to at the start of service delivery. It sends that packet to the RADIUS Accounting server, which sends back an acknowledgement that the packet has been received. At the end of service delivery, the client generates an Accounting Stop

packet describing the type of service that was delivered and, optionally, statistics such as elapsed time, input and output octets, or input and output packets. It sends that packet to the RADIUS Accounting server, which sends back an acknowledgement that the packet has been received. The Accounting-Request (whether for Start or Stop) is submitted to the RADIUS accounting server through the network.

Transactions between the client and RADIUS accounting server are authenticated through the use of a shared secret, which is never sent over the network.

## Session Accounting

The RAS client can record SIP, H.323, and IWF session activity based on configuration and a CDR. The CDR determines which messages are generated and determines the RADIUS attributes included in the messages. The RAS client must be capable of sending CDRs to any number of RADIUS accounting servers, using the defined hunt, failover, round robin, fewest pending, or fastest server strategies.

The establishment, failed establishment, change, or removal of a session can trigger RADIUS Accounting Request messages. The RAS might also send notification of its status (enabled/disabled). RADIUS Accounting Request messages include the following:

- Start—Session has started.
- Interim-Update—Session parameters have changed.
- Stop—Session has ended.
- Accounting-On—Creation of a new RADIUS client.
- Accounting-Off—RADIUS client has shut down.

Each session might generate Start, Interim-Update, and Stop messages based on the local configuration when the session is initiated. Each Start message tells the RADIUS server that a session has started. Each Interim-Update message changes the session parameters, and may report the session characteristics for the session to that point. Each Stop message informs the RADIUS server that a session has ended and reports session characteristics.

The RAS has the ability to transmit all RADIUS messages related to a session at the end of the session, regardless of which messages are generated and when they are generated. Some customers might choose this option to reduce the likelihood of the RADIUS messages being logged to different servers, or in different log files on the same server.

The RAS always generates a RADIUS Stop message when the session ends, regardless of the session termination cause. The termination cause and the session characteristics are reported.

## Interim RADIUS Records for Recursive Attempts

When the Net-Net SBC routes calls, it performs local policy look-ups that can return several next hops, ordered by preference. This can also happen as a result of an LRT lookup, an ENUM query response, or SIP redirect. To set up sessions, the Net-Net SBC uses—in ordered preference—and recurses through the list if it encounters failures.

You can configure SIP accounting to send RADIUS Interim records when the Net-Net SBC encounters these failures. The interim message contains: the destination IP address, the disconnect reason, a timestamp for the failure, and the number that was called. This feature is enabled by setting the *generate-interim* parameter to

**unsuccessful-attempt.** Please refer to Appendix C to view the format of an unsuccessful-attempt interim record.

## RADIUS Messages

The following table identifies the relationship between the signaling elements and the RADIUS attributes included in Accounting Request messages to the RADIUS server.

RADIUS Attribute	Data Element	Message
NAS IP-Address	IP address of the SIP proxy or the H.323 stack's call signal address.	Start, Interim-Update, Stop, On, Off
NAS Port	SIP proxy port or the H.323 stack's call signaling RAS port.	Start, Interim-Update, Stop, On, Off
NAS Identifier	<p>Value, if any, set in the optional NAS-ID field for the accounting server that you configure as part of the accounting configuration. This identifier sets the value that the remote server (the accounting server) uses to identify the Net-Net SBC so that RADIUS messages can be transmitted.</p> <p>The remote server to which the accounting configuration will send messages uses at least one of two pieces of information for identification:</p> <ul style="list-style-type: none"> <li>NAS IP address: always included in the accounting message</li> <li>NAS identifier: configured in the NAS-ID parameter of the accounting server; if configured, the NAS identifier is sent to the remote server</li> </ul> <p>This attribute only appears if a value is configured in the NAS-ID field.</p>	Start, Interim-Update, Stop, On, Off
Acct-Session-ID	Either the "Call-ID" field value of the SIP INVITE message, the callIdentifier of the H.323 message, or RADIUS client information.	Start, Interim-Update, Stop, On, Off
Called Station ID	"To" field value of the SIP INVITE message (a type of message used to initiate a session) or the calledPartyNumber of the H.323 message.	Start, Interim-Update, Stop
Calling Station ID	"From" field value of the SIP INVITE message or the callingPartyNumber of the H.323 message.	Start, Interim-Update, Stop
Acct-Terminate-Cause	Reason for session ending (refer to Session Termination session).	Stop, Off
Acct-Session-Time	Length of session (time in seconds).	Interim-Update, Stop, Off



## Session Termination

Sessions are terminated for reasons that include normal termination, signaling failure, timeout, or network problems. The following table maps RADIUS accounting termination cause codes to network events.

RADIUS Termination Cause	Event	Message
User request	SIP BYE message or H.323	Stop
User error	SIP signaling failed to establish session (accompanied by disconnect cause)	Stop
NAS request	RADIUS server disabled	Off

## ACLI Instructions and Examples

This section tells you how to access and set parameters for RADIUS accounting support. To use the Net-Net SBC with external RADIUS (accounting) servers to generate CDRs and provide billing services requires, you need to configure account configuration and account server list.

### Accessing the Accounting and Accounting Servers Configuration

#### To configure the account configuration and account servers:

- In Superuser mode, type **configure terminal** and press <Enter>.
 

```
ACMEPACKET# configure terminal
```
- Type **session-router** and press <Enter> to access the system-level configuration elements.
 

```
ACMEPACKET(configure)# session-router
```
- Type **account-config** and press <Enter>. The system prompt changes to let you know that you can begin configuring individual parameters.
 

```
ACMEPACKET(session-router)# account-config
ACMEPACKET(account-config)#
```
- To configure account server parameters (a subset of the account configuration parameters, type **account-servers** and press <Enter>. The system prompt changes to let you know that you can begin configuring individual parameters.
 

```
ACMEPACKET(account-config)# account-servers
ACMEPACKET(account-server)#
```

### Setting Up the Account Configuration

You set the account configuration parameters to indicate where you want accounting messages sent, when accounting messages you want them sent, and the strategy you want used to select account servers.

#### To configure the account configuration:

- hostname**—Defaults to and must remain local host.
- port**—Retain the default value of 1813 or enter the number of the UDP port associated with the Net-Net SBC from which RADIUS messages are sent.
  - minimum: 1025
  - maximum: 65535

3. **strategy**—Indicate the strategy you want used to select the accounting servers to which the Net-Net SBC will send its accounting messages. The following table lists the available strategies:

Strategy	Description
hunt	Selects accounting servers in the order in which they are listed. If the first accounting server is online, working, and has not exceeded any of the defined constraints, all traffic is sent to it. Otherwise the second accounting server is selected. If the first and second accounting servers are offline or exceed any defined constraints, the third accounting server is selected. And so on through the entire list of configured servers
failover	Uses the first server in the list of predefined accounting servers until a failure is received from that server. Once a failure is received, it moves to the second accounting server in the list until a failure is received. And so on through the entire list of configured servers.
round robin	Selects each accounting server in order, distributing the selection of each accounting server evenly over time.
fastest round trip time	Selects the accounting server that has the fastest round trip time (RTT) observed during transactions with the servers (sending a record and receiving an ACK).
fewest pending	Selects the accounting server that has the fewest number of unacknowledged accounting messages (that are in transit to the Net-Net SBC).

4. **state**—Retain the default value **enabl ed** if you want the account configuration active on the system. Enter **di sabl ed** if you do not want the account configuration active on the system.
5. **max-msg-delay**—Retain the default value of **60** seconds or indicate the length of time in seconds that you want the Net-Net SBC to continue trying to send each accounting message. During this delay, the Net-Net SBC can hold a generic queue of 4096 messages.
- Minimum: zero (0)
  - Maximum:  $2^{32}-1$
6. **max-wait-failover**—Retain the default value of **100** messages or indicate the maximum number of accounting messages the Net-Net SBC can store its message waiting queue for a specific accounting server, before it is considered a failover situation.
- Once this value is exceeded, the Net-Net SBC attempts to send its accounting messages, including its pending messages, to the next accounting server in its configured list.
- Minimum: one (1) message
  - Maximum: 4096 messages
7. **trans-at-close**—Retain the default value of **di sabl ed** if you do not want to defer the transmission of message information to the close of a session. Enter **enabl ed** if you want to defer message transmission.
- **di sabl ed**—The Net-Net SBC transmits accounting information at the start of a session (Start), during the session (Interim), and at the close of a session

(Stop). The transmitted accounting information for a single session might span a period of hours and be spread out among different storage files.

- **enabled**—Limits the number of files on the Net-Net SBC used to store the accounting message information for one session. It is easiest to store the accounting information from a single session in a single storage file.
8. **generate-start**—Retain the default value **ok** if you want the RADIUS Start message to be generated once the Net-Net SBC receives an OK message in response to an INVITE. (A RADIUS Start message informs the accounting server that a SIP session has started.)

Other options include:

- **Start**—RADIUS Start message should not be generated.
  - **Invite**—RADIUS Start message should be generated once the Net-Net SBC receives a SIP session INVITE.
9. **generate-interim**—Retain the default value **reinvite response** to cause the Net-Net SBC to transmit a RADIUS Interim message. (A RADIUS Interim message indicates to the accounting server that the SIP session parameters have changed.)

You can select none, one, or more than one of the following values:

Option	Description
<b>ok</b>	RADIUS Start message is generated when the Net-Net SBC receives an OK message in response to an INVITE.
<b>reinvite</b>	RADIUS Interim message is generated when the Net-Net SBC receives a SIP session reINVITE message.
<b>reinvite response (default)</b>	RADIUS Interim message is generated when the Net-Net SBC receives a SIP session reINVITE and responds to it (for example, session connection or failure).
<b>reinvite cancel</b>	RADIUS Interim message is generated when the Net-Net SBC receives a SIP session reINVITE, and the Reinvite is cancelled before the Net-Net SBC responds to it.
<b>unsuccessful-attempt</b>	RADIUS Interim message is generated when a SIP session set-up attempt from a preference-ordered list of next-hop destinations is unsuccessful. This can happen when a local policy lookup, LRT lookup, ENUM query response, or SIP redirect returns a preference-ordered list of next-hop destinations. The interim message contains: the destination IP address, the disconnect reason, a timestamp for the failure, and the number that was called.

10. **account-server**—Create the account server list to store accounting server information for the account configuration. Each account server can hold 100 accounting messages. See the next section for step-by-step instructions.

Account server entries are specific to the account configuration. They cannot be viewed or accessed for editing outside of the account configuration.

**Note:** RADIUS will not work if you do not enter one or more servers in a list.

## Setting Up Accounting Servers

You must establish the list of servers to which the Net-Net SBC can send accounting messages.

1. **hostname**—Name of the host associated with the account server in hostname format (FQDN) or as an IP address.
2. **port**—Retain the default 1813 or enter the number of the UDP port associated with the account server to which RADIUS messages are sent.
  - minimum: 1025
  - maximum: 65535
3. **state**—Retain the default `enabled` to enable the account servers on the system or enter `disabled` to disable them.
4. **min-round-trip**—Retain the default 250 milliseconds or indicate the minimum round trip time of an accounting message.

A round trip consists of the following:

- The Net-Net SBC sends an accounting message to the account server.
- The account server processes this message and responds back to the Net-Net SBC.

If the fastest RTT is the strategy for the account configuration, the value you enter here can be used to determine an order of preference (if all the configured account servers are responding in less than their minimum RTT).

5. **max-inactivity**—Retain the default 60 seconds or indicate the length of time in seconds that you want the Net-Net SBC with pending accounting messages to wait when it has not received a valid response from the target account server.
  - minimum: 1 second
  - maximum: 300 seconds

Once this timer value is exceeded, the Net-Net SBC marks the unresponsive account server as disabled in its failover scheme. When a server connection is marked as inactive, the Net-Net SBC attempts to restart the connection and transfers pending messages to another queue for transmission. RADIUS messages might be moved between different account servers as servers become inactive or disabled.

6. **restart-delay**—Retain the default 30 seconds or indicate the length of time in seconds you want the Net-Net SBC to wait before resending messages to a disabled account server.
  - minimum: 1 second
  - maximum: 300 seconds
7. **bundle-vs-a**—Retain the default `enabled` if you want the account server to bundle the VSAs within RADIUS accounting messages. Enter `disabled` if you do not want the VSAs to be bundled. (Bundling means including multiple VSAs within the vendor value portion of the message.)

In a bundled accounting message, the RADIUS message type is vendor-specific, the length is determined for each individual message, and the vendor portion begins with a 4-byte identifier, and includes multiple vendor type, vendor length, and vendor value attributes.

8. **secret**—Enter the secret passed from the account server to the client in text format. Transactions between the client and the RADIUS server are authenticated by the shared secret; which is determined by the source IPv4 address of the received packet.

9. **NAS-ID**—*Optional*. Enter the NAS ID in text format (FQDN allowed). The account server uses this value to identify the Net-Net SBC for the transmittal of accounting messages.

The remote server to which the account configuration sends messages uses at least one of two potential pieces of information for purposes of identification. The Net-Net SBC accounting messages always includes in the first of these:

- Network Access Server (NAS) IP address (the IP address of the Net-Net SBC's SIP proxy)
- NAS ID (the second piece of information) provided by this value. If you enter a value here, the NAS ID is sent to the remote server.

If you have more than one Net-Net SBC pointing to the same account server, the NAS ID can be used to identify which Net-Net SBC generated the record.

## Per Realm Accounting Control

---

You can enable or disable accounting control for specific realms by setting one parameter. This feature is enabled by default.

The Net-Net SBC's SIP task checks whether this parameter is set to enabled or disabled, and sends record on that basis.

## ACLI Instructions and Examples

### To configure per realm accounting:

1. In Superuser mode, type **configure terminal** and press <Enter>.
 

```
ACMEPACKET# configure terminal
ACMEPACKET(configure)#
```
2. Type **session-router** and press <Enter>.
 

```
ACMEPACKET(configure)# media-router
ACMEPACKET(media-router)#
```
3. Type **realm-config** and press <Enter>.
 

```
ACMEPACKET(media-router)# realm-config
ACMEPACKET(real m-config)#
```
4. **accounting-enable**—Either leave this parameter set to **enabled** (default) to generate CDRs for this realm, or change it to **disabled**.
5. Save and activate your configuration.

## Configurable Intermediate Period

---

You can set how often the Net-Net SBC generates periodic interim records for SIP.

- SIP—The periodic timer (set to the value you specify in the accounting configuration) is dynamically created when the Net-Net SBC receives a 200 OK response to an INVITE message. The Net-Net SBC deletes the timer when the session is terminated.

### To set the timer for periodic interim records:

1. In Superuser mode, type **configure terminal** and press <Enter>.
 

```
ACMEPACKET# configure terminal
ACMEPACKET(configure)#
```
2. Type **session-router** and press <Enter>.

```
ACMEPACKET(configure)# session-router
```

```
ACMEPACKET(session-router)#
```

3. Type **account-config** and press <Enter>.

```
ACMEPACKET(session-router)# account-config
```

```
ACMEPACKET(account-config)#
```

4. **intermediate-period**—Enter amount of time in seconds between generating periodic interim records during a SIP call. This parameter defaults to zero, which is not a valid value.
5. Save and activate your configuration.

## RADIUS CDR Content Control

---

The RADIUS CDR content control feature allows you to limit the size of RADIUS CDRs.

The Net-Net SBC's RADIUS accounting provides a detailed set of records that can contain, for example, multiple media flow descriptions for forked calls that can contain multiple sets of media and QoS attributes. While the level of detail might be required for some networks, in others the large CDRs generated to reflect that level of granularity can cause issues for the application receiving the records.

You can use the following enhancements to control the size of the RADIUS CDRs your Net-Net SBC produces:

- Duplicate RADIUS attribute prevention—Using this feature, you can configure the Net-Net SBC to send only one set of RADIUS attributes in CDR for a forked call. (When a forked SIP INVITE contains media information, media and QoS attributes can potentially be duplicated.)
- RADIUS attribute selection—You can now set a list of the Acme Packet VSAs you want included in a RADIUS CDR, and the Net-Net SBC will exclude the others from the record; standard attributes are always included. You specify attributes using their unique identifier in a comma-delimited list, and you can list them in any order. However, entering an invalid range disables this feature. The Net-Net SBC excludes attributes from the records in which they are already defined. If an attribute only appears in a Stop record, then it will be deleted from Stop records. The configuration provides a mechanism to make entries flexible and easy.

Note that if you use a Net-Net OS release with the **max-vsa-id** parameter, the **vsa-id-range** parameter supersedes it. On upgrade, the change will automatically be made from the configured **max-vsa-id** to the corresponding **vsa-id-range**.

## ACL Instructions and Examples

This section shows you how to configure the two parameters used for CDR content control.

### Preventing Duplicate RADIUS Attributes

#### To enable duplicate RADIUS attribute prevention:

1. **prevent-duplicate-attrs**—Change this parameter from disabled (default) to enabled.

```
ACMEPACKET(account-config)# prevent-duplicate-attrs enabled
```

2. Save and activate your configuration.

## RADIUS Attribute Selection

You enter the list of VSAs that you want included as a comma-delimited list. There are special entry types you can use in the comma-delimited list to set ranges and make entries easier:

- `x-` — Where X is a VSA identifier, the Net-Net SBC will include all attributes with an identifier equal to or greater than x.
- `-x` — Where X is a VSA identifier, the Net-Net SBC will include all attributes with an identifier equal to or less than x.
- `-` — Use the minus sign (-) alone when you want to turn off attribute selection, including all VSAs in the CDR.

### To enter a list of RADIUS attributes to include in a CDR:

1. **vsa-id-range**—Enter a comma-delimited list that represents the VSA you want to appear in the RADIUS CDR. There is no default for this parameter.

Do not use <Spaces> when typing in your comma-delimited list.

```
ACMEPACKET(account-confi g)# vsa-i d-range -5, 7, 10-
```

This entry specifies that CDRs contain VSA with identifiers equal to and less than 5, VSA 7, and VSAs with identifiers equal to and greater than 10.

2. Save and activate your configuration.

## Custom RADIUS CDR VSAs for SIP

---

This section describes these additions to the Net-Net SBC's RADIUS accounting capabilities for customizing your call detail records (CDRs):

- Generating CDRs with call detail information from a SIP message—The Net-Net SBC reserves a set of vender-specific attributes (VSAs) and then populates them according to your header manipulation (HMR) configuration
- Generating CDRs with trunk group information—You can enable your Net-Net SBC to provide terminating trunk-group and trunk-context data even when the Net-Net SBC is not performing trunk-group routing.

Both support using the CSV file for RADIUS records, which you can either save locally or push to a defined FTP server.

## About User-Defined VSAs for SIP Calls

The Net-Net SBC reserves VSAs 200-229 for you to define for use with SIP calls. These VSAs should never be used for other purposes, and their use should never conflict with the need to add new VSAs in the future. Because this leaves a significant number of VSAs unused, there is still ample space for any new VSAs that might be required.

Since RADIUS START records are created on session initiation, their content cannot be updated. However, the content for INTERIM and STOP records can be.

To configure user-defined VSAs for a SIP call, you use HMR. For example, when you set up HMR correctly, the Net-Net SBC reports originating or terminating country codes in CDRs in whatever format they appear in the SIP username field. The HMR rules you configure uses the SIP header name P-Acme-VSA, adding it to the SIP header from any part of the SIP message. Then the Net-Net SBC searches for the P-Acme-VSA header, generates a VSA for it, and then includes that VSA in the CDR for the call.

You can include multiple custom VSAs per CDR by adding the corresponding number of rules; in essence, you add in the header as many times as required.

## HMR Adaptations

The following HMR element rule types support user-defined VSA for SIP calls:

- **uri-user-only**—The **uri-user-only** element rule type represents the URI username without the URI user parameters. You can perform these actions for the **uri-user-only** type: store, replaces, delete, and add. This means, for example, that you can add a username string to SIP or TEL URI without having any impact on other parameters.
- **uri-phone-number-only**—The **uri-phone-number-only** applies when all rules are met. It refers to the user part of the SIP/TEL URI without the user parameters when the user qualifies for the BNF shown here:

```
uri -phone-number -only = [+]1*(phone-di gi t / dtmf-di gi t / pause-character)
phone-di gi t           = DI GI T / vi sual -separator
DI GI T                 = "0" / "1" / "2" / "3" / "4" / "5" / "6" / "7" / "8" / "9"
vi sual -separator     = "-" / "." / "(" / ")"
dtmf-di gi t           = "*" / "#" / "A" / "B" / "C" / "D"
pause-character        = "p" / "w"
```

Once the URI user part qualifies as a uri-phone-number-only based on this BNF, the Net-Net SBC ignores the visual separators when comparing it against a match value. Furthermore, the Net-Net SBC performs on or using the uri-phone-number-only after the excluding the visual separators.

But anew value being added as a uri-phone-number-only or replacing a uri-phone-number-only does not have to match the BNF noted above. That is, you can use the **uri-phone-number-only** type knowing that:

- The action only occurs if the URI username matches the BNF defined here.
- Even so, you can also replace the uri-phone-number-only with one that does not match—using the same rule.

## HMR String Variable

HMR supports the use of a string variable that you can use to populate headers and elements. You set this value in the **hmr-string** parameter for a realm, SIP session agent, or SIP interface. Then, you reference it as the \$HMR\_STRING variable.

When a message arrives, the Net-Net SBC matches the string you provision to the closest session agent, realm, or SIP interface. The precedence for matching is in this order: session agent, realm, and then SIP interface. For example, the Net-Net SBC populates messages matching a session agent using the \$HMR\_STRING variable, but it leaves the value empty for session agents that do not match.

You can use the string variable, for instance, for values specific to realms and session agents such as country code values when the regular expression pattern used to match a country code fails to do so.

## ACLI Instructions and Examples: User-Defined VSAs

This section shows you how to configure user-defined VSAs for SIP calls. It also contains subsections with configuration examples so you can see how this feature is put to use.

This section also shows you two configuration examples for this feature.

### To create a header manipulation rule that generates user-defined VSAs for SIP calls:

1. In Superuser mode, type **configure terminal** and press <Enter>.
 

```
ACMEPACKET# confi gure termi nal
ACMEPACKET(confi gure)#
```
2. Type **session-router** and press <Enter>.



- ```
ACMEPACKET(configure)# session-router
ACMEPACKET(session-router)#
```
3. Type **sip-manipulation** and press <Enter>.

```
ACMEPACKET(session-router)# sip-manipulation
ACMEPACKET(sip-manipulation)#
```
  4. Type **header-rules** and press <Enter>.

```
ACMEPACKET(session-router)# header-rules
ACMEPACKET(sip-header-rules)#
```
  5. **name**—Enter a meaningful name for the header rule you are creating. For example, if you want to add VSA 200 to your CDRs for SIP calls, you might name your rule **generateVSA200**. There is no default for this parameter, and it is required.
  6. **header-name**—Set this parameter to P-Acme-VSA so the Net-Net SBC will add this accounting information to CDRs for the call.
  7. **action**—Set this parameter to **add**.
  8. **new-value**—Enter the regular expression value for the new value you want to add. For example, to add VSA 200 that contains the value from the SIP From header, you would enter **200:+\$storeFrom.\$0**.
  9. Save and activate your configuration.

The first example shows you how to generate custom VSA for the To and From headers in SIP messages.

- VSA 200 contains the header value from the SIP From header.
- VSA 220 contains the header value from the SIP To header.

```

sip-manipulation
  namecustom                                VSA1
  description
  header-rule
    name                                     storeFrom
    header-name                             from
    action                                   store
    comparison-type                         pattern-rule
    match-value                             .*
    msg-type                                 request
    new-value
    methods                                  INVITE
  header-rule
    name                                     storeTo
    header-name                             to
    action                                   store
    comparison-type                         pattern-rule
    match-value                             .*
    msg-type                                 request
    new-value
    methods                                  INVITE
  header-rule
    name                                     generateVSA200
    header-name                             P-Acme-VSA
    action                                   add
    comparison-type                         case-sensitive
    match-value

```

```

msg-type any
new-value 200: +$storeFrom. $0
methods INVITE
header-rule
name generateVSA220
header-name P-Acme-VSA
action add
comparison-type case-sensitive
match-value
msg-type any
new-value 220: +$storeTo. $0
methods INVITE

```

The second example shows you how to configure HMR to generate VSA 225, which contains the customer P\_From header when it is present. When that header is not present, the rule instructs the Net-Net SBC to include the header value from the SIP From header for VSA 225.

```

sip-manipulation
name customVSA1
description
header-rule
name storePfrom
header-name P_From
action store
comparison-type pattern-rule
match-value .*
msg-type request
new-value
methods INVITE
header-rule
name storeFrom
header-name from
action store
comparison-type pattern-rule
match-value .*
msg-type request
new-value
methods INVITE
header-rule
name generateVSA225_1
header-name P-Acme-VSA
action add
comparison-type case-sensitive
match-value
msg-type request
new-value 225: +$storeFrom. $0
methods INVITE
header-rule
name generateVSA225_2
header-name P-Acme-VSA
action manipulate
comparison-type pattern-rule
match-value $storePfrom
msg-type request

```

```

new-value
methods                               INVITE
element-rule
    name                               one
    parameter-name
    type                               header-value
    action                             delete-element
    match-value-type                   any
    comparison-type                   pattern-rule
    match-value                         ^225.*
    new-value
element-rule
    name                               two
    parameter-name
    type                               header-value
    action                             add
    match-value-type                   any
    comparison-type                   case-sensitive
    match-value
    new-value                           225: +$storePfrom.$0

```

### ACLI Instructions and Examples: String Variable

To use the HMR string variable, you set the **hmr-string** value in the SIP session agent, realm, or SIP interface where you want the feature applied. The following sample shows you how to configure the **hmr-string** parameter for SIP session agent.

1. In Superuser mode, type **configure terminal** and press <Enter>.

```

ACMEPACKET# configure terminal
ACMEPACKET(configure)#

```

2. Type **session-router** and press <Enter>.

```

ACMEPACKET(configure)# session-router
ACMEPACKET(session-router)#

```

3. Type **session-agent** and press <Enter>.

```

ACMEPACKET(session-router)# session-agent
ACMEPACKET(session-agent)#

```

If you are adding this feature to an existing configuration, you need to select the configuration (using the ACLI **select** command) before making your changes.

4. **manipulation-string**—Enter a value that references the \$HMR\_STRING variable that will be used to populate SIP headers and elements using HMR. There is no default value for this parameter.
5. Save and activate your configuration.

### Trunk-Group VSA Generation

You can force the Net-Net SBC to generate VSAs related to trunk groups even when you are not using the trunk group feature. With the **force-report-trunk-info** parameter turned on in the session router configuration:

- The Net-Net SBC reports terminating trunk group and trunk-context information even though it has not perform trunk-group routing.

The appropriate VSAs report the terminating trunk-group (VSA 65) and trunk context (VSA 67) with the information of the matching ingress session agent and realm of the originator.

- The Net-Net SBC reports the terminating trunk-group (VSA 66) and trunk context (VSA 68) as the received trunk group and context from the call's SIP REQUEST message. If the SIP message has none, then the Net-Net SBC uses the information from the matching egress session agent (or egress realm, when available) and next-hop realm.

Note that information is reported after HMR processing—meaning that header manipulation has been performed on the message information reported.

## ACLI Instructions and Examples

You enable trunk-group VSA generation on a system-wide basis in the session-router configuration.

### To enable forced trunk-group VSA generation:

1. In Superuser mode, type **configure terminal** and press <Enter>.
 

```
ACMEPACKET# configure terminal
ACMEPACKET(configure)#
```
2. Type **session-router** and press <Enter>.
 

```
ACMEPACKET(configure)# session-router
ACMEPACKET(session-router)#
```
3. Type **session-agent** and press <Enter>.
 

```
ACMEPACKET(session-router)# session-router
ACMEPACKET(session-router)#
```
4. **forced-report-trunk-info**—Change this parameter to enabled if you want to turn on the Net-Net SBC's ability to generate VSAs for trunk group information even when you are not using trunk-group routing. The Net-Net SBC uses VSAs 65-68 to report originating and terminating trunk group information as described in the [Trunk-Group VSA Generation \(51\)](#) section above. By default, this parameter is **disabled**.
5. Save and activate your configuration.

## SSH RADIUS Authentication VSA Support

Since the login information from an SSH connection is used for authentication and authorization with certain RADIUS servers, the Net-Net SBC supports the use of the Cisco Systems Inc.™ “Cisco-AVPair” vendor specific attribute (VSA). For this VSA, the Vendor-ID is 1 and the Vendor-Type is 9. The following table defines the behavior for each Cisco-AVPair return value.

| Cisco-VSA Value        | Behavior                                                                       |
|------------------------|--------------------------------------------------------------------------------|
| shell : privilege = 15 | User automatically logged in as an administrator                               |
| shell : privilege = 1  | User logged in at the “user” level, and not allowed to become an administrator |
| Any other value        | User rejected                                                                  |

You do not need to take special configuration step to use this feature; it is automatically enabled.

## Accounting Configuration Example

Using the Net-Net SBC with external RADIUS accounting servers to generate CDRs and provide billing services requires you to configure accounting configuration and any associated accounting servers you might need.

The following example shows how you can set accounting configuration and accounting server parameters to support multiple RADIUS accounting servers.

```

ACMEPACKET(account-config)# show
account-config
  hostname                local host
  port                    1813
  strategy                Hunt
  state                   enabled
  max-msg-delay           60
  max-wait-failover      100
  trans-at-close          disabled
  file-output             enabled
  max-file-size           1000000
  max-files                5
  file-path                /ramdrv
  file-rotate-time        60
  ftp-push                enabled
  ftp-address              154.0.12.4
  ftp-port                 21
  ftp-user                 Admin
  ftp-password             A213HG
  ftp-remote-path         /sbcRADIUS
  generate-start           OK
  generate-interim

  intermediate-period     0
  prevent-duplicate-attrs disabled
  vsa-id-range

account-server
  hostname                10.0.0.189
  port                    1813
  state                   enabled
  min-round-trip          250
  max-inactivity           60
  restart-delay            30
  bundle-vsa              enabled
  secret                  acme
  NAS-ID

account-server
  hostname                192.168.200.70
  port                    5050
  state                   enabled
  min-round-trip          250
  max-inactivity           60
  restart-delay            30
  bundle-vsa              enabled
  secret                  packet
  NAS-ID

```

## Local CDR Storage and FTP Push

---

The local CDR storage feature allows you to save RADIUS CDR data to a local CSV text file on the Net-Net SBC. Local CDR file creation and storage can be used in addition to or independently of sending CDRs to RADIUS servers for every call. Once the Net-Net SBC creates and saves local CDR files, you can:

- Send the files to an FTP server by configuring a push receiver
- Develop and implement your own script for retrieving them as necessary from the Net-Net SBC

You configure the Net-Net SBC to:

- Set directory path where you want to save local CDR files
- Set a maximum file size for the CSV file
- Set a maximum number of local CDR files
- Set an interval in which to close the existing local CDR file and begin writing a new file.

Once local CDR file creation is enabled, you can configure push receivers to “push” any non-active and closed CDR files to an FTP server using FTP or SFTP protocols. You configure the Net-Net SBC with the push receiver’s:

- server IP address and port information
- login credentials
- path to save the local CDR Files
- The interval at which the Net-Net SBC should send files to a push receiver

For flexibility and security, the Net-Net SBC can log into a push receiver with either FTP or SFTP. If you are creating a secure connection with SFTP, your Net-Net SBC can authenticate to the server with either a public shared key or SSH-encrypted username and password.

### Local CDR File Format

The CDRs are written as comma-delimited ASCII records to files on the Net-Net SBC. The types of records are controlled by the same accounting configuration parameters used for RADIUS. The fields of the comma-delimited entries correspond to RADIUS START, INTERIM, and STOP records. Using the accounting configuration, you can configure the Net-Net SBC to record STOP records only.

Because the record types do not have consistent field positioning, any server parsing them would need to read the first field to determine the type and learn how to parse the remaining fields.

### Local CDR File Format Consistency

If you want to guarantee the CSV placement for RADIUS attribute values, you must use the entire RADIUS dictionary. You cannot use the RADIUS CDR abbreviation feature. Using an abbreviated form of the RADIUS dictionary results in adverse effects for the CSV file.

In your configuration, then, you must set the **vsa-id-range** parameter to use the entire range of attributes. Leaving this parameter blank disables abbreviation and all attributes are included. Alternatively, you can specify all of the parameters (by attribute number) that are used in the Net-Net OS release loaded on your system.

See the [RADIUS CDR Content Control \(46\)](#) section for more information.

## Local CDR File Naming Convention

Filenames are derived from the date and time that the CDR file is opened for writing. The format is `cdrYYYYMMDDHHMM[a-j ]`, where:

- YYYY=the year
- MM=the month
- DD=the day
- HH=the hour
- MM=the minute
- [a-j ]=a suffix that provides additional discrimination in case of changing system time, setting the rotation time for this feature to one minute, or in case of another occurrence that might compromise the date and time

Your file name will resemble the following sample: `cdr200511151200`.

## CSV Filename Sequence Numbering

The basic local CDR file naming convention renders it impossible to determine if one or more files are missing from a list of file names, which is even more apparent when one views the list of files on a FTP/SFTP server.

Even when the file-rotation-time is enabled, viewing timestamps does not provide a definitive means for determining missing files, as an administrator could have changed the rotation time or maximum file size, causing fewer or more frequent rotations.

As a solution, the Net-Net SBC can append a sequence number to the CSV file name by enabling the **file-seq-number** parameter in the account config configuration element.

The sequence number is a 9 digit number padded with zeros where applicable. For example, sequence number 123 appears as 000000123 in a filename. While the sequence number will be consistent across failovers, it will be reset whenever the Net-Net SBC is power cycled.

With sequence numbers enabled, the format of a CSV file name will be:

```
cdr<timestamp>-<9 digit sequence number>
```

Using the format shown above, a directory listing will continue to show files in time-ascending order, even in the presence of a sequence number. For example:

```
-rw-r--r-- 1 acme src 0 Nov 23 16:02 cdr200911212346-000000040
-rw-r--r-- 1 acme src 0 Nov 23 16:02 cdr200911212347-000000041
-rw-r--r-- 1 acme src 0 Nov 23 16:02 cdr200911212348-000000042
-rw-r--r-- 1 acme src 0 Nov 23 16:02 cdr200911212349-000000043
-rw-r--r-- 1 acme src 0 Nov 23 16:06 cdr200911212354-000000001
-rw-r--r-- 1 acme src 0 Nov 23 16:07 cdr200911212355-000000002
-rw-r--r-- 1 acme src 0 Nov 23 16:08 cdr200911212356-000000003
-rw-r--r-- 1 acme src 0 Nov 23 16:09 cdr200911212357-000000004
```

When this feature is enabled, the [a-j ] suffix described in the Local CDR File Naming Convention section is disabled.

## Downgrade Warning

When downgrading system software from a version that supports CDR CSV file Sequence Numbers to a version that does not, there are a few guidelines:

- Disable file sequence numbers (`file-seq-number = disabled`) before you downgrade.
- Wait for all files with sequence numbers to be pushed off box, or retrieve them manually from `/ramdrv` on the Net-Net SBC.

### Local CDR File Storage Directories

The Net-Net SBC only allows local storage of ASCII CDRs to the `/ramdrv` and `/ramdrv/logs` directories. If you try to save to another directory (such as `/code` or `/boot`), you will receive an error message.

If you are using the ACLI and enter an inappropriate directory, the ACLI will issue an error message.

### Local CDR File Size and Rotation

You can configure maximum file size, maximum number of local CSV files to store, and the interval at which the files rotate.

The Net-Net SBC saves up to the file size limit (**max file size**) and maintains only number of files that you configure (**max files**). When the maximum file size is reached, the Net-Net SBC closes that file and begins writing VSA attributes and values to a new local CDR file. When it is time for the Net-Net SBC to write the *max files* + 1 file, the oldest file is deleted so that the newest one can be stored.

### More About File Rotation Time

You can use the CDR local storage feature on its own, without enabling the FTP push feature. The Net-Net SBC uses a period of time that you set to periodically rotate the files. The **file rotate time** parameter rotates the local CSV files regardless of whether you use the FTP push feature.

### RADIUS CDR Redundancy

H.323 calls proceed without interruption over an HA node in the event of a failover from one Net-Net SBC to another, and RADIUS records are generated and duplicated across the active and standby systems in an HA node. However if a switchover occurs during an H.323 call (that has been initiated, but not completed), the newly active (formerly standby) system will not generate RADIUS Stop records when the call completes.

### FTP Push

The FTP push feature is used to copy local CDR files to a remote FTP server on a periodic basis. This feature is configured by defining push receivers which contain standard login and FTP server credentials of the remote machine. At the configured time interval (**file rotate time**), the Net-Net SBC closes the current file, and pushes the files that are complete and have not yet been pushed; including the just-closed-file.

### Deprecated ACLI Configuration

The following parameters in the `account-config` configuration element are deprecated:

- `ftp-address`
- `ftp-port`
- `ftp-user`
- `ftp-password`
- `ftp-remote-path`.



These parameters will only be used if no `account-config > push-receiver` configuration elements have been defined. All new push receivers must be defined in the `account-config > push-receiver` configuration element.

## Multiple Push Receivers

The Net-Net SBC supports up to five CDR push receivers for use with the local file storage and FTP push feature. The system uses the push receivers according to the priorities you set by giving a 0 through 4 priority number to the server when you configure it; 0 is the highest priority, and 4 is the lowest. By default, push receivers always have their priority at the lowest setting (4).

Based on the priority level, the Net-Net SBC uses a configurable strategy to select a CDR push receiver. If the highest priority push receiver selected using the strategy becomes unavailable (i.e., times out), the Net-Net SBC uses the strategy (hunt, round robin, etc.) to select another. You can configure the time-out value after which the Net-Net SBC considers the current push receiver to have failed.

This feature is dynamically configurable. When you change the configuration, the Net-Net SBC updates the list of push receivers if it has changed.

## Push Receivers

A push receiver configuration includes all the credentials that the Net-Net SBC needs to log into an FTP server and upload any recent local CDR files. Push receiver configurations must include:

- the server's IP address and port
- remote path of where to upload the local CDR files
- protocol used to connect to the user
- account login credentials

## Secure FTP Push

The Net-Net SBC can securely log in to a push receiver using one of two methods that create a secure connection.

You can use password-based SSH authentication for logging into an SFTP server by setting the push receiver's **protocol** parameter to SFTP, configuring a username and password and leaving the **public-key** parameter blank.

You can use SSH public key authentication for logging into an SFTP server by setting the push receiver's **protocol** parameter to SFTP, setting the **public-key** parameter to a configured public key record name (`security > public key > name`), and including an account **username**.

## FTP/SFTP Server Upload Verification

When sending a CDR CSV file to a remote FTP or SFTP server, the file might not have been transferred completely. A failed file push will likely result in a partial file appearing on the server. By inspecting a partial file and its contents, it is not always possible to determine if it in fact is a partial file.

To ensure that CDR CSV files pushed to FTP or SFTP servers are saved in their entirety on the remote server, the Net-Net SBC uses an initial temporary file name for upload. Once the transfer completes, the Net-Net SBC renames the file to the permanent name with the appropriate FTP or SFTP command.

This behavior is configured in the the push-receiver portion of the accounting configuration by enabling the **temp remote file** parameter. When enabled, the Net-Net SBC transmits the file with a "temp-" prefix. Once the file transfer completes,

the remote file is renamed to the final name. With this mechanism in place, the system operator can assume that all “tmp-” files are incomplete.

For example, a CDR CSV file is uploaded to an FTP or SFTP server as:

```
tmp-<filename-prefix>-cdr<timestamp>-<9 digit sequence number>
```

When the upload completes, it is renamed to:

```
<filename-prefix>-cdr<timestamp>-<9 digit sequence number>
```

## Server Requirements

- When connecting to a push receiver via FTP, ensure that the server supports the RNFR and RNT0 commands
- When connecting to a push receiver via SFTP, ensure that the server supports the rename command (packet type 18).

## ACLI Instructions and Examples

This section shows you how to configure Local CDR storage and FTP push on your Net-Net SBC.

### Accessing the Accounting Configuration

To configure parameter for these features, you must access the accounting configuration.

#### To access the accounting configuration:

1. In Superuser mode, type **configure terminal** and press <Enter>.

```
ACMEPACKET# configure terminal
```

2. Type **session-router** and press <Enter>.

```
ACMEPACKET(configure)# session-router
```

3. Type **account-config** and press <Enter>.

```
ACMEPACKET(session-router)# account-config
ACMEPACKET(account-config)#
```

From here, you can enable local CDR storage and FTP push.

### Enabling Local CDR Storage

#### To enable local CDR storage:

4. **file-output**—Enable this parameter for the Net-Net SBC to create comma-delimited CDRs (generated from RADIUS records). By default, this parameter is disabled.
5. **file-path**—You must configure this path or the CDR push feature will not work. Set the path to use on the Net-Net SBC for file storage from these two options:

- /ramdrv
- /ramdrv/logs

To use FTP push, you must configure a usable path.

6. **max-file-size**—Set the maximum file size in bytes permitted for each CDR file. The default and minimum value is 1000000. The maximum value is  $10^8$ .
7. **max-files**—Set the maximum number of files to be stored on the Net-Net SBC at one time. You can configure the Net-Net SBC to store as few as one file or as many as 4096. The default is 5.
8. **file-rotate-time**—Set how often in minutes you want to rotate the stored files; the Net-Net SBC will overwrite the oldest file first. The minimum rotation time

is 2 minutes; the default is 60 minutes. This parameter defaults to 0, and leaving it set to the default means that the Net-Net SBC will not rotate the files.

## Configuring a Push Receiver Fallback Method

You set the push receiver strategy and define the maximum timeout in seconds in the main accounting configuration.

**Note:** You may ignore the following two parameters if only one push receiver is configured.

### To configure how push receivers behave in a multiple push receiver configuration:

9. **ftp-strategy**—Set the strategy you want the Net-Net SBC to use when selecting from multiple push receivers. The default is **hunt**.

| Strategy   | Description                                                                                                                                                                                                                                                                                           |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hunt       | The Net-Net SBC selects the push receiver from the available list according to the priority level. The system uses this strategy as its default.                                                                                                                                                      |
| Failover   | The Net-Net SBC selects the push receiver based on priority level and will continue to use that same push receiver until it fails over.                                                                                                                                                               |
| RoundRobin | The Net-Net SBC selects push receivers systematically one after another, balancing the load among all responsive push receivers.                                                                                                                                                                      |
| FastestRTT | The Net-Net SBC selects the push receiver based on best average throughput. For this situation, throughput is the number of bytes transferred divided by the response time. The system uses a running average of the five most recent throughput values to accommodate for network load fluctuations. |

10. **ftp-max-wait-failover**—Enter the amount of time in seconds to wait before the Net-Net SBC declares a push receiver to have failed over. This default value for this parameter is 60.

## Setting the CSV Sequence Number

This section shows you how to set the VSAs generated and how to enable the CSV filename sequence numbering feature..

### To enable fixed value placement in CSV files for RADIUS CDRs:

1. In Superuser mode, type **configure terminal** and press <Enter>.

```
ACMEPACKET# configure terminal
ACMEPACKET(configure)#
```

2. Type **session-router** and press <Enter>.

```
ACMEPACKET(configure)# session-router
```

3. Type **account-config** and press <Enter>.

```
ACMEPACKET(session-router)# account-config
ACMEPACKET(account-config)#
```

If you are adding support for this feature to a pre-existing accounting configuration, then you must use the CLI **select** command so that you can edit it.

4. **vsa-id-range**—Either leave this parameter blank (default), or enter the complete range of VSAs for the Net-Net OS release loaded on your system. The following example shows what you would enter to use all of the VSAs for Net-Net OS Release 4.1.4p4 for a system that is not running QoS.

ACMEPACKET(account-config)# **vsa-id-range 1-4, 10-14, 20-24, 28, 29, 32-71, 74-136**

5. **file-seq-number**—Set this parameter to enabled to use the CSV Filename Sequence Numbering feature.

## Enabling FTP Push

### To enable FTP push:

1. In Superuser mode, type **configure terminal** and press <Enter>.

```
ACMEPACKET# configure terminal
ACMEPACKET(configure)#
```

2. Type **session-router** and press <Enter>.

```
ACMEPACKET(configure)# session-router
```

3. Type **account-config** and press <Enter>.

```
ACMEPACKET(session-router)# account-config
```

If you are adding support for this feature to a pre-existing accounting configuration, then you must use the ACLI **select** command so that you can edit it.

4. **ftp-push**—Set the state of FTP push feature to **enabled**. It is disabled by default.
5. Type **push-receiver** and press <Enter>.  
ACMEPACKET(account-config)# **push-receiver**
6. **server**—Enter the IP address of this push receiver FTP server.
7. **port**—Enter the port number of this push receiver FTP server.
8. **remote-path**—Enter the remote pathname to which you want CDR files to be sent on the push receiver. There is no default for this parameter.
9. **filename-prefix**—Enter the filename prefix (as a string) to prepend to the to the CDR files the Net-Net SBC sends to the push receiver. The Net-Net SBC does not rename local files. There is no default for this parameter.
10. **priority**—By entering a number 0 through 4, set the priority of this push receiver in relation to the others you configure on the system. Since you can configure up to five (5) push receivers, you define a push receiver's priority by giving it a number. The highest priority—and the push receiver the system will use first—is 0. The lowest priority—and the push receiver the system will use last—is 4. This parameter defaults to 4.
11. **protocol**—Enter **SFTP** if you want to change the transport protocol for this push receiver from its default, **FTP**.
12. **username**—Enter the username the Net-Net SBC uses when connecting to this push receiver. There is no default for this parameter. This parameter must be configured whether you are using unencrypted FTP, password or public key authentication.
13. **password**—Enter the password corresponding to the username the Net-Net SBC uses when connecting to this push receiver. There is no default for this parameter.
14. **public-key**—Enter the public key profile to use for authentication to this push receiver if this is the preferred form of authentication. If you define this as an SFTP push receiver but do not set the public-key value, the Net-Net SBC will use password authentication. There is no default for this parameter.

15. **temp remote file**—Set this parameter to enabled for the Net-Net SBC to upload CDR CSV files initially with a tmp-prefix and then rename the file after successful upload.
16. Save and activate your configuration.

## Local CDR Monitoring

---

### Monitoring CDR Push Receivers

You can use the ACLI **show radius cdr** command to view information about CDR push receivers. The existing display for this command has been extended to include information that looks like the following:

```
***** CDR Push Receiver Display Start*****
strategy = FastestRTT, maxwaitfailover = 10, number of receivers = 1
----- 172.30.0.70:21 -----
cdrpush-receiver = 172.30.0.70:21, state = READY, priority = 4
remote path = /home/acme, remote prefix = vik, protocol = ftp
username = acme, password = *****, publickey =
FTP rtt = 0, FTP successes = 0, FTP failures = 0
FTP timeouts = 0, FTP Delays = 0, FTP Put failures = 0
FTP conn failures = 0, FTP terminates = 0, FTP triggered terminates = 0
```

### SNMP Support

The Net-Net SBC sends traps when a single push receiver or all push receivers become unavailable.

- When one CDR push receiver becomes unavailable, the CDR\_PUSH\_RECEIVER\_FAIL\_TRAP trap is sent and a minor alarm is generated.
- When all of the configured CDR push receivers become unavailable, the CDR\_ALL\_PUSH\_RECEIVERS\_FAIL\_TRAP is sent and a major alarm is generated.
- When one or more of the push receivers comes back, the CDR\_ALL\_PUSH\_RECEIVERS\_FAIL\_CLEAR\_TRAP is sent and the alarm is cleared.



# 3 RADIUS Accounting Management

## Overview

---

This chapter provides information about management and monitoring of RADIUS accounting functions on your Net-Net SBC.

- Net-Net SBC alarm generation and monitoring
- Status and statistics monitoring

## Alarm Generation and Monitoring

---

The Net-Net products generate alarms when certain hardware and software events occur. For more information about Net-Net SBC alarms for RADIUS, refer to the *Net-Net Maintenance and Troubleshooting Guide*.

The RADIUS ACCOUNTING CONNECTION DOWN alarm, detailed in the table below, is directly associated with the Net-Net SBC's RADIUS functionality. When enabled connections to RADIUS servers have timed-out without a response from the RADIUS server, the alarm is activated. The RADIUS ACCOUNTING CONNECTION DOWN alarm triggers a Simple Network Management Protocol (SNMP) trap that is sent via the syslog Management Information Base (MIB) ([ap-syslog.mib](#)). For a list of all SNMP-related alarms and their associated traps, refer to the table of SNMP trap correlation to Net-Net SBC's alarms in Acme Packet's [MIB Reference Guide](#).

This alarm has no impact on a the health score of a Net-Net SBC that is part of an HA Node.

## RADIUS Alarms

The table below describes the Net-Net SBC's alarms for RADIUS.

| Name/ID                                  | Severity/<br>Health<br>Degradation                                                                                                                                                                                                                                                   | Cause(s)                                                                                            | Log Message                                                                                                                                                                                                           | Traps Generated                                           |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| APP ALARM LOST<br>ACCT CONN/<br>51100001 | CRITICAL: if all enabled and configured RADIUS accounting server connections have timed-out without response from the RADIUS server<br><br>MAJOR: if some, but not all configured RADIUS accounting server connections have timed-out without response from the RADIUS server./<br>1 | The enabled connections to RADIUS servers have timed-out without a response from the RADIUS server. | CRITICAL: All enabled accounting connections have been lost! Check accounting status for more details.<br>MAJOR: One or more enabled accounting connections have been lost! Check accounting status for more details. | apSysMgmtRadiusDownTrap<br>OR<br>apSyslogMessageGenerated |

## Status and Statistics Monitoring

The ACLI **show radius** command, used with the three arguments described below, displays the status of any established RADIUS accounting connections and authentications. A working RADIUS connection displays **READY**, and a disabled connection displays **DI SABLED**.

When an accounting server is disabled, the triggering and clearing of RADIUS ACCOUNTING CONNECTION DOWN alarms is not affected.

For more information about Net-Net SBC about monitoring your Net-Net SBC, refer to the *Net-Net Maintenance and Troubleshooting Guide*.

### ACLI Show RADIUS Display

The **show radius** command can take one of the three available arguments:

- **authentication**—Shows authentication statistics for primary and secondary RADIUS servers, including: server IP address and port; round trip time; information about failed and successful requests/authentications; number of rejections; number of challenges; number of time-outs, number of retransmissions
- **accounting**—Shows the information described in this table:

| Section           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Client Display    | General accounting setup (as established in the accounting configuration element), including: <ul style="list-style-type: none"> <li>• Information about the state of the RADIUS client</li> <li>• Accounting strategy used ( Hunt, Failover, RoundRobin, FastestRTT, or FewestPending)</li> <li>• IP address and port on which the Net-Net server is listening</li> <li>• Maximum message delay in seconds</li> <li>• Number of configured accounting servers</li> </ul> |
| Waiting Queue     | Amount of accounting (RADIUS) messages waiting to be sent. Waiting queue capacity is 5000 messages.                                                                                                                                                                                                                                                                                                                                                                       |
| <IP Address:Port> | Information about each configured accounting server (established in the accounting servers configuration). The heading above each accounting server section is the IPv4 address and port combination of the accounting server described. This section also includes information about the accounting server's state (e.g., Connect_Attempt, I N I T).                                                                                                                     |
| cdr               | List of files written                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

The following is an example of the ACLI **show radius authentication** command output.

```
ACMEPACKET# show radius authentication
Active Primary Authentication Servers:
  server ipAddr: 172.30.0.7

Active Secondary Authentication Servers:
  server ipAddr: 172.30.0.8

Authentication Statistics:
  Server: "172.30.0.7:1812"
    RoundTri pTi me           : 0
```



```

Mal formedAccessResponse: 0
AccessRequests           : 2
BadAuthenticators       : 0
AccessRetransmissions   : 5
AccessAccepts           : 0
Timeouts                 : 6
AccessRejects           : 0
UnknownPDUTypes         : 0
AccessChallenges        : 0

```

Server: "172.30.0.8:1812"

```

RoundTripTime           : 0
Mal formedAccessResponse: 0
AccessRequests           : 2
BadAuthenticators       : 0
AccessRetransmissions   : 9
AccessAccepts           : 0
Timeouts                 : 10
AccessRejects           : 0
UnknownPDUTypes         : 0
AccessChallenges        : 0

```

The following is an example of the ACLI **show radius accounting** command output.

```

ACMEPACKET# show radius accounting
*****Client Display Start*****
Client State = READY, strategy=Hunt
Listening on 127.0.0.1:1813
max message delay = 60 s, # of servers = 2

===== Waiting Queue =====
Waiting size = 89

=====
----- 10.0.0.189:1813 -----
Remote = 10.0.0.189:1813, Local = 0.0.0.0:1026, sock=45 (BOUND)
conn state=READY, RTT=250 ms
Min Rtt=250 ms, Max inactivity=60 s, expires at Nov 21 13:50:19.582,
Restart delay=30 s

----- 192.168.200.70:5050 -----
Remote = 192.168.200.70:5050, Local = 0.0.0.0:1027, sock=46 (BOUND)
conn state=DISABLED, RTT=0 ms
Min Rtt=250 ms, Max inactivity=60 s, expires at Nov 21 13:50:19.569,
Restart delay=30 s

*****Client Display End*****

```

- **cdr**—Shows local CDR file and FTP push accounting information.

The following is an example of the ACLI **show radius cdr** command output.

The following is an example of the ACLI **show radius cdr** command output. This command lists CDR files, including the FTP list, unmanaged list, the last 3 deleted files, and the last transmitted file (with timestamp).

```

ACMEPACKET# show radius cdr
Current Time: 2009-12-21 20:54:34.667
CDR Pushing on ACTIVE SPU is ENABLED
Legend:
  flags: <l=l ast>          <x=xfer complete>

```

```

<f=found>           <r=red creation>
<p=pushed>          <h=handle replaced>
<s=pushed standby> <m=marked for deletion>
<d=xfer delayed>    <t=marked for FTP>
<c=FTP complete>
    
```

```

Managed CDR Files: 2
  /ramdrv/logs/cdr200912212052-000000001.gz: is 591287 bytes rate: 293
BPMS: psmc
  /ramdrv/logs/cdr200912212053-000000002: is 4683123 bytes rate: 0
BPMS: lp
  Last File Transmitted at 2009-12-21 20: 53: 46. 772:
  /ramdrv/logs/cdr200912212052-000000001.gz: is 591287 bytes rate: 1602
BPMS: psmc
  Current Open CDR File:
  cdr200912212053-000000002
    
```

The **show radius cdr statistics** command output is as follows:

```

ACMEPACKET# show radius cdr statistics
Current Time: 2009-12-21 20: 54: 34. 667
CDR Pushing on ACTIVE SPU is ENABLED
Statistics:
Files added                2          0
Files found:               0          0
Delete Requests:          0          0
Deleted Files:             0          0
Deleted Files while OOS:   0          0
Deleted Files (overflow):  0          0
File Deletes Delayed:     0          0
Xfer Success:              0          0
Xfer Failures:             0          0
Delayed Deletes:          0          0
Actual Deletes:           0          0
Rasm/Cdr Race Condition Detection: 0          0
File found before xfer:    0          0
File not found before xfer: 0          0
File size mismatch after transfer: 0          0
File size match after transfer: 0          0
No file size test (no prev file): 0          0
No file size test (no new file): 0          0
    
```

The **show radius cdr servers** command output is as follows:

```

ACMEPACKET# show radius cdr servers
Current Time: 2009-12-21 20: 54: 34. 667
CDR Pushing on ACTIVE SPU is ENABLED
***** CDR Push Receiver Display Start *****
strategy = Hunt, maxwaitfailover = 120, number of receivers = 2
----- 172.30.0.39:21 -----
cdrpush-receiver = 172.30.0.39:21, state = READY, priority = 4
remote path = /home/acme/CDR, remote prefix = maniac-, protocol = ftp
username = acme, password = *****, publickey =
FTP throughput = 3819448, FTP successes = 1, FTP failures = 0
FTP timeouts = 0, FTP Delays = 0, FTP Put failures = 0
FTP conn failures = 0, FTP terminates = 0, FTP triggered terminates = 0
FTP rename failures = 0
Ftp Positive Preliminary Reply = 1
    
```

```
Ftp Positive Completion Reply = 1
----- 172.30.0.88:21 -----
cdrpush-receiver = 172.30.0.88:21, state = UNAVAIL, priority = 4
remote path = /home/acme/push2, remote prefix = acme88, protocol = ftp
username = acme, password = *****, publickey =
FTP throughput = 0, FTP successes = 0, FTP failures = 0
FTP timeouts = 0, FTP Delays = 0, FTP Put failures = 0
FTP conn failures FTP terminates = 0, FTP triggered terminates = 0
FTP rename failures = 0= 0,
```

The **show radius cdr all** command concatenates the output for the three commands (minus redundant information).



# 4 Compact Flash for Local CDR Storage

The Net-Net 9200 can use a compact flash memory card that extends the system's internal storage beyond the fixed amount of flash RAM. When configuring local CDR creation, you can configure the Net-Net SBC to use compact flash memory for local CDR file storage instead of the limited internal flash RAM.

Disk space on the compact flash module appears as a local volume on the Net-Net SBC. Wherever you specify a volume name for a configuration parameter value, you can enter a volume located on the compact flash module, (unless the parameter is otherwise specified).

## Using Compact Flash Card for CDR Storage

---

### Compact Flash Memory Specifications

The Net-Net 9200 copies CDR files from RAM drive to a compact flash memory module for persistent CDR storage. Compact Flash memory is inserted into the appropriately labeled slot on the Net-Net 9200's MIU.

Only one PCMCIA Compact Flash device is supported: the SanDisk SDCFX3-016G-A31 16 GB Extreme III CompactFlash Card.

Flash devices must be formatted FAT32, which can be performed by qualified Acme Packet personnel.

### Compact Flash Standby Replication

Because PCMCIA is permanent storage, CDR files in PCMCIA are not replicated to standby. In addition, CDR files on the active SPU/MIU pair's internal flash drive are not replicated to standby. To force the Net-Net 9200 to transfer files from the standby's FLASH, it is necessary to transition the standby card to the ACTIVE role.

### Local CDR Storage Directory

To save local CDR files to the compact flash module, configure the **file path** parameter in the account config with **/pcmcia**. This indicates that the files should be written to the compact flash module which attaches to the PCMCIA bus.

### FTP Push Backup

When FTP push is enabled, if all FTP push servers are unreachable, then local CDR files are written to local file system until the FTP push servers return to service. Once an FTP Push server becomes reachable, the Net-Net SBC transfers all local CDR files to the remote server automatically. After a local CDR file has been successfully transferred to the FTP server from the Net-Net SBC, it is deleted from the local volume.

### Local CDR File Compression

You can configure the Net-Net SBC to compress local CDRs in .gz format to save disk space. The local CDRs will be compressed and appear with a .gz file extension. This feature is enabled with the **file compression** parameter.

## CDR Decompression

The Net-Net 9200 can decompress locally compressed .gz files before sending them to a remote file server. Only files with a ".gz" extension will be decompressed. Files lacking this extension will be transmitted as-is. If an error occurs during decompression, the file will be transmitted compressed (with the .gz extension). Setting the file-decompression parameter to **enabled** will push decompressed CDR files to the remote server.

## ACLI Configuration and Examples

**The following ACLI configuration procedure describes:**

- identifying volumes on the compact flash module
- configuring compact flash module volumes as the destination for local CDR files

These procedures are only a portion of local CDR file generation and FTP Push configuration. Please refer to the Net-Net 9000 S-D7.1.0 ACLI Accounting Guide's Local CDR Storage and FTP Push section for a full explanation and all prerequisites before referencing the following procedure.

**To identify the volumes on the compact flash module to use with local CDR storage:**

1. Note the volume name on the compact flash module you wish to use for local CDR output using the **show space pcmcia** command. The following example indicates that there are 4 partitions, which are set in bold:

```
SYSTEM# show space pcmci a

/sys: 19695716352/19695749120 bytes (99%) remaini ng
/l ocal : 19693335040/19693367808 bytes (99%) remaini ng
/l ogs: 19693335040/19693367808 bytes (99%) remaini ng
/ml sc: 19693335040/19693367808 bytes (99%) remaini ng
SYSTEM#
```

**To configure a Net-Net 9200 to write local CDRs to a compact flash module:**

1. In Superuser mode, type **configure terminal** and press <Enter>.
 

```
ACMEPACKET# confi gure termi nal
```
2. Type **session-router** and press <Enter>.
 

```
ACMEPACKET(confi gure)# sessi on-router
```
3. Type **account-config** and press <Enter>.
 

```
ACMEPACKET(sessi on-router)# account-confi g
ACMEPACKET(account-confi g)#
```
4. **file-path**—Set this parameter to the volume you identified to use for local CDR file storage in the previous section. Ensure the path begins with a forward slash, "/".
5. **file-compression**—Set this to **enabled** to compress local CDR files in .gz format.
6. **file-decompression**—Set this to **enabled** for the Net-Net 9200 to decompress local CDR files in memory before pushing them the off box server.
7. Save and activate your configuration.

## Compact Flash Module Management

---

The Net-Net SBC provides you with a set of tools to manage the compact flash module.

### Identifying compact flash module Volumes

You can identify volumes and free disk space that exist on the compact flash module using the **show space pcmcia** command. You can identify volumes and free disk space that exist on the RAM drive using the **show space ramdrv** command. Free space is displayed for both MIUs (via their SPUs). In addition, free and used space are reported too. For Example:

```
SYSTEM# show space pcmcia

0.0.0 /pcmcia/ filesystem: 212145152/264225792 bytes (80%) remaining
1.0.0 /pcmcia/ filesystem: 211752960/264225792 bytes (80%) remaining
```

### Viewing Directories and Files

You can view files and directories on the compact flash module using the **show directory /pcmcia/<path>** command. Remember to use absolute paths beginning with the forward slash. For example:

```
SYSTEM# show directory /pcmcia
-rwxrwxrwx 1 0 0 9999961 Dec 15 20: 38 cdr200912152037
-rwxrwxrwx 1 0 0 9998955 Dec 15 20: 37 cdr200912152036
-rwxrwxrwx 1 0 0 9999931 Dec 15 20: 35 cdr200912152034a
-rwxrwxrwx 1 0 0 9999026 Dec 15 20: 36 cdr200912152035
```

```
SYSTEM#
```

To view all volumes on the Net-Net SBC, type **show directory** without any arguments. For Example:

```
SYSTEM# show directory
Top-level directories:
/ramdrv
/code
/boot
/pcmcia
```

Typing **show directory \*** displays all top-level directories and their contents.

### Viewing Standby Directories and Files

You can view files and directories on the standby SPU/MIU using the **show directory \* standby** command.

## Compact Flash Module Monitoring

---

### Low Disk Space Warning

The Net-Net SBC can initiate an alarm and an SNMP trap when a volume reaches a configured threshold of remaining free disk space, configured as a percentage of volume. You can configure multiple alarms, each with increasing severity that indicate less free disk space.

## Low Disk Space Threshold Alarm

The low disk space threshold alarm is configured in **alarm threshold** configuration element. It is non-health affecting. The threshold alarm appears as follows:

```
SYSTEM# show alarm current
1 alarms to show
ID      Task      Severity      First Occurred      Last Occurred
131142  547896076    4             2009-08-25 13:36:26  2009-08-25 13:36:26
Count   Description
1       Volume /pcmcia space used 81% is over major threshold of 80%.
```

## Low Disk Space Threshold SNMP Trap

For any threshold reached, an SNMP trap will be sent to all configured trap-receivers. The apSysMgmtStorageSpaceAvailThresholdTrap trap contains the following information:

- VolumeName—name of the volume where a threshold was exceeded
- CurrentValue—current percentage of disk space value that is exceeding one of the thresholds.
- MinorThreshold—configured minor threshold for this volume, if none then this is 0.
- MajorThreshold—configured major threshold for this volume, if none then this is 0.
- CriticalThreshold—configured critical threshold for this volume, if none then this is 0.

## ACLI Configuration and Examples

### To configure alarm thresholds for monitoring free disk space:

1. In Superuser mode, type **configure terminal** and press <Enter>.
 

```
ACMEPACKET# configure terminal
```
2. Type **system** and press <Enter>.
 

```
ACMEPACKET(configure)# system
ACMEPACKET(system)#
```
3. Type **system-config** and press <Enter>.
 

```
ACMEPACKET(system)# system-config
ACMEPACKET(system-config)#
```
4. Type **select** and press <Enter>.
 

```
ACMEPACKET(system-config)# select
ACMEPACKET(system-config)#
```
5. Type **alarm-threshold** and press <Enter>.
 

```
ACMEPACKET(system-config)# alarm-threshold
ACMEPACKET(alarm-threshold)#
```

The system prompt changes to let you know that you can begin configuring individual parameters.
6. **type**—Set this parameter to **space** to create an alarm based on reduced free disk space.
7. **volume**—Set this parameter to the volume name you wish to monitor. Generally this string should be the same as the **file-path** parameter located in the account-config.



8. **severity**—Enter the severity level of this alarm. Valid severity values are MINOR, MAJOR, and CRITICAL.
9. **value**—Enter the percent of resource (*type*) in use that triggers the configured alarm (*severity*).
10. Save your work.
11. Repeat this procedure to configure multiple alarm thresholds.

The following example reflects what a major and critical alarm would look like:

```

al arm-threshol d
    type                space
    vol ume             /pcmc i a
    severi ty          maj or
    val ue              80
al arm-threshol d
    type                space
    vol ume             /pcmc i a
    severi ty          cri ti cal
    val ue              90

```



# Appendix A

## Net-Net RADIUS Log Examples

### Overview

---

Several examples of RADIUS logs appear in this appendix. These logs were processed and the output generated by a FreeRADIUS server; the labels for each field come from the installed VSA dictionaries, including the Acme Packet RADIUS dictionary.

As you review these examples, please note:

- The `Acct-Unique-Session-Id` and `Timestamp` fields shown in the following examples are generated by the RADIUS server and not by the Net-Net SBC.
- For non-QoS calls, the attributes appear in the record, but their values are always zero (0).

### RADIUS CDR Samples

---

This section provides an example CDR for a SIP call.

#### CDR Samples for SIP

This section provides sample CDRs for the following SIP call scenarios:

- A basic successful SIP call
- An unsuccessful SIP call (busy)
- A SIP call on hold
- A SIP call transfer
- A SIP successful mid-call media change

#### Basic Successful SIP Call

The following sample CDRs are for a successful SIP call.

```
Wed May 13 18:26:34 2009
  Acct-Status-Type = Start
  NAS-IP-Address = 127.0.0.100
  NAS-Port = 5060
  Acct-Session-Id = "SDgtu4401-c587a3aba59dcae68ec76cb5e2c6fe6f-v3000i1"
  Acme-Session-Ingress-CallId = "8EDDDC21D3EC4A218FF41982146844310xac1ec85d"
  Acme-Session-Egress-CallId = "SDgtu4401-c587a3aba59dcae68ec76cb5e2c6fe6f-v3000i1"
  Acme-Session-Protocol-Type = "SIP"
  Calling-Station-Id = ""9998776565"
  <si p: 9998776565@10.10.170.2:5060>; tag=2ed75b8317f"
  Called-Station-Id = "<si p: 7143221099@10.10.170.2:5060>"
  h323-setup-time = "18:24:36.966 UTC MAY 13 2009"
```

```

h323-connect-time = "18: 24: 37.483 UTC MAY 13 2009"
Acme-Session-Egress-Realm = "peer"
Acme-Session-Ingress-Realm = "core"
Acme-FlowID_FS1_F = "Local host: 65544"
Acme-FlowType_FS1_F = "PCMA"
Acme-Flow-In-Realm_FS1_F = "core"
Acme-Flow-In-Src-Addr_FS1_F = 0.0.0.0
Acme-Flow-In-Src-Port_FS1_F = 0
Acme-Flow-In-Dst-Addr_FS1_F = 10.10.170.2
Acme-Flow-In-Dst-Port_FS1_F = 31008
Acme-Flow-Out-Realm_FS1_F = "peer"
Acme-Flow-Out-Src-Addr_FS1_F = 10.10.130.2
Acme-Flow-Out-Src-Port_FS1_F = 21008
Acme-Flow-Out-Dst-Addr_FS1_F = 10.10.130.15
Acme-Flow-Out-Dst-Port_FS1_F = 5062
Acme-FlowID_FS1_R = "Local host: 65545"
Acme-FlowType_FS1_R = "PCMA"
Acme-Flow-In-Realm_FS1_R = "peer"
Acme-Flow-In-Src-Addr_FS1_R = 0.0.0.0
Acme-Flow-In-Src-Port_FS1_R = 0
Acme-Flow-In-Dst-Addr_FS1_R = 10.10.130.2
Acme-Flow-In-Dst-Port_FS1_R = 21008
Acme-Flow-Out-Realm_FS1_R = "core"
Acme-Flow-Out-Src-Addr_FS1_R = 10.10.170.2
Acme-Flow-Out-Src-Port_FS1_R = 31008
Acme-Flow-Out-Dst-Addr_FS1_R = 10.10.170.15
Acme-Flow-Out-Dst-Port_FS1_R = 49156
Acme-Firmware-Version = "D7.0.0"
Acme-Local-Time-Zone = "Time Zone Not Set"
Acme-Post-Dial-Delay = 110
Acme-Primary-Routing-Number =
"si p: 7143221099@10.10.170.2: 5060"
Acme-Ingress-Local-Addr = "10.10.170.2: 5060"
Acme-Ingress-Remote-Addr = "10.10.170.15: 5060"
Acme-Egress-Local-Addr = "10.10.130.2: 5060"
Acme-Egress-Remote-Addr = "10.10.130.15: 5060"
Acme-Egress-Final-Routing-Number =
"si p: 7143221099@10.10.130.15: 5060"
Acme-CDR-Sequence-Number = 13
Client-IP-Address = 172.30.20.150
Acct-Unique-Session-Id = "0832b03cd3a290b3"
Timestamp = 1181773594

```

Wed May 13 18:26:42 2009

```

Acct-Status-Type = Stop
NAS-IP-Address = 127.0.0.100
NAS-Port = 5060

```

Acct-Session-Id = "SDgtu4401-c587a3aba59dcae68ec76cb5e2c6fe6f-v3000i 1"  
 Acme-Session-Ingress-CallId = "8EDDDC21D3EC4A218FF41982146844310xac1ec85d"  
 Acme-Session-Egress-CallId = "SDgtu4401-c587a3aba59dcae68ec76cb5e2c6fe6f-v3000i 1"  
 Acme-Session-Protocol-Type = "SIP"  
 Calling-Station-Id = ""9998776565"  
 <si p: 9998776565@10. 10. 170. 2: 5060>; tag=2ed75b8317f"  
 Called-Station-Id = "<si p: 7143221099@10. 10. 170. 2: 5060>"  
 Acct-Terminate-Cause = User-Request  
 Acct-Session-Time = 7  
 h323-setup-time = "18: 24: 36. 966 UTC MAY 13 2009"  
 h323-connect-time = "18: 24: 37. 483 UTC MAY 13 2009"  
 h323-disconnect-time = "18: 24: 44. 818 UTC MAY 13 2009"  
 h323-disconnect-cause = "1"  
 Acme-Session-Egress-Realm = "peer"  
 Acme-Session-Ingress-Realm = "core"  
 Acme-FlowID\_FS1\_F = "Local host: 65544"  
 Acme-FlowType\_FS1\_F = "PCMA"  
 Acme-Flow-In-Realm\_FS1\_F = "core"  
 Acme-Flow-In-Src-Addr\_FS1\_F = 10. 10. 170. 15  
 Acme-Flow-In-Src-Port\_FS1\_F = 49156  
 Acme-Flow-In-Dst-Addr\_FS1\_F = 10. 10. 170. 2  
 Acme-Flow-In-Dst-Port\_FS1\_F = 31008  
 Acme-Flow-Out-Realm\_FS1\_F = "peer"  
 Acme-Flow-Out-Src-Addr\_FS1\_F = 10. 10. 130. 2  
 Acme-Flow-Out-Src-Port\_FS1\_F = 21008  
 Acme-Flow-Out-Dst-Addr\_FS1\_F = 10. 10. 130. 15  
 Acme-Flow-Out-Dst-Port\_FS1\_F = 5062  
 Acme-Calling-RTCP-Packets-Lost\_FS1 = 0  
 Acme-Calling-RTCP-Avg-Jitter\_FS1 = 0  
 Acme-Calling-RTCP-Avg-Latency\_FS1 = 0  
 Acme-Calling-RTCP-MaxJitter\_FS1 = 0  
 Acme-Calling-RTCP-MaxLatency\_FS1 = 0  
 Acme-Calling-RTP-Packets-Lost\_FS1 = 0  
 Acme-Calling-RTP-Avg-Jitter\_FS1 = 3  
 Acme-Calling-RTP-MaxJitter\_FS1 = 0  
 Acme-Calling-Octets\_FS1 = 957  
 Acme-Calling-Packets\_FS1 = 11  
 Acme-FlowID\_FS1\_R = "Local host: 65545"  
 Acme-FlowType\_FS1\_R = "PCMA"  
 Acme-Flow-In-Realm\_FS1\_R = "peer"  
 Acme-Flow-In-Src-Addr\_FS1\_R = 10. 10. 130. 15  
 Acme-Flow-In-Src-Port\_FS1\_R = 5062  
 Acme-Flow-In-Dst-Addr\_FS1\_R = 10. 10. 130. 2  
 Acme-Flow-In-Dst-Port\_FS1\_R = 21008  
 Acme-Flow-Out-Realm\_FS1\_R = "core"

```

Acme-Flow-Out-Src-Addr_FS1_R = 10.10.170.2
Acme-Flow-Out-Src-Port_FS1_R = 31008
Acme-Flow-Out-Dst-Addr_FS1_R = 10.10.170.15
Acme-Flow-Out-Dst-Port_FS1_R = 49156
Acme-Called-RTCP-Packets-Lost_FS1 = 0
Acme-Called-RTCP-Avg-Jitter_FS1 = 1369
Acme-Called-RTCP-Avg-Latency_FS1 = 0
Acme-Called-RTCP-MaxJitter_FS1 = 2031
Acme-Called-RTCP-MaxLatency_FS1 = 0
Acme-Called-RTP-Packets-Lost_FS1 = 0
Acme-Called-RTP-Avg-Jitter_FS1 = 0
Acme-Called-RTP-MaxJitter_FS1 = 3
Acme-Called-Octets_FS1 = 77892
Acme-Called-Packets_FS1 = 361
Acme-Firmware-Version = "D7.0.0"
Acme-Local-Time-Zone = "Time Zone Not Set"
Acme-Post-Dial-Delay = 110
Acme-Primary-Routing-Number =
"sip:7143221099@10.10.170.2:5060"
Acme-Ingress-Local-Addr = "10.10.170.2:5060"
Acme-Ingress-Remote-Addr = "10.10.170.15:5060"
Acme-Egress-Local-Addr = "10.10.130.2:5060"
Acme-Egress-Remote-Addr = "10.10.130.15:5060"
Acme-Session-Disposition = 3
Acme-Disconnect-Initiator = 2
Acme-Disconnect-Cause = 16
Acme-SIP-Status = 200
Acme-Egress-Final-Routing-Number =
"sip:7143221099@10.10.130.15:5060"
Acme-CDR-Sequence-Number = 14
Client-IP-Address = 172.30.20.150
Acct-Unique-Session-Id = "0832b03cd3a290b3"
Timestamp = 1181773602

```

**Unsuccessful SIP Call**

The following sample CDRs are for an unsuccessful SIP call.

Tue May 29 15:19:36 2009

```

NAS-Identifier = "acme"
Acct-Status-Type = Stop
NAS-IP-Address = 127.0.0.100
NAS-Port = 5060
Acct-Session-Id = "SDnhtv201-
d75375c7948c975fc2524a65507b01a5-v3000i1"
Acme-Session-Ingress-CallId =
"OTFkN2Y2NzUwYzFmMmNiYWYxNDkONzFjNThkZTZiYzY."
Acme-Session-Egress-CallId = "SDnhtv201-
d75375c7948c975fc2524a65507b01a5-v3000i1"
Acme-Session-Protocol-Type = "SIP"

```

```

Calling-Station-Id =
""8543221049"<si p: 8543221049@10. 10. 130. 2>; tag=a548ca3f"
Called-Station-Id =
""1121134786"<si p: 1121134786@10. 10. 130. 2>"
Acct-Terminate-Cause = User-Error
Acct-Session-Time = 0
h323-setup-time = "19: 23: 33. 839 UTC MAY 29 2009"
h323-disconnect-time = "19: 23: 33. 891 UTC MAY 29 2009"
h323-disconnect-cause = "3"
Acme-Session-Egress-Realm = "core"
Acme-Session-Ingress-Realm = "peer"
Acme-Firmware-Version = "D7. 0. 0"
Acme-Local-Time-Zone = "Time Zone Not Set"
Acme-Post-Dial-Delay = 0
Acme-Primary-Routing-Number =
"si p: 1121134786@10. 10. 130. 2"
Acme-Ingress-Local-Addr = "10. 10. 130. 2: 5060"
Acme-Ingress-Remote-Addr = "10. 10. 130. 15: 5060"
Acme-Egress-Local-Addr = "10. 10. 170. 2: 5060"
Acme-Egress-Remote-Addr = "10. 10. 170. 15: 5060"
Acme-Session-Disposition = 1
Acme-Disconnect-Initiator = 2
Acme-Disconnect-Cause = 17
Acme-SIP-Status = 486
Acme-Egress-Final-Routing-Number =
"si p: 1121134786@10. 10. 170. 15"
Acme-CDR-Sequence-Number = 229
Client-IP-Address = 172. 30. 20. 110
Acct-Unique-Session-Id = "c09ea1dce82bea90"
Timestamp = 1180466376

```

## SIP Call On Hold

The following sample CDRs are for SIP call on hold.

Tue May 29 15: 47: 23 2009

```

NAS-Identifier = "acme"
Acct-Status-Type = Start
NAS-IP-Address = 127. 0. 0. 100
NAS-Port = 5060
Acct-Session-Id = "SD1uarb01-
e3d56c8c9dc8487e7a8e0ed29753168c-v3000i 1"
Acme-Session-Ingress-CallId =
"YTVj Yzk3Nj czY2VkMj k1NTU2ZDMzOTUwMj cOMj Zi YmY. "
Acme-Session-Egress-CallId = "SD1uarb01-
e3d56c8c9dc8487e7a8e0ed29753168c-v3000i 1"
Acme-Session-Protocol-Type = "SIP"
Calling-Station-Id =
""8543221049"<si p: 8543221049@10. 10. 130. 2>; tag=5f18a232"
Called-Station-Id =
""8543221666"<si p: 8543221666@10. 10. 130. 2>"
h323-setup-time = "19: 51: 18. 022 UTC MAY 29 2009"

```

```

h323-connect-time = "19: 51: 20.747 UTC MAY 29 2009"
Acme-Session-Egress-Realm = "core"
Acme-Session-Ingress-Realm = "peer"
Acme-FlowID_FS1_F = "localhost: 65700"
Acme-FlowType_FS1_F = "PCMA"
Acme-Flow-In-Realm_FS1_F = "peer"
Acme-Flow-In-Src-Addr_FS1_F = 0.0.0.0
Acme-Flow-In-Src-Port_FS1_F = 0
Acme-Flow-In-Dst-Addr_FS1_F = 10.10.130.2
Acme-Flow-In-Dst-Port_FS1_F = 21164
Acme-Flow-Out-Realm_FS1_F = "core"
Acme-Flow-Out-Src-Addr_FS1_F = 10.10.170.2
Acme-Flow-Out-Src-Port_FS1_F = 31164
Acme-Flow-Out-Dst-Addr_FS1_F = 10.10.170.15
Acme-Flow-Out-Dst-Port_FS1_F = 49152
Acme-FlowID_FS1_R = "localhost: 65701"
Acme-FlowType_FS1_R = "PCMA"
Acme-Flow-In-Realm_FS1_R = "core"
Acme-Flow-In-Src-Addr_FS1_R = 0.0.0.0
Acme-Flow-In-Src-Port_FS1_R = 0
Acme-Flow-In-Dst-Addr_FS1_R = 10.10.170.2
Acme-Flow-In-Dst-Port_FS1_R = 31164
Acme-Flow-Out-Realm_FS1_R = "peer"
Acme-Flow-Out-Src-Addr_FS1_R = 10.10.130.2
Acme-Flow-Out-Src-Port_FS1_R = 21164
Acme-Flow-Out-Dst-Addr_FS1_R = 10.10.130.15
Acme-Flow-Out-Dst-Port_FS1_R = 5062
Acme-Firmware-Version = "D7.0.0"
Acme-Local-Time-Zone = "Time Zone Not Set"
Acme-Post-Dial-Delay = 315
Acme-Primary-Routing-Number =
"si p: 8543221666@10.10.130.2"
Acme-Ingress-Local-Addr = "10.10.130.2: 5060"
Acme-Ingress-Remote-Addr = "10.10.130.15: 5060"
Acme-Egress-Local-Addr = "10.10.170.2: 5060"
Acme-Egress-Remote-Addr = "10.10.170.15: 5060"
Acme-Egress-Final-Routing-Number =
"si p: 8543221666@10.10.170.15"
Acme-CDR-Sequence-Number = 290
Client-IP-Address = 172.30.20.110
Acct-Unique-Session-Id = "aa2d2764581a19bd"
Timestamp = 1180468043

```

Tue May 29 15: 47: 24 2009

```

NAS-Identifier = "acme"
Acct-Status-Type = Interim-Update
NAS-IP-Address = 127.0.0.100

```



```

NAS-Port = 5060
Acct-Session-Id = "SD1uarb01-
e3d56c8c9dc8487e7a8e0ed29753168c-v3000i 1"
Acme-Session-Ingress-CallId =
"YTVj Yzk3Nj czy2VKmj k1NTU2ZDMz0TUwMj c0Mj Zi YmY. "
Acme-Session-Egress-CallId = "SD1uarb01-
e3d56c8c9dc8487e7a8e0ed29753168c-v3000i 1"
Acme-Session-Protocol-Type = "SIP"
Calling-Station-Id =
""8543221049"<sip: 8543221049@10. 10. 130. 2>; tag=5f18a232"
Called-Station-Id =
""8543221666"<sip: 8543221666@10. 10. 130. 2>"
h323-setup-time = "19: 51: 18. 022 UTC MAY 29 2009"
h323-connect-time = "19: 51: 20. 747 UTC MAY 29 2009"
Acme-Session-Egress-Realm = "core"
Acme-Session-Ingress-Realm = "peer"
Acme-FlowID_FS1_F = "Local host: 65700"
Acme-FlowType_FS1_F = "PCMA"
Acme-FlowIn-Realm_FS1_F = "peer"
Acme-FlowIn-Src-Addr_FS1_F = 0. 0. 0. 0
Acme-FlowIn-Src-Port_FS1_F = 0
Acme-FlowIn-Dst-Addr_FS1_F = 10. 10. 130. 2
Acme-FlowIn-Dst-Port_FS1_F = 21164
Acme-Flow-Out-Realm_FS1_F = "core"
Acme-Flow-Out-Src-Addr_FS1_F = 10. 10. 170. 2
Acme-Flow-Out-Src-Port_FS1_F = 31164
Acme-Flow-Out-Dst-Addr_FS1_F = 10. 10. 170. 15
Acme-Flow-Out-Dst-Port_FS1_F = 49152
Acme-Calling-RTCP-Packets-Lost_FS1 = 0
Acme-Calling-RTCP-Avg-Jitter_FS1 = 0
Acme-Calling-RTCP-Avg-Latency_FS1 = 0
Acme-Calling-RTCP-MaxJitter_FS1 = 0
Acme-Calling-RTCP-MaxLatency_FS1 = 0
Acme-Calling-RTP-Packets-Lost_FS1 = 0
Acme-Calling-RTP-Avg-Jitter_FS1 = 0
Acme-Calling-RTP-MaxJitter_FS1 = 0
Acme-Calling-Octets_FS1 = 0
Acme-Calling-Packets_FS1 = 0
Acme-FlowID_FS1_R = "Local host: 65701"
Acme-FlowType_FS1_R = "PCMA"
Acme-FlowIn-Realm_FS1_R = "core"
Acme-FlowIn-Src-Addr_FS1_R = 0. 0. 0. 0
Acme-FlowIn-Src-Port_FS1_R = 0
Acme-FlowIn-Dst-Addr_FS1_R = 10. 10. 170. 2
Acme-FlowIn-Dst-Port_FS1_R = 31164
Acme-Flow-Out-Realm_FS1_R = "peer"
Acme-Flow-Out-Src-Addr_FS1_R = 10. 10. 130. 2
Acme-Flow-Out-Src-Port_FS1_R = 21164

```

Acme-Flow-Out-Dst-Addr\_FS1\_R = 10.10.130.15  
 Acme-Flow-Out-Dst-Port\_FS1\_R = 5062  
 Acme-Called-RTCP-Packets-Lost\_FS1 = 0  
 Acme-Called-RTCP-Avg-Jitter\_FS1 = 0  
 Acme-Called-RTCP-Avg-Latency\_FS1 = 0  
 Acme-Called-RTCP-MaxJitter\_FS1 = 0  
 Acme-Called-RTCP-MaxLatency\_FS1 = 0  
 Acme-Called-RTP-Packets-Lost\_FS1 = 0  
 Acme-Called-RTP-Avg-Jitter\_FS1 = 0  
 Acme-Called-RTP-MaxJitter\_FS1 = 0  
 Acme-Called-Octets\_FS1 = 0  
 Acme-Called-Packets\_FS1 = 0  
 Acme-Firmware-Version = "D7.0.0"  
 Acme-Local-Time-Zone = "Time Zone Not Set"  
 Acme-Post-Dial-Delay = 315  
 Acme-Primary-Routing-Number =  
 "sip:8543221666@10.10.130.2"  
 Acme-Ingress-Local-Addr = "10.10.130.2:5060"  
 Acme-Ingress-Remote-Addr = "10.10.130.15:5060"  
 Acme-Egress-Local-Addr = "10.10.170.2:5060"  
 Acme-Egress-Remote-Addr = "10.10.170.15:5060"  
 Acme-Intermediate-Time = "00:00:00.000 UTC JAN 01 1970"  
 Acme-Egress-Final-Routing-Number =  
 "sip:8543221666@10.10.170.15"  
 Acme-CDR-Sequence-Number = 291  
 Client-IP-Address = 172.30.20.110  
 Acct-Unique-Session-Id = "aa2d2764581a19bd"  
 Timestamp = 1180468044

Tue May 29 15:47:24 2009

NAS-Identifier = "acme"  
 Acct-Status-Type = Interim-Update  
 NAS-IP-Address = 127.0.0.100  
 NAS-Port = 5060  
 Acct-Session-Id = "SD1uarb01-e3d56c8c9dc8487e7a8e0ed29753168c-v3000i1"  
 Acme-Session-Ingress-CallId =  
 "YTVjYzk3NjczY2VkMjk1NTU2ZDMzOTUwMjc0MjZiYmY. "  
 Acme-Session-Egress-CallId = "SD1uarb01-e3d56c8c9dc8487e7a8e0ed29753168c-v3000i1"  
 Acme-Session-Protocol-Type = "SIP"  
 Calling-Station-Id =  
 ""8543221049"<sip:8543221049@10.10.130.2>;tag=5f18a232"  
 Called-Station-Id =  
 ""8543221666"<sip:8543221666@10.10.130.2>"  
 h323-setup-time = "19:51:18.022 UTC MAY 29 2009"  
 h323-connect-time = "19:51:20.747 UTC MAY 29 2009"  
 Acme-Session-Egress-Realm = "core"  
 Acme-Session-Ingress-Realm = "peer"

Acme-FlowID\_FS1\_F = "local host: 65700"  
Acme-FlowType\_FS1\_F = "PCMA"  
Acme-FlowIn-Realm\_FS1\_F = "peer"  
Acme-FlowIn-Src-Addr\_FS1\_F = 0.0.0.0  
Acme-FlowIn-Src-Port\_FS1\_F = 0  
Acme-FlowIn-Dst-Addr\_FS1\_F = 10.10.130.2  
Acme-FlowIn-Dst-Port\_FS1\_F = 21164  
Acme-Flow-Out-Realm\_FS1\_F = "core"  
Acme-Flow-Out-Src-Addr\_FS1\_F = 10.10.170.2  
Acme-Flow-Out-Src-Port\_FS1\_F = 31164  
Acme-Flow-Out-Dst-Addr\_FS1\_F = 10.10.170.15  
Acme-Flow-Out-Dst-Port\_FS1\_F = 0  
Acme-Calling-RTCP-Packets-Lost\_FS1 = 0  
Acme-Calling-RTCP-Avg-Jitter\_FS1 = 0  
Acme-Calling-RTCP-Avg-Latency\_FS1 = 0  
Acme-Calling-RTCP-MaxJitter\_FS1 = 0  
Acme-Calling-RTCP-MaxLatency\_FS1 = 0  
Acme-Calling-RTP-Packets-Lost\_FS1 = 0  
Acme-Calling-RTP-Avg-Jitter\_FS1 = 0  
Acme-Calling-RTP-MaxJitter\_FS1 = 0  
Acme-Calling-Octets\_FS1 = 0  
Acme-Calling-Packets\_FS1 = 0  
Acme-FlowID\_FS1\_R = "local host: 65701"  
Acme-FlowType\_FS1\_R = "PCMA"  
Acme-FlowIn-Realm\_FS1\_R = "core"  
Acme-FlowIn-Src-Addr\_FS1\_R = 0.0.0.0  
Acme-FlowIn-Src-Port\_FS1\_R = 0  
Acme-FlowIn-Dst-Addr\_FS1\_R = 10.10.170.2  
Acme-FlowIn-Dst-Port\_FS1\_R = 31164  
Acme-Flow-Out-Realm\_FS1\_R = "peer"  
Acme-Flow-Out-Src-Addr\_FS1\_R = 10.10.130.2  
Acme-Flow-Out-Src-Port\_FS1\_R = 21164  
Acme-Flow-Out-Dst-Addr\_FS1\_R = 10.10.130.15  
Acme-Flow-Out-Dst-Port\_FS1\_R = 5062  
Acme-Called-RTCP-Packets-Lost\_FS1 = 0  
Acme-Called-RTCP-Avg-Jitter\_FS1 = 0  
Acme-Called-RTCP-Avg-Latency\_FS1 = 0  
Acme-Called-RTCP-MaxJitter\_FS1 = 0  
Acme-Called-RTCP-MaxLatency\_FS1 = 0  
Acme-Called-RTP-Packets-Lost\_FS1 = 0  
Acme-Called-RTP-Avg-Jitter\_FS1 = 0  
Acme-Called-RTP-MaxJitter\_FS1 = 0  
Acme-Called-Octets\_FS1 = 0  
Acme-Called-Packets\_FS1 = 0  
Acme-Firmware-Version = "D7.0.0"  
Acme-Local-Time-Zone = "Time Zone Not Set"

Acme-Post-Dial-Delay = 315  
 Acme-Primary-Routing-Number = "sip: 8543221666@10.10.130.2"  
 Acme-Ingress-Local-Addr = "10.10.130.2:5060"  
 Acme-Ingress-Remote-Addr = "10.10.130.15:5060"  
 Acme-Egress-Local-Addr = "10.10.130.2:5060"  
 Acme-Egress-Remote-Addr = "10.10.130.15:5060"  
 Acme-Intermediate-Time = "00:00:00.000 UTC JAN 01 1970"  
 Acme-Egress-Final-Routing-Number =  
 "sip: 8543221666@10.10.170.15"  
 Acme-CDR-Sequence-Number = 292  
 Client-IP-Address = 172.30.20.110  
 Acct-Unique-Session-Id = "aa2d2764581a19bd"  
 Timestamp = 1180468044

Tue May 29 15:47:28 2009

NAS-Identifier = "acme"  
 Acct-Status-Type = Interim-Update  
 NAS-IP-Address = 127.0.0.100  
 NAS-Port = 5060  
 Acct-Session-Id = "SD1uarb01-e3d56c8c9dc8487e7a8e0ed29753168c-v3000i1"  
 Acme-Session-Ingress-CallId =  
 "YTVj Yzk3Nj czY2Vkmj k1NTU2ZDMzOTUwMj cOMj Zi YmY. "  
 Acme-Session-Egress-CallId = "SD1uarb01-e3d56c8c9dc8487e7a8e0ed29753168c-v3000i1"  
 Acme-Session-Protocol-Type = "SIP"  
 Calling-Station-Id =  
 ""8543221049" <sip: 8543221049@10.10.130.2>; tag=5f18a232"  
 Called-Station-Id =  
 ""8543221666" <sip: 8543221666@10.10.130.2>"  
 h323-setup-time = "19:51:18.022 UTC MAY 29 2009"  
 h323-connect-time = "19:51:20.747 UTC MAY 29 2009"  
 Acme-Session-Egress-Realm = "core"  
 Acme-Session-Ingress-Realm = "peer"  
 Acme-FlowID\_FS1\_F = "local host: 65700"  
 Acme-FlowType\_FS1\_F = "PCMA"  
 Acme-Flow-In-Realm\_FS1\_F = "peer"  
 Acme-Flow-In-Src-Addr\_FS1\_F = 0.0.0.0  
 Acme-Flow-In-Src-Port\_FS1\_F = 0  
 Acme-Flow-In-Dst-Addr\_FS1\_F = 10.10.130.2  
 Acme-Flow-In-Dst-Port\_FS1\_F = 21164  
 Acme-Flow-Out-Realm\_FS1\_F = "core"  
 Acme-Flow-Out-Src-Addr\_FS1\_F = 10.10.170.2  
 Acme-Flow-Out-Src-Port\_FS1\_F = 31164  
 Acme-Flow-Out-Dst-Addr\_FS1\_F = 10.10.170.15  
 Acme-Flow-Out-Dst-Port\_FS1\_F = 0  
 Acme-Calling-RTCP-Packets-Lost\_FS1 = 0  
 Acme-Calling-RTCP-Avg-Jitter\_FS1 = 0

```

Acme-Calling-RTCP-Avg-Latency_FS1 = 0
Acme-Calling-RTCP-MaxJitter_FS1 = 0
Acme-Calling-RTCP-MaxLatency_FS1 = 0
Acme-Calling-RTP-Packets-Lost_FS1 = 0
Acme-Calling-RTP-Avg-Jitter_FS1 = 0
Acme-Calling-RTP-MaxJitter_FS1 = 0
Acme-Calling-Octets_FS1 = 0
Acme-Calling-Packets_FS1 = 0
Acme-FlowID_FS1_R = "local host: 65701"
Acme-FlowType_FS1_R = "PCMA"
Acme-Flow-In-Realm_FS1_R = "core"
Acme-Flow-In-Src-Addr_FS1_R = 0.0.0.0
Acme-Flow-In-Src-Port_FS1_R = 0
Acme-Flow-In-Dst-Addr_FS1_R = 10.10.170.2
Acme-Flow-In-Dst-Port_FS1_R = 31164
Acme-Flow-Out-Realm_FS1_R = "peer"
Acme-Flow-Out-Src-Addr_FS1_R = 10.10.130.2
Acme-Flow-Out-Src-Port_FS1_R = 21164
Acme-Flow-Out-Dst-Addr_FS1_R = 10.10.130.15
Acme-Flow-Out-Dst-Port_FS1_R = 5062
Acme-Called-RTCP-Packets-Lost_FS1 = 0
Acme-Called-RTCP-Avg-Jitter_FS1 = 0
Acme-Called-RTCP-Avg-Latency_FS1 = 0
Acme-Called-RTCP-MaxJitter_FS1 = 0
Acme-Called-RTCP-MaxLatency_FS1 = 0
Acme-Called-RTP-Packets-Lost_FS1 = 0
Acme-Called-RTP-Avg-Jitter_FS1 = 0
Acme-Called-RTP-MaxJitter_FS1 = 0
Acme-Called-Octets_FS1 = 0
Acme-Called-Packets_FS1 = 0
Acme-Firmware-Version = "D7.0.0"
Acme-Local-Time-Zone = "Time Zone Not Set"
Acme-Post-Dial-Delay = 315
Acme-Primary-Routing-Number = "sip:8543221666@10.10.130.2"
Acme-Ingress-Local-Addr = "10.10.130.2:5060"
Acme-Ingress-Remote-Addr = "10.10.130.15:5060"
Acme-Egress-Local-Addr = "10.10.130.2:5060"
Acme-Egress-Remote-Addr = "10.10.130.15:5060"
Acme-Intermediary-Time = "00:00:00.000 UTC JAN 01 1970"
Acme-Egress-Final-Routing-Number =
"sip:8543221666@10.10.170.15"
Acme-CDR-Sequence-Number = 293
Client-IP-Address = 172.30.20.110
Acct-Unique-Session-Id = "aa2d2764581a19bd"
Timestamp = 1180468048

```

Tue May 29 15:47:28 2009

```

NAS-Identifi er = "acme"
Acct-Status-Type = Interim-Update
NAS-IP-Address = 127.0.0.100
NAS-Port = 5060
Acct-Sessi on-Id = "SD1uarb01-
e3d56c8c9dc8487e7a8e0ed29753168c-v3000i 1"
Acme-Sessi on-I ngress-Cal l Id =
"YTVj Yzk3Nj czY2VkMj k1NTU2ZDMzOTUwMj cOMj Zi YmY. "
Acme-Sessi on-Egress-Cal l Id = "SD1uarb01-
e3d56c8c9dc8487e7a8e0ed29753168c-v3000i 1"
Acme-Sessi on-Protocol -Type = "SIP"
Cal l ing-Station-Id =
""8543221049"<si p: 8543221049@10. 10. 130. 2>; tag=5f18a232"
Cal led-Station-Id =
""8543221666"<si p: 8543221666@10. 10. 130. 2>"
h323-setup-time = "19: 51: 18. 022 UTC MAY 29 2009"
h323-connect-time = "19: 51: 20. 747 UTC MAY 29 2009"
Acme-Sessi on-Egress-Real m = "core"
Acme-Sessi on-I ngress-Real m = "peer"
Acme-FI owl D_FS1_F = "l ocal host: 65700"
Acme-FI owType_FS1_F = "PCMA"
Acme-FI ow-I n-Real m_FS1_F = "peer"
Acme-FI ow-I n-Src-Addr_FS1_F = 0. 0. 0. 0
Acme-FI ow-I n-Src-Port_FS1_F = 0
Acme-FI ow-I n-Dst-Addr_FS1_F = 10. 10. 130. 2
Acme-FI ow-I n-Dst-Port_FS1_F = 21164
Acme-FI ow-Out-Real m_FS1_F = "core"
Acme-FI ow-Out-Src-Addr_FS1_F = 10. 10. 170. 2
Acme-FI ow-Out-Src-Port_FS1_F = 31164
Acme-FI ow-Out-Dst-Addr_FS1_F = 10. 10. 170. 15
Acme-FI ow-Out-Dst-Port_FS1_F = 49152
Acme-Cal l i ng-RTCP-Packets-Lost_FS1 = 0
Acme-Cal l i ng-RTCP-Avg-Ji tter_FS1 = 0
Acme-Cal l i ng-RTCP-Avg-Latency_FS1 = 0
Acme-Cal l i ng-RTCP-MaxJi tter_FS1 = 0
Acme-Cal l i ng-RTCP-MaxLatency_FS1 = 0
Acme-Cal l i ng-RTP-Packets-Lost_FS1 = 0
Acme-Cal l i ng-RTP-Avg-Ji tter_FS1 = 0
Acme-Cal l i ng-RTP-MaxJi tter_FS1 = 0
Acme-Cal l i ng-Octets_FS1 = 0
Acme-Cal l i ng-Packets_FS1 = 0
Acme-FI owl D_FS1_R = "l ocal host: 65701"
Acme-FI owType_FS1_R = "PCMA"
Acme-FI ow-I n-Real m_FS1_R = "core"
Acme-FI ow-I n-Src-Addr_FS1_R = 0. 0. 0. 0
Acme-FI ow-I n-Src-Port_FS1_R = 0
Acme-FI ow-I n-Dst-Addr_FS1_R = 10. 10. 170. 2
Acme-FI ow-I n-Dst-Port_FS1_R = 31164

```

```

Acme-Flow-Out-Realm_FS1_R = "peer"
Acme-Flow-Out-Src-Addr_FS1_R = 10. 10. 130. 2
Acme-Flow-Out-Src-Port_FS1_R = 21164
Acme-Flow-Out-Dst-Addr_FS1_R = 10. 10. 130. 15
Acme-Flow-Out-Dst-Port_FS1_R = 5062
Acme-Called-RTCP-Packets-Lost_FS1 = 0
Acme-Called-RTCP-Avg-Jitter_FS1 = 0
Acme-Called-RTCP-Avg-Latency_FS1 = 0
Acme-Called-RTCP-MaxJitter_FS1 = 0
Acme-Called-RTCP-MaxLatency_FS1 = 0
Acme-Called-RTP-Packets-Lost_FS1 = 0
Acme-Called-RTP-Avg-Jitter_FS1 = 0
Acme-Called-RTP-MaxJitter_FS1 = 0
Acme-Called-Octets_FS1 = 0
Acme-Called-Packets_FS1 = 0
Acme-Firmware-Version = "D7. 0. 0"
Acme-Local-Time-Zone = "Time Zone Not Set"
Acme-Post-Dial-Delay = 315
Acme-Primary-Routing-Number = "sip: 8543221666@10. 10. 130. 2"
Acme-Ingress-Local-Addr = "10. 10. 130. 2: 5060"
Acme-Ingress-Remote-Addr = "10. 10. 130. 15: 5060"
Acme-Egress-Local-Addr = "10. 10. 130. 2: 5060"
Acme-Egress-Remote-Addr = "10. 10. 130. 15: 5060"
Acme-Intermediat e_Ti me = "00: 00: 00. 000 UTC JAN 01 1970"
Acme-Egress-Final-Routing-Number =
"sip: 8543221666@10. 10. 170. 15"
Acme-CDR-Sequence-Number = 294
Client-IP-Address = 172. 30. 20. 110
Acct-Unique-Session-Id = "aa2d2764581a19bd"
Timestamp = 1180468048

```

Tue May 29 15: 47: 31 2009

```

NAS-Identifier = "acme"
Acct-Status-Type = Stop
NAS-IP-Address = 127. 0. 0. 100
NAS-Port = 5060
Acct-Session-Id = "SD1uarb01-
e3d56c8c9dc8487e7a8e0ed29753168c-v3000i 1"
Acme-Session-Ingress-Call Id =
"YTVj Yzk3Nj czY2VkMj k1NTU2ZDMzOTUwMj c0Mj Zi YmY. "
Acme-Session-Egress-Call Id = "SD1uarb01-
e3d56c8c9dc8487e7a8e0ed29753168c-v3000i 1"
Acme-Session-Protocol-Type = "SIP"
Calling-Station-Id =
""8543221049" < sip: 8543221049@10. 10. 130. 2>; tag=5f18a232"
Called-Station-Id =
""8543221666" < sip: 8543221666@10. 10. 130. 2>"
Acct-Terminate-Cause = User-Request

```

```

Acct-Session-Time = 8
h323-setup-time = "19:51:18.022 UTC MAY 29 2009"
h323-connect-time = "19:51:20.747 UTC MAY 29 2009"
h323-disconnect-time = "19:51:28.898 UTC MAY 29 2009"
h323-disconnect-cause = "1"
Acme-Session-Egress-Realm = "core"
Acme-Session-Ingress-Realm = "peer"
Acme-FlowID_FS1_F = "local host: 65700"
Acme-FlowType_FS1_F = "PCMA"
Acme-Flow-In-Realm_FS1_F = "peer"
Acme-Flow-In-Src-Addr_FS1_F = 0.0.0.0
Acme-Flow-In-Src-Port_FS1_F = 0
Acme-Flow-In-Dst-Addr_FS1_F = 10.10.130.2
Acme-Flow-In-Dst-Port_FS1_F = 21164
Acme-Flow-Out-Realm_FS1_F = "core"
Acme-Flow-Out-Src-Addr_FS1_F = 10.10.170.2
Acme-Flow-Out-Src-Port_FS1_F = 31164
Acme-Flow-Out-Dst-Addr_FS1_F = 10.10.170.15
Acme-Flow-Out-Dst-Port_FS1_F = 49152
Acme-Calling-RTCP-Packets-Lost_FS1 = 6
Acme-Calling-RTCP-Avg-Jitter_FS1 = 15
Acme-Calling-RTCP-Avg-Latency_FS1 = 0
Acme-Calling-RTCP-MaxJitter_FS1 = 15
Acme-Calling-RTCP-MaxLatency_FS1 = 0
Acme-Calling-RTP-Packets-Lost_FS1 = 0
Acme-Calling-RTP-Avg-Jitter_FS1 = 0
Acme-Calling-RTP-MaxJitter_FS1 = 4
Acme-Calling-Octets_FS1 = 45106
Acme-Calling-Packets_FS1 = 208
Acme-FlowID_FS1_R = "local host: 65701"
Acme-FlowType_FS1_R = "PCMA"
Acme-Flow-In-Realm_FS1_R = "core"
Acme-Flow-In-Src-Addr_FS1_R = 0.0.0.0
Acme-Flow-In-Src-Port_FS1_R = 0
Acme-Flow-In-Dst-Addr_FS1_R = 10.10.170.2
Acme-Flow-In-Dst-Port_FS1_R = 31164
Acme-Flow-Out-Realm_FS1_R = "peer"
Acme-Flow-Out-Src-Addr_FS1_R = 10.10.130.2
Acme-Flow-Out-Src-Port_FS1_R = 21164
Acme-Flow-Out-Dst-Addr_FS1_R = 10.10.130.15
Acme-Flow-Out-Dst-Port_FS1_R = 5062
Acme-Called-RTCP-Packets-Lost_FS1 = 0
Acme-Called-RTCP-Avg-Jitter_FS1 = 0
Acme-Called-RTCP-Avg-Latency_FS1 = 0
Acme-Called-RTCP-MaxJitter_FS1 = 0
Acme-Called-RTCP-MaxLatency_FS1 = 0

```



```

Acme-Called-RTP-Packets-Lost_FS1 = 0
Acme-Called-RTP-Avg-Jitter_FS1 = 0
Acme-Called-RTP-MaxJitter_FS1 = 2
Acme-Called-Octets_FS1 = 43442
Acme-Called-Packets_FS1 = 203
Acme-Firmware-Version = "D7.0.0"
Acme-Local-Time-Zone = "Time Zone Not Set"
Acme-Post-Dial-Delay = 315
Acme-Primary-Routing-Number = "sip:8543221666@10.10.130.2"
Acme-Ingress-Local-Addr = "10.10.130.2:5060"
Acme-Ingress-Remote-Addr = "10.10.130.15:5060"
Acme-Egress-Local-Addr = "10.10.130.2:5060"
Acme-Egress-Remote-Addr = "10.10.130.15:5060"
Acme-Session-Disposition = 3
Acme-Disconnect-Initiator = 2
Acme-Disconnect-Cause = 0
Acme-SIP-Status = 0
Acme-Egress-Final-Routing-Number =
"sip:8543221666@10.10.170.15"
Acme-CDR-Sequence-Number = 295
Client-IP-Address = 172.30.20.110
Acct-Unique-Session-Id = "aa2d2764581a19bd"
Timestamp = 1180468051

```

## SIP Call Transfer

The following sample CDRs are for a SIP call transfer.

Wed May 13 21:08:27 2009

```

Acct-Status-Type = Start
NAS-IP-Address = 127.0.0.100
NAS-Port = 5060
Acct-Session-Id = "SDrcev201-
03ba803d12bc4acdc29fd5468a797b6e-v3000i1"
Acme-Session-Ingress-CallId =
"NWIZNGVmOTIzZGFhN2Y1MTBhYTJmZTMzMTZkOTg5MTc."
Acme-Session-Egress-CallId = "SDrcev201-
03ba803d12bc4acdc29fd5468a797b6e-v3000i1"
Acme-Session-Protocol-Type = "SIP"
Calling-Station-Id =
""8543221049"<sip:8543221049@10.10.130.2>;tag=51201b69"
Called-Station-Id =
""7143221099"<sip:7143221099@10.10.130.2>"
h323-setup-time = "21:06:28.890 UTC MAY 13 2009"
Acme-Session-Ingress-Realm = "peer"
Acme-Firmware-Version = "D7.0.0"
Acme-Local-Time-Zone = "Time Zone Not Set"
Acme-Post-Dial-Delay = 0
Acme-Primary-Routing-Number =
"sip:7143221099@10.10.130.2"
Acme-Ingress-Local-Addr = "10.10.130.2:5060"

```

Acme-Ingress-Remote-Addr = "10. 10. 130. 15: 5061"  
 Acme-Egress-Local -Addr = "0. 0. 0. 0: 0"  
 Acme-Egress-Remote-Addr = "0. 0. 0. 0: 0"  
 Acme-CDR-Sequence-Number = 93  
 Client-IP-Address = 172. 30. 20. 150  
 Acct-Unique-Sessi on-Id = "4beb75ae59a14893"  
 Timestamp = 1181783307

Wed May 13 21: 08: 43 2009

Acct-Status-Type = Interim-Update  
 NAS-IP-Address = 127. 0. 0. 100  
 NAS-Port = 5060  
 Acct-Sessi on-Id = "SDrcev201-03ba803d12bc4acdc29fd5468a797b6e-v3000i 1"  
 Acme-Sessi on-Ingress-Call Id = "NWI zNGVm0TI zZGFhN2Y1MTBhYTJmZTMzMTZkOTg5MTc. "  
 Acme-Sessi on-Egress-Call Id = "SDrcev201-03ba803d12bc4acdc29fd5468a797b6e-v3000i 1"  
 Acme-Sessi on-Protocol -Type = "SIP"  
 Calling-Station-Id = ""8543221049"<si p: 8543221049@10. 10. 130. 2>; tag=51201b69"  
 Called-Station-Id = ""7143221099"<si p: 7143221099@10. 10. 130. 2>"  
 h323-setup-time = "21: 06: 28. 890 UTC MAY 13 2009"  
 h323-connect-time = "21: 06: 45. 739 UTC MAY 13 2009"  
 Acme-Sessi on-Egress-Real m = "core"  
 Acme-Sessi on-Ingress-Real m = "peer"  
 Acme-FlowID\_FS1\_F = "Local host: 65590"  
 Acme-FlowType\_FS1\_F = "PCMU"  
 Acme-Flow-In-Real m\_FS1\_F = "peer"  
 Acme-Flow-In-Src-Addr\_FS1\_F = 0. 0. 0. 0  
 Acme-Flow-In-Src-Port\_FS1\_F = 0  
 Acme-Flow-In-Dst-Addr\_FS1\_F = 10. 10. 130. 2  
 Acme-Flow-In-Dst-Port\_FS1\_F = 21064  
 Acme-Flow-Out-Real m\_FS1\_F = "core"  
 Acme-Flow-Out-Src-Addr\_FS1\_F = 10. 10. 170. 2  
 Acme-Flow-Out-Src-Port\_FS1\_F = 31060  
 Acme-Flow-Out-Dst-Addr\_FS1\_F = 0. 0. 0. 0  
 Acme-Flow-Out-Dst-Port\_FS1\_F = 0  
 Acme-Calling-RTCP-Packets-Lost\_FS1 = 0  
 Acme-Calling-RTCP-Avg-Jitter\_FS1 = 0  
 Acme-Calling-RTCP-Avg-Latency\_FS1 = 0  
 Acme-Calling-RTCP-MaxJitter\_FS1 = 0  
 Acme-Calling-RTCP-MaxLatency\_FS1 = 0  
 Acme-Calling-RTP-Packets-Lost\_FS1 = 0  
 Acme-Calling-RTP-Avg-Jitter\_FS1 = 0  
 Acme-Calling-RTP-MaxJitter\_FS1 = 0  
 Acme-Calling-Octets\_FS1 = 0

Acme-Calling-Packets\_FS1 = 0  
 Acme-FlowID\_FS1\_R = "localhost: 65591"  
 Acme-FlowType\_FS1\_R = "PCMU"  
 Acme-Flow-In-Realm\_FS1\_R = "core"  
 Acme-Flow-In-Src-Addr\_FS1\_R = 0. 0. 0. 0  
 Acme-Flow-In-Src-Port\_FS1\_R = 0  
 Acme-Flow-In-Dst-Addr\_FS1\_R = 10. 10. 170. 2  
 Acme-Flow-In-Dst-Port\_FS1\_R = 31060  
 Acme-Flow-Out-Realm\_FS1\_R = "peer"  
 Acme-Flow-Out-Src-Addr\_FS1\_R = 10. 10. 130. 2  
 Acme-Flow-Out-Src-Port\_FS1\_R = 21064  
 Acme-Flow-Out-Dst-Addr\_FS1\_R = 10. 10. 130. 15  
 Acme-Flow-Out-Dst-Port\_FS1\_R = 5062  
 Acme-Called-RTCP-Packets-Lost\_FS1 = 0  
 Acme-Called-RTCP-Avg-Jitter\_FS1 = 0  
 Acme-Called-RTCP-Avg-Latency\_FS1 = 0  
 Acme-Called-RTCP-MaxJitter\_FS1 = 0  
 Acme-Called-RTCP-MaxLatency\_FS1 = 0  
 Acme-Called-RTP-Packets-Lost\_FS1 = 0  
 Acme-Called-RTP-Avg-Jitter\_FS1 = 0  
 Acme-Called-RTP-MaxJitter\_FS1 = 0  
 Acme-Called-Octets\_FS1 = 0  
 Acme-Called-Packets\_FS1 = 0  
 Acme-Firmware-Version = "D7. 0. 0"  
 Acme-Local-Time-Zone = "Time Zone Not Set"  
 Acme-Post-Dial-Delay = 14808  
 Acme-Primary-Routing-Number =  
 "sip: 7143221099@10. 10. 130. 2"  
 Acme-Ingress-Local-Addr = "10. 10. 130. 2: 5060"  
 Acme-Ingress-Remote-Addr = "10. 10. 130. 15: 5061"  
 Acme-Egress-Local-Addr = "10. 10. 130. 2: 5060"  
 Acme-Egress-Remote-Addr = "10. 10. 130. 15: 5060"  
 Acme-Intermediate-Time = "00: 00: 00. 000 UTC JAN 01 1970"  
 Acme-Egress-Final-Routing-Number =  
 "sip: 66@10. 10. 130. 15: 5060"  
 Acme-CDR-Sequence-Number = 94  
 Client-IP-Address = 172. 30. 20. 150  
 Acct-Unique-Session-Id = "4beb75ae59a14893"  
 Timestamp = 1181783323

Wed May 13 21: 08: 48 2009

Acct-Status-Type = Stop  
 NAS-IP-Address = 127. 0. 0. 100  
 NAS-Port = 5060  
 Acct-Session-Id = "SDrcev201-  
 03ba803d12bc4acdc29fd5468a797b6e-v3000i 1"  
 Acme-Session-Ingress-CallId =  
 "NWI zNGVmOTI zZGFhN2Y1MTBhYTJmZTMzMTZkOTg5MTc. "

```

Acme-Session-Egress-CallId = "SDrcev201-
03ba803d12bc4acdc29fd5468a797b6e-v3000i1"
Acme-Session-Protocol-Type = "SIP"
Calling-Station-Id =
""8543221049"<si p: 8543221049@10. 10. 130. 2>; tag=51201b69"
Called-Station-Id =
""7143221099"<si p: 7143221099@10. 10. 130. 2>"
Acct-Terminate-Cause = 0
Acct-Session-Time = 5
h323-setup-time = "21: 06: 28. 890 UTC MAY 13 2009"
h323-connect-time = "21: 06: 45. 739 UTC MAY 13 2009"
h323-disconnect-time = "21: 06: 50. 832 UTC MAY 13 2009"
h323-disconnect-cause = "0"
Acme-Session-Egress-Realm = "core"
Acme-Session-Ingress-Realm = "peer"
Acme-FlowID_FS1_F = "Local host: 65590"
Acme-FlowType_FS1_F = "PCMU"
Acme-Flow-In-Realm_FS1_F = "peer"
Acme-Flow-In-Src-Addr_FS1_F = 0. 0. 0. 0
Acme-Flow-In-Src-Port_FS1_F = 0
Acme-Flow-In-Dst-Addr_FS1_F = 10. 10. 130. 2
Acme-Flow-In-Dst-Port_FS1_F = 21064
Acme-Flow-Out-Realm_FS1_F = "core"
Acme-Flow-Out-Src-Addr_FS1_F = 10. 10. 170. 2
Acme-Flow-Out-Src-Port_FS1_F = 31060
Acme-Flow-Out-Dst-Addr_FS1_F = 0. 0. 0. 0
Acme-Flow-Out-Dst-Port_FS1_F = 0
Acme-Calling-RTCP-Packets-Lost_FS1 = 0
Acme-Calling-RTCP-Avg-Jitter_FS1 = 0
Acme-Calling-RTCP-Avg-Latency_FS1 = 0
Acme-Calling-RTCP-MaxJitter_FS1 = 0
Acme-Calling-RTCP-MaxLatency_FS1 = 0
Acme-Calling-RTP-Packets-Lost_FS1 = 0
Acme-Calling-RTP-Avg-Jitter_FS1 = 0
Acme-Calling-RTP-MaxJitter_FS1 = 0
Acme-Calling-Octets_FS1 = 0
Acme-Calling-Packets_FS1 = 0
Acme-FlowID_FS1_R = "Local host: 65591"
Acme-FlowType_FS1_R = "PCMU"
Acme-Flow-In-Realm_FS1_R = "core"
Acme-Flow-In-Src-Addr_FS1_R = 0. 0. 0. 0
Acme-Flow-In-Src-Port_FS1_R = 0
Acme-Flow-In-Dst-Addr_FS1_R = 10. 10. 170. 2
Acme-Flow-In-Dst-Port_FS1_R = 31060
Acme-Flow-Out-Realm_FS1_R = "peer"
Acme-Flow-Out-Src-Addr_FS1_R = 10. 10. 130. 2
Acme-Flow-Out-Src-Port_FS1_R = 21064

```

```

Acme-Flow-Out-Dst-Addr_FS1_R = 10.10.130.15
Acme-Flow-Out-Dst-Port_FS1_R = 5062
Acme-Called-RTCP-Packets-Lost_FS1 = 0
Acme-Called-RTCP-Avg-Jitter_FS1 = 0
Acme-Called-RTCP-Avg-Latency_FS1 = 0
Acme-Called-RTCP-MaxJitter_FS1 = 0
Acme-Called-RTCP-MaxLatency_FS1 = 0
Acme-Called-RTP-Packets-Lost_FS1 = 0
Acme-Called-RTP-Avg-Jitter_FS1 = 0
Acme-Called-RTP-MaxJitter_FS1 = 0
Acme-Called-Octets_FS1 = 0
Acme-Called-Packets_FS1 = 0
Acme-Firmware-Version = "D7.0.0"
Acme-Local-Time-Zone = "Time Zone Not Set"
Acme-Post-Dial-Delay = 14808
Acme-Primary-Routing-Number =
"si p: 7143221099@10.10.130.2"
Acme-Ingress-Local-Addr = "10.10.130.2:5060"
Acme-Ingress-Remote-Addr = "10.10.130.15:5061"
Acme-Egress-Local-Addr = "10.10.130.2:5060"
Acme-Egress-Remote-Addr = "10.10.130.15:5060"
Acme-Session-Disposition = 3
Acme-Disconnect-Initiator = 2
Acme-Disconnect-Cause = 0
Acme-SIP-Status = 0
Acme-Egress-Final-Routing-Number =
"si p: 66@10.10.130.15:5060"
Acme-CDR-Sequence-Number = 95
Client-IP-Address = 172.30.20.150
Acct-Unique-Session-Id = "4beb75ae59a14893"
Timestamp = 1181783328

```

## CDR Samples for H.323

This section provides sample CDRs for an H.323 call.

### H.323 Successful Call

The following sample CDRs are for a successful H.323 call.

```

Thu May 7 18:01:57 2009
Acct-Status-Type = Start
NAS-IP-Address = 192.168.60.100
NAS-Port = 1720
Acct-Session-Id = "f722b9a963126049bfaa019b9d98036e"
Acme-Session-Ingress-CallId =
"f722b9a963126049bfaa019b9d98036e"
Acme-Session-Egress-CallId =
"f722b9a963126049bfaa019b9d98036e"
Acme-Session-Protocol-Type = "H323"

```

Acme-Sessi on-Generi c-I d = "118125378800002@000825013500"  
 Cal led-Stati on-I d = "9783926666"  
 h323-setup-ti me = "13: 23: 08. 943 EST MAY 07 2009"  
 Acme-Sessi on-I ngress-Real m = "backbone"  
 Acme-Fi rmware-Versi on = "D7. 0. 0"  
 Acme-Local -Ti me-Zone = "GMT+08: 40"  
 Acme-Post-Di al -Del ay = 0  
 Acme-I ngress-Local -Addr = "192. 168. 60. 100: 1720"  
 Acme-I ngress-Remote-Addr = "192. 168. 60. 1: 9472"  
 Acme-Egress-Local -Addr = "0. 0. 0. 0: 0"  
 Acme-Egress-Remote-Addr = "0. 0. 0. 0: 0"  
 Acme-CDR-Sequence-Number = 29  
 Cl ient-I P-Address = 172. 30. 20. 120  
 Acct-Uni que-Sessi on-I d = "39fd0d684beebaf7"  
 Ti mestamp = 1181253717

Thu May 7 18: 01: 59 2009

Acct-Status-Type = Interi m-Update  
 NAS-I P-Address = 192. 168. 60. 100  
 NAS-Port = 1720  
 Acct-Sessi on-I d = "f722b9a963126049bfaa019b9d98036e"  
 Acme-Sessi on-I ngress-Cal l I d =  
 "f722b9a963126049bfaa019b9d98036e"  
 Acme-Sessi on-Egress-Cal l I d =  
 "f722b9a963126049bfaa019b9d98036e"  
 Acme-Sessi on-Protocol -Type = "H323"  
 Acme-Sessi on-Generi c-I d = "118125378800002@000825013500"  
 Cal led-Stati on-I d = "9783926666"  
 h323-setup-ti me = "13: 23: 08. 943 EST MAY 07 2009"  
 h323-connect-ti me = "13: 23: 11. 120 EST MAY 07 2009"  
 Acme-Sessi on-I ngress-Real m = "backbone"  
 Acme-Fi rmware-Versi on = "D7. 0. 0"  
 Acme-Local -Ti me-Zone = "GMT+08: 40"  
 Acme-Post-Di al -Del ay = 2177  
 Acme-I ngress-Local -Addr = "192. 168. 60. 100: 1720"  
 Acme-I ngress-Remote-Addr = "192. 168. 60. 1: 9472"  
 Acme-Egress-Local -Addr = "172. 16. 13. 100: 1720"  
 Acme-Egress-Remote-Addr = "172. 16. 13. 50: 1720"  
 Acme-I ntermedi ate\_Ti me = "21: 48: 16. 000 EST FEB 05 2106"  
 Acme-CDR-Sequence-Number = 30  
 Cl ient-I P-Address = 172. 30. 20. 120  
 Acct-Uni que-Sessi on-I d = "39fd0d684beebaf7"  
 Ti mestamp = 1181253719

Thu May 7 18: 02: 06 2009

Acct-Status-Type = Stop  
 NAS-I P-Address = 192. 168. 60. 100

NAS-Port = 1720  
Acct-Session-Id = "f722b9a963126049bfaa019b9d98036e"  
Acme-Session-Ingress-CallId =  
"f722b9a963126049bfaa019b9d98036e"  
Acme-Session-Egress-CallId =  
"f722b9a963126049bfaa019b9d98036e"  
Acme-Session-Protocol-Type = "H323"  
Acme-Session-Generic-Id = "118125378800002@000825013500"  
Called-Station-Id = "9783926666"  
Acct-Terminate-Cause = User-Request  
Acct-Session-Time = 7  
h323-setup-time = "13: 23: 08. 943 EST MAY 07 2009"  
h323-connect-time = "13: 23: 11. 120 EST MAY 07 2009"  
h323-disconnect-time = "13: 23: 18. 102 EST MAY 07 2009"  
h323-disconnect-cause = "16"  
Acme-Session-Egress-Realm = "internet"  
Acme-Session-Ingress-Realm = "backbone"  
Acme-FlowID\_FS1\_F = "local host: 65547"  
Acme-FlowType\_FS1\_F = "PCMA"  
Acme-Flow-In-Realm\_FS1\_F = "backbone"  
Acme-Flow-In-Src-Addr\_FS1\_F = 0. 0. 0. 0  
Acme-Flow-In-Src-Port\_FS1\_F = 0  
Acme-Flow-In-Dst-Addr\_FS1\_F = 192. 168. 60. 100  
Acme-Flow-In-Dst-Port\_FS1\_F = 6010  
Acme-Flow-Out-Realm\_FS1\_F = "internet"  
Acme-Flow-Out-Src-Addr\_FS1\_F = 172. 16. 13. 100  
Acme-Flow-Out-Src-Port\_FS1\_F = 4010  
Acme-Flow-Out-Dst-Addr\_FS1\_F = 172. 16. 13. 100  
Acme-Flow-Out-Dst-Port\_FS1\_F = 4008  
Acme-Calling-RTCP-Packets-Lost\_FS1 = 0  
Acme-Calling-RTCP-Avg-Jitter\_FS1 = 0  
Acme-Calling-RTCP-Avg-Latency\_FS1 = 0  
Acme-Calling-RTCP-MaxJitter\_FS1 = 0  
Acme-Calling-RTCP-MaxLatency\_FS1 = 0  
Acme-Calling-RTP-Packets-Lost\_FS1 = 0  
Acme-Calling-RTP-Avg-Jitter\_FS1 = 0  
Acme-Calling-RTP-MaxJitter\_FS1 = 0  
Acme-Calling-Octets\_FS1 = 0  
Acme-Calling-Packets\_FS1 = 0  
Acme-FlowID\_FS1\_R = "local host: 65546"  
Acme-FlowType\_FS1\_R = "PCMA"  
Acme-Flow-In-Realm\_FS1\_R = "internet"  
Acme-Flow-In-Src-Addr\_FS1\_R = 0. 0. 0. 0  
Acme-Flow-In-Src-Port\_FS1\_R = 0  
Acme-Flow-In-Dst-Addr\_FS1\_R = 172. 16. 13. 100  
Acme-Flow-In-Dst-Port\_FS1\_R = 4010  
Acme-Flow-Out-Realm\_FS1\_R = "backbone"

```

Acme-Flow-Out-Src-Addr_FS1_R = 192.168.60.100
Acme-Flow-Out-Src-Port_FS1_R = 6010
Acme-Flow-Out-Dst-Addr_FS1_R = 192.168.60.1
Acme-Flow-Out-Dst-Port_FS1_R = 49156
Acme-Called-RTCP-Packets-Lost_FS1 = 0
Acme-Called-RTCP-Avg-Jitter_FS1 = 0
Acme-Called-RTCP-Avg-Latency_FS1 = 0
Acme-Called-RTCP-MaxJitter_FS1 = 0
Acme-Called-RTCP-MaxLatency_FS1 = 0
Acme-Called-RTP-Packets-Lost_FS1 = 0
Acme-Called-RTP-Avg-Jitter_FS1 = 0
Acme-Called-RTP-MaxJitter_FS1 = 0
Acme-Called-Octets_FS1 = 0
Acme-Called-Packets_FS1 = 0
Acme-Firmware-Version = "D7.0.0"
Acme-Local-Time-Zone = "GMT+08:40"
Acme-Post-Dial-Delay = 2177
Acme-Ingress-Local-Addr = "192.168.60.100:1720"
Acme-Ingress-Remote-Addr = "192.168.60.1:9472"
Acme-Egress-Local-Addr = "172.16.13.100:1720"
Acme-Egress-Remote-Addr = "172.16.13.50:1720"
Acme-Session-Disposition = 3
Acme-Disconnect-Initiator = 2
Acme-Disconnect-Cause = 16
Acme-SIP-Status = 0
Acme-CDR-Sequence-Number = 31
Client-IP-Address = 172.30.20.120
Acct-Unique-Session-Id = "39fd0d684beebaf7"
Timestamp = 1181253726

```

## CDR Samples for IWF

This section provides sample CDRs for calls that require translation between H.323 and SIP, using the Net-Net SBC's interworking function (IWF).

### H.323 to SIP Call

The following sample CDRs are for an IWF call that originates in H.323 and is translated to SIP.

Wed May 6 18:18:18 2009

```

Acct-Status-Type = Start
NAS-IP-Address = 192.168.70.100
NAS-Port = 5060
Acct-Session-Id = "SDtb7i001-1b1e041dd86147c74243eab6fbd1f8ff-06ad4i1"
Acme-Session-Ingress-CallId = "NDFjMDUyMjYzNDM1OGQyOGQ2NWUwNTBIYjRiYzJlMmE."
Acme-Session-Egress-CallId = "SDtb7i001-1b1e041dd86147c74243eab6fbd1f8ff-06ad4i1"
Acme-Session-Protocol-Type = "SIP"

```



Acme-Sessi on-Generi c-I d = "118116836400005@000825013500"  
 Cal l i ng-Stati on-I d =  
 ""1664329900"<si p: 1664329900@192. 168. 70. 100>; tag=e061715f  
 ..  
 Cal l ed-Stati on-I d =  
 ""1294226060"<si p: 1294226060@192. 168. 70. 100>"  
 h323-setup-ti me = "13: 39: 24. 501 EST MAY 06 2009"  
 Acme-Sessi on-I ngress-Real m = "si p"  
 Acme-Fi rmware-Versi on = "D7. 0. 0"  
 Acme-Local -Ti me-Zone = "GMT+08: 40"  
 Acme-Post-Di al -Del ay = 0  
 Acme-Pri mary-Routi ng-Number =  
 "si p: 1294226060@192. 168. 70. 100"  
 Acme-I ngress-Local -Addr = "192. 168. 70. 100: 5060"  
 Acme-I ngress-Remote-Addr = "192. 168. 70. 27: 5060"  
 Acme-Egress-Local -Addr = "0. 0. 0. 0: 0"  
 Acme-Egress-Remote-Addr = "0. 0. 0. 0: 0"  
 Acme-CDR-Sequence-Number = 86  
 Cl i ent-I P-Address = 172. 30. 20. 120  
 Acct-Uni que-Sessi on-I d = "6b6c0698130e3699"  
 Ti mestamp = 1181168298

Wed May 6 18: 18: 18 2009

Acct-Status-Type = Start  
 NAS-I P-Address = 192. 168. 60. 100  
 NAS-Port = 1720  
 Acct-Sessi on-I d = "808d113b0802001f24e5e0995e3f0c55"  
 Acme-Sessi on-I ngress-Cal l I d =  
 "808d113b0802001f24e5e0995e3f0c55"  
 Acme-Sessi on-Egress-Cal l I d =  
 "808d113b0802001f24e5e0995e3f0c55"  
 Acme-Sessi on-Protocol -Type = "H323"  
 Acme-Sessi on-Generi c-I d = "118116836400005@000825013500"  
 Cal l i ng-Stati on-I d =  
 ""1664329900"<si p: 1664329900@192. 168. 70. 100>; tag=SDtb7i 00  
 1-e061715f"  
 Cal l ed-Stati on-I d =  
 ""1294226060"<si p: 1294226060@192. 168. 70. 100>"  
 h323-setup-ti me = "13: 39: 24. 515 EST MAY 06 2009"  
 Acme-Sessi on-Egress-Real m = "h323"  
 Acme-Fi rmware-Versi on = "D7. 0. 0"  
 Acme-Local -Ti me-Zone = "GMT+08: 40"  
 Acme-Post-Di al -Del ay = 0  
 Acme-I ngress-Local -Addr = "0. 0. 0. 0: 0"  
 Acme-I ngress-Remote-Addr = "0. 0. 0. 0: 0"  
 Acme-Egress-Local -Addr = "0. 0. 0. 0: 0"  
 Acme-Egress-Remote-Addr = "0. 0. 0. 0: 0"  
 Acme-CDR-Sequence-Number = 87  
 Cl i ent-I P-Address = 172. 30. 20. 120

Acct-Unique-Session-Id = "a7e61c2c7736cb29"  
 Timestamp = 1181168298

Wed May 6 18:18:20 2009

Acct-Status-Type = Interim-Update  
 NAS-IP-Address = 192.168.60.100  
 NAS-Port = 1720  
 Acct-Session-Id = "808d113b0802001f24e5e0995e3f0c55"  
 Acme-Session-Ingress-CallId =  
 "808d113b0802001f24e5e0995e3f0c55"  
 Acme-Session-Egress-CallId =  
 "808d113b0802001f24e5e0995e3f0c55"  
 Acme-Session-Protocol-Type = "H323"  
 Acme-Session-Generic-Id = "118116836400005@000825013500"  
 Calling-Station-Id =  
 ""1664329900"<sip:1664329900@192.168.70.100>; tag=SDtb7i001-e061715f"  
 Called-Station-Id =  
 ""1294226060"<sip:1294226060@192.168.70.100>"  
 h323-setup-time = "13:39:24.515 EST MAY 06 2009"  
 h323-connect-time = "13:39:26.413 EST MAY 06 2009"  
 Acme-Session-Egress-Realm = "h323"  
 Acme-Firmware-Version = "D7.0.0"  
 Acme-Local-Time-Zone = "GMT+08:40"  
 Acme-Post-Dial-Delay = 0  
 Acme-Ingress-Local-Addr = "0.0.0.0:0"  
 Acme-Ingress-Remote-Addr = "0.0.0.0:0"  
 Acme-Egress-Local-Addr = "192.168.60.100:1720"  
 Acme-Egress-Remote-Addr = "192.168.60.27:1720"  
 Acme-Intermediate-Time = "21:48:16.000 EST FEB 05 2106"  
 Acme-CDR-Sequence-Number = 88  
 Client-IP-Address = 172.30.20.120  
 Acct-Unique-Session-Id = "a7e61c2c7736cb29"  
 Timestamp = 1181168300

Wed May 6 18:18:20 2009

Acct-Status-Type = Interim-Update  
 NAS-IP-Address = 192.168.70.100  
 NAS-Port = 5060  
 Acct-Session-Id = "SDtb7i001-  
 1b1e041dd86147c74243eab6fbd1f8ff-06ad4i1"  
 Acme-Session-Ingress-CallId =  
 "NDFjMDUyMjYzNDM1OGQyOGQ2NWEwNTBIYjRiYzJI MmE. "  
 Acme-Session-Egress-CallId = "SDtb7i001-  
 1b1e041dd86147c74243eab6fbd1f8ff-06ad4i1"  
 Acme-Session-Protocol-Type = "SIP"  
 Acme-Session-Generic-Id = "118116836400005@000825013500"  
 Calling-Station-Id =  
 ""1664329900"<sip:1664329900@192.168.70.100>; tag=e061715f  
 ..

```

Called-Station-Id =
"1294226060" <si p: 1294226060@192. 168. 70. 100>"
h323-setup-time = "13: 39: 24. 501 EST MAY 06 2009"
h323-connect-time = "13: 39: 26. 431 EST MAY 06 2009"
Acme-Sessi on-Egress-Real m = "h323"
Acme-Sessi on-Ingress-Real m = "si p"
Acme-Fl owI D_FS1_F = "l ocal host: 65546"
Acme-Fl owType_FS1_F = ""
Acme-Fl ow-In-Real m_FS1_F = "si p"
Acme-Fl ow-In-Src-Addr_FS1_F = 0. 0. 0. 0
Acme-Fl ow-In-Src-Port_FS1_F = 0
Acme-Fl ow-In-Dst-Addr_FS1_F = 192. 168. 70. 100
Acme-Fl ow-In-Dst-Port_FS1_F = 20010
Acme-Fl ow-Out-Real m_FS1_F = "h323"
Acme-Fl ow-Out-Src-Addr_FS1_F = 192. 168. 60. 100
Acme-Fl ow-Out-Src-Port_FS1_F = 10010
Acme-Fl ow-Out-Dst-Addr_FS1_F = 192. 168. 60. 27
Acme-Fl ow-Out-Dst-Port_FS1_F = 16414
Acme-Cal l i ng-RTCP-Packets-Lost_FS1 = 0
Acme-Cal l i ng-RTCP-Avg-Ji tter_FS1 = 0
Acme-Cal l i ng-RTCP-Avg-Latency_FS1 = 0
Acme-Cal l i ng-RTCP-MaxJi tter_FS1 = 0
Acme-Cal l i ng-RTCP-MaxLatency_FS1 = 0
Acme-Cal l i ng-RTP-Packets-Lost_FS1 = 0
Acme-Cal l i ng-RTP-Avg-Ji tter_FS1 = 0
Acme-Cal l i ng-RTP-MaxJi tter_FS1 = 0
Acme-Cal l i ng-Octets_FS1 = 0
Acme-Cal l i ng-Packets_FS1 = 0
Acme-Fl owI D_FS1_R = "l ocal host: 65547"
Acme-Fl owType_FS1_R = ""
Acme-Fl ow-In-Real m_FS1_R = "h323"
Acme-Fl ow-In-Src-Addr_FS1_R = 0. 0. 0. 0
Acme-Fl ow-In-Src-Port_FS1_R = 0
Acme-Fl ow-In-Dst-Addr_FS1_R = 192. 168. 60. 100
Acme-Fl ow-In-Dst-Port_FS1_R = 10010
Acme-Fl ow-Out-Real m_FS1_R = "si p"
Acme-Fl ow-Out-Src-Addr_FS1_R = 192. 168. 70. 100
Acme-Fl ow-Out-Src-Port_FS1_R = 20010
Acme-Fl ow-Out-Dst-Addr_FS1_R = 192. 168. 70. 27
Acme-Fl ow-Out-Dst-Port_FS1_R = 5062
Acme-Cal l ed-RTCP-Packets-Lost_FS1 = 0
Acme-Cal l ed-RTCP-Avg-Ji tter_FS1 = 0
Acme-Cal l ed-RTCP-Avg-Latency_FS1 = 0
Acme-Cal l ed-RTCP-MaxJi tter_FS1 = 0
Acme-Cal l ed-RTCP-MaxLatency_FS1 = 0
Acme-Cal l ed-RTP-Packets-Lost_FS1 = 0
Acme-Cal l ed-RTP-Avg-Ji tter_FS1 = 0

```

Acme-Called-RTP-MaxJitter\_FS1 = 0  
 Acme-Called-Octets\_FS1 = 0  
 Acme-Called-Packets\_FS1 = 0  
 Acme-Firmware-Version = "D7.0.0"  
 Acme-Local-Time-Zone = "GMT+08:40"  
 Acme-Post-Dial-Delay = 1928  
 Acme-Primary-Routing-Number =  
 "sip:1294226060@192.168.70.100"  
 Acme-Ingress-Local-Addr = "192.168.70.100:5060"  
 Acme-Ingress-Remote-Addr = "192.168.70.27:5060"  
 Acme-Egress-Local-Addr = "0.0.0.0:0"  
 Acme-Egress-Remote-Addr = "0.0.0.0:0"  
 Acme-Intermediate-Time = "21:48:16.000 EST FEB 05 2106"  
 Acme-Egress-Final-Routing-Number =  
 "sip:1294226060@192.168.60.27:1720; acme\_sa=192.168.60.27;  
 acme\_real m=h323; acme\_i real m=sip"  
 Acme-CDR-Sequence-Number = 89  
 Client-IP-Address = 172.30.20.120  
 Acct-Unique-Session-Id = "6b6c0698130e3699"  
 Timestamp = 1181168300

Wed May 6 18:18:23 2009

Acct-Status-Type = Stop  
 NAS-IP-Address = 192.168.60.100  
 NAS-Port = 1720  
 Acct-Session-Id = "808d113b0802001f24e5e0995e3f0c55"  
 Acme-Session-Ingress-CallId =  
 "808d113b0802001f24e5e0995e3f0c55"  
 Acme-Session-Egress-CallId =  
 "808d113b0802001f24e5e0995e3f0c55"  
 Acme-Session-Protocol-Type = "H323"  
 Acme-Session-Generi c-Id = "118116836400005@000825013500"  
 Calling-Station-Id =  
 ""1664329900"<sip:1664329900@192.168.70.100>; tag=SDtb7i00  
 1-e061715f"  
 Called-Station-Id =  
 ""1294226060"<sip:1294226060@192.168.70.100>"  
 Acct-Terminate-Cause = User-Request  
 Acct-Session-Time = 3  
 h323-setup-time = "13:39:24.515 EST MAY 06 2009"  
 h323-connect-time = "13:39:26.413 EST MAY 06 2009"  
 h323-disconnect-time = "13:39:29.547 EST MAY 06 2009"  
 h323-disconnect-cause = "16"  
 Acme-Session-Egress-Realm = "h323"  
 Acme-Firmware-Version = "D7.0.0"  
 Acme-Local-Time-Zone = "GMT+08:40"  
 Acme-Post-Dial-Delay = 0  
 Acme-Ingress-Local-Addr = "0.0.0.0:0"  
 Acme-Ingress-Remote-Addr = "0.0.0.0:0"

Acme-Egress-Local-Addr = "192.168.60.100:1720"  
 Acme-Egress-Remote-Addr = "192.168.60.27:1720"  
 Acme-Session-Disposition = 3  
 Acme-Disconnect-Initiator = 0  
 Acme-Disconnect-Cause = 16  
 Acme-SIP-Status = 0  
 Acme-CDR-Sequence-Number = 90  
 Client-IP-Address = 172.30.20.120  
 Acct-Unique-Session-Id = "a7e61c2c7736cb29"  
 Timestamp = 1181168303

Wed May 6 18:18:23 2009

Acct-Status-Type = Stop  
 NAS-IP-Address = 192.168.70.100  
 NAS-Port = 5060  
 Acct-Session-Id = "SDtb7i001-1b1e041dd86147c74243eab6fbd1f8ff-06ad4i1"  
 Acme-Session-Ingress-CallId = "NDFjMDUyMjYzNDM1OGQyOGQ2NWEwNTBIYjRiYzJlMmE."  
 Acme-Session-Egress-CallId = "SDtb7i001-1b1e041dd86147c74243eab6fbd1f8ff-06ad4i1"  
 Acme-Session-Protocol-Type = "SIP"  
 Acme-Session-Generic-Id = "118116836400005@000825013500"  
 Calling-Station-Id = ""1664329900"<sip:1664329900@192.168.70.100>; tag=e061715f"  
 Called-Station-Id = ""1294226060"<sip:1294226060@192.168.70.100>"  
 Acct-Terminate-Cause = User-Request  
 Acct-Session-Time = 3  
 h323-setup-time = "13:39:24.501 EST MAY 06 2009"  
 h323-connect-time = "13:39:26.431 EST MAY 06 2009"  
 h323-disconnect-time = "13:39:29.574 EST MAY 06 2009"  
 h323-disconnect-cause = "1"  
 Acme-Session-Egress-Realm = "h323"  
 Acme-Session-Ingress-Realm = "sip"  
 Acme-FlowID\_FS1\_F = "local host: 65546"  
 Acme-FlowType\_FS1\_F = ""  
 Acme-Flow-In-Realm\_FS1\_F = "sip"  
 Acme-Flow-In-Src-Addr\_FS1\_F = 192.168.70.27  
 Acme-Flow-In-Src-Port\_FS1\_F = 5063  
 Acme-Flow-In-Dst-Addr\_FS1\_F = 192.168.70.100  
 Acme-Flow-In-Dst-Port\_FS1\_F = 20010  
 Acme-Flow-Out-Realm\_FS1\_F = "h323"  
 Acme-Flow-Out-Src-Addr\_FS1\_F = 192.168.60.100  
 Acme-Flow-Out-Src-Port\_FS1\_F = 10010  
 Acme-Flow-Out-Dst-Addr\_FS1\_F = 192.168.60.27  
 Acme-Flow-Out-Dst-Port\_FS1\_F = 16414

Acme-Calling-RTCP-Packets-Lost\_FS1 = 0  
Acme-Calling-RTCP-Avg-Jitter\_FS1 = 0  
Acme-Calling-RTCP-Avg-Latency\_FS1 = 0  
Acme-Calling-RTCP-MaxJitter\_FS1 = 0  
Acme-Calling-RTCP-MaxLatency\_FS1 = 0  
Acme-Calling-RTP-Packets-Lost\_FS1 = 0  
Acme-Calling-RTP-Avg-Jitter\_FS1 = 6  
Acme-Calling-RTP-MaxJitter\_FS1 = 17  
Acme-Calling-Octets\_FS1 = 30764  
Acme-Calling-Packets\_FS1 = 142  
Acme-FlowID\_FS1\_R = "local host: 65547"  
Acme-FlowType\_FS1\_R = ""  
Acme-Flow-In-Realm\_FS1\_R = "h323"  
Acme-Flow-In-Src-Addr\_FS1\_R = 192. 168. 60. 27  
Acme-Flow-In-Src-Port\_FS1\_R = 16414  
Acme-Flow-In-Dst-Addr\_FS1\_R = 192. 168. 60. 100  
Acme-Flow-In-Dst-Port\_FS1\_R = 10010  
Acme-Flow-Out-Realm\_FS1\_R = "sip"  
Acme-Flow-Out-Src-Addr\_FS1\_R = 192. 168. 70. 100  
Acme-Flow-Out-Src-Port\_FS1\_R = 20010  
Acme-Flow-Out-Dst-Addr\_FS1\_R = 192. 168. 70. 27  
Acme-Flow-Out-Dst-Port\_FS1\_R = 5062  
Acme-Called-RTCP-Packets-Lost\_FS1 = 0  
Acme-Called-RTCP-Avg-Jitter\_FS1 = 0  
Acme-Called-RTCP-Avg-Latency\_FS1 = 0  
Acme-Called-RTCP-MaxJitter\_FS1 = 0  
Acme-Called-RTCP-MaxLatency\_FS1 = 0  
Acme-Called-RTP-Packets-Lost\_FS1 = 0  
Acme-Called-RTP-Avg-Jitter\_FS1 = 6  
Acme-Called-RTP-MaxJitter\_FS1 = 17  
Acme-Called-Octets\_FS1 = 33598  
Acme-Called-Packets\_FS1 = 157  
Acme-Firmware-Version = "D7. 0. 0"  
Acme-Local-Time-Zone = "GMT+08: 40"  
Acme-Post-Dial-Delay = 1928  
Acme-Primary-Routing-Number =  
"sip: 1294226060@192. 168. 70. 100"  
Acme-Ingress-Local-Addr = "192. 168. 70. 100: 5060"  
Acme-Ingress-Remote-Addr = "192. 168. 70. 27: 5060"  
Acme-Egress-Local-Addr = "0. 0. 0. 0: 0"  
Acme-Egress-Remote-Addr = "0. 0. 0. 0: 0"  
Acme-Session-Disposition = 3  
Acme-Disconnect-Initiator = 1  
Acme-Disconnect-Cause = 16  
Acme-SIP-Status = 200

```

Acme-Egress-Final-Routing-Number =
"sip:1294226060@192.168.60.27:1720;acme_sa=192.168.60.27;
acme_real m=h323;acme_i real m=sip"
Acme-CDR-Sequence-Number = 91
Client-IP-Address = 172.30.20.120
Acct-Unique-Session-Id = "6b6c0698130e3699"
Timestamp = 1181168303

```

**SIP to H.323 Call**

The following sample CDRs are for an IWF call that originates in SIP and is translated to H.323.

Wed May 6 18:12:38 2009

```

Acct-Status-Type = Start
NAS-IP-Address = 192.168.60.100
NAS-Port = 1720
Acct-Session-Id = "55f1a32352d6bb4b89543ba92cefc839"
Acme-Session-Ingress-CallId =
"55f1a32352d6bb4b89543ba92cefc839"
Acme-Session-Egress-CallId =
"55f1a32352d6bb4b89543ba92cefc839"
Acme-Session-Protocol-Type = "H323"
Acme-Session-Generi c-Id = "118116802400004@000825013500"
Called-Station-Id = 4445556060
h323-setup-time = "13:33:44.535 EST MAY 06 2009"
Acme-Session-Ingress-Real m = "h323"
Acme-Firmware-Versi on = "D7.0.0"
Acme-Local -Ti me-Zone = "GMT+08:40"
Acme-Post-Di al -Del ay = 0
Acme-I ngress-Local -Addr = "192.168.60.100:1720"
Acme-I ngress-Remote-Addr = "192.168.60.27:1521"
Acme-Egress-Local -Addr = "0.0.0.0:0"
Acme-Egress-Remote-Addr = "0.0.0.0:0"
Acme-CDR-Sequence-Number = 73
Client-IP-Address = 172.30.20.120
Acct-Unique-Session-Id = "94111c11fe8233bf"
Timestamp = 1181167958

```

Wed May 6 18:12:38 2009

```

Acct-Status-Type = Start
NAS-IP-Address = 192.168.70.100
NAS-Port = 5060
Acct-Session-Id = "SD7kvl 801-
1693bc418a00f4fae8829303648e358a-06ad4i 1"
Acme-Session-Ingress-CallId =
"7f00000113ce0000076600062638@127.0.0.1"
Acme-Session-Egress-CallId = "SD7kvl 801-
1693bc418a00f4fae8829303648e358a-06ad4i 1"
Acme-Session-Protocol-Type = "SIP"
Acme-Session-Generi c-Id = "118116802400004@000825013500"

```

```

Calling-Station-Id =
""4445558080"<si p: 192. 168. 70. 100: 5060>; tag=00000766000631
f0"
Called-Station-Id = "<si p: 4445556060@192. 168. 70. 27: 5060>"
h323-setup-time = "13: 33: 44. 550 EST MAY 06 2009"
Acme-Sessi on-Ingress-Real m = "h323"
Acme-Fi rmware-Versi on = "D7. 0. 0"
Acme-Local -Ti me-Zone = "GMT+08: 40"
Acme-Post-Di al -Del ay = 0
Acme-Pri mary-Routi ng-Number =
"si p: 4445556060@192. 168. 70. 27: 5060"
Acme-Ingress-Local -Addr = "0. 0. 0. 0: 0"
Acme-Ingress-Remote-Addr = "127. 0. 0. 1: 5070"
Acme-Egress-Local -Addr = "0. 0. 0. 0: 0"
Acme-Egress-Remote-Addr = "0. 0. 0. 0: 0"
Acme-CDR-Sequence-Number = 74
Cl ient-IP-Address = 172. 30. 20. 120
Acct-Uni que-Sessi on-Id = "8ce0c0bed743f835"
Ti mestamp = 1181167958

```

Wed May 6 18: 12: 43 2009

```

Acct-Status-Type = Interim-Update
NAS-IP-Address = 192. 168. 70. 100
NAS-Port = 5060
Acct-Sessi on-Id = "SD7kvl 801-
1693bc418a00f4fae8829303648e358a-06ad4i 1"
Acme-Sessi on-Ingress-Cal l Id =
"7f00000113ce0000076600062638@127. 0. 0. 1"
Acme-Sessi on-Egress-Cal l Id = "SD7kvl 801-
1693bc418a00f4fae8829303648e358a-06ad4i 1"
Acme-Sessi on-Protocol -Type = "SIP"
Acme-Sessi on-Generi c-Id = "118116802400004@000825013500"
Calling-Station-Id =
""4445558080"<si p: 192. 168. 70. 100: 5060>; tag=00000766000631
f0"
Called-Station-Id = "<si p: 4445556060@192. 168. 70. 27: 5060>"
h323-setup-time = "13: 33: 44. 550 EST MAY 06 2009"
h323-connect-time = "13: 33: 49. 075 EST MAY 06 2009"
Acme-Sessi on-Egress-Real m = "si p"
Acme-Sessi on-Ingress-Real m = "h323"
Acme-FI owl D_FS1_F = "l ocal host: 65544"
Acme-FI owType_FS1_F = ""
Acme-FI ow-In-Real m_FS1_F = "h323"
Acme-FI ow-In-Src-Addr_FS1_F = 0. 0. 0. 0
Acme-FI ow-In-Src-Port_FS1_F = 0
Acme-FI ow-In-Dst-Addr_FS1_F = 192. 168. 60. 100
Acme-FI ow-In-Dst-Port_FS1_F = 10008
Acme-FI ow-Out-Real m_FS1_F = "si p"
Acme-FI ow-Out-Src-Addr_FS1_F = 192. 168. 70. 100

```



```

Acme-Flow-Out-Src-Port_FS1_F = 20008
Acme-Flow-Out-Dst-Addr_FS1_F = 192.168.70.27
Acme-Flow-Out-Dst-Port_FS1_F = 5062
Acme-Calling-RTCP-Packets-Lost_FS1 = 0
Acme-Calling-RTCP-Avg-Jitter_FS1 = 0
Acme-Calling-RTCP-Avg-Latency_FS1 = 0
Acme-Calling-RTCP-MaxJitter_FS1 = 0
Acme-Calling-RTCP-MaxLatency_FS1 = 0
Acme-Calling-RTP-Packets-Lost_FS1 = 0
Acme-Calling-RTP-Avg-Jitter_FS1 = 0
Acme-Calling-RTP-MaxJitter_FS1 = 0
Acme-Calling-Octets_FS1 = 0
Acme-Calling-Packets_FS1 = 0
Acme-FlowID_FS1_R = "local host: 65545"
Acme-FlowType_FS1_R = ""
Acme-Flow-In-Realm_FS1_R = "sip"
Acme-Flow-In-Src-Addr_FS1_R = 0.0.0.0
Acme-Flow-In-Src-Port_FS1_R = 0
Acme-Flow-In-Dst-Addr_FS1_R = 192.168.70.100
Acme-Flow-In-Dst-Port_FS1_R = 20008
Acme-Flow-Out-Realm_FS1_R = "h323"
Acme-Flow-Out-Src-Addr_FS1_R = 192.168.60.100
Acme-Flow-Out-Src-Port_FS1_R = 10008
Acme-Flow-Out-Dst-Addr_FS1_R = 192.168.60.27
Acme-Flow-Out-Dst-Port_FS1_R = 16412
Acme-Called-RTCP-Packets-Lost_FS1 = 0
Acme-Called-RTCP-Avg-Jitter_FS1 = 0
Acme-Called-RTCP-Avg-Latency_FS1 = 0
Acme-Called-RTCP-MaxJitter_FS1 = 0
Acme-Called-RTCP-MaxLatency_FS1 = 0
Acme-Called-RTP-Packets-Lost_FS1 = 0
Acme-Called-RTP-Avg-Jitter_FS1 = 0
Acme-Called-RTP-MaxJitter_FS1 = 0
Acme-Called-Octets_FS1 = 0
Acme-Called-Packets_FS1 = 0
Acme-Firmware-Version = "D7.0.0"
Acme-Local-Time-Zone = "GMT+08:40"
Acme-Post-Dial-Delay = 107
Acme-Primary-Routing-Number =
"sip:4445556060@192.168.70.27:5060"
Acme-Ingress-Local-Addr = "0.0.0.0:0"
Acme-Ingress-Remote-Addr = "127.0.0.1:5070"
Acme-Egress-Local-Addr = "0.0.0.0:0"
Acme-Egress-Remote-Addr = "192.168.70.27:5060"
Acme-Intermediate-Time = "21:48:16.000 EST FEB 05 2106"
Acme-Egress-Final-Routing-Number =
"sip:4445556060@192.168.70.27:5060"

```

Acme-CDR-Sequence-Number = 75  
 Client-IP-Address = 172.30.20.120  
 Acct-Unique-Session-Id = "8ce0c0bed743f835"  
 Timestamp = 1181167963

Wed May 6 18:12:43 2009

Acct-Status-Type = Interim-Update  
 NAS-IP-Address = 192.168.60.100  
 NAS-Port = 1720  
 Acct-Session-Id = "55f1a32352d6bb4b89543ba92cefc839"  
 Acme-Session-Ingress-CallId =  
 "55f1a32352d6bb4b89543ba92cefc839"  
 Acme-Session-Egress-CallId =  
 "55f1a32352d6bb4b89543ba92cefc839"  
 Acme-Session-Protocol-Type = "H323"  
 Acme-Session-Generic-Id = "118116802400004@000825013500"  
 Called-Station-Id = 4445556060  
 h323-setup-time = "13:33:44.535 EST MAY 06 2009"  
 h323-connect-time = "13:33:49.101 EST MAY 06 2009"  
 Acme-Session-Ingress-Realm = "h323"  
 Acme-Firmware-Version = "D7.0.0"  
 Acme-Local-Time-Zone = "GMT+08:40"  
 Acme-Post-Dial-Delay = 4566  
 Acme-Ingress-Local-Addr = "192.168.60.100:1720"  
 Acme-Ingress-Remote-Addr = "192.168.60.27:1521"  
 Acme-Egress-Local-Addr = "0.0.0.0:0"  
 Acme-Egress-Remote-Addr = "0.0.0.0:0"  
 Acme-Intermediate-Time = "21:48:16.000 EST FEB 05 2106"  
 Acme-CDR-Sequence-Number = 76  
 Client-IP-Address = 172.30.20.120  
 Acct-Unique-Session-Id = "94111c11fe8233bf"  
 Timestamp = 1181167963

Wed May 6 18:12:50 2009

Acct-Status-Type = Stop  
 NAS-IP-Address = 192.168.60.100  
 NAS-Port = 1720  
 Acct-Session-Id = "55f1a32352d6bb4b89543ba92cefc839"  
 Acme-Session-Ingress-CallId =  
 "55f1a32352d6bb4b89543ba92cefc839"  
 Acme-Session-Egress-CallId =  
 "55f1a32352d6bb4b89543ba92cefc839"  
 Acme-Session-Protocol-Type = "H323"  
 Acme-Session-Generic-Id = "118116802400004@000825013500"  
 Called-Station-Id = 4445556060  
 Acct-Terminate-Cause = User-Request  
 Acct-Session-Time = 7  
 h323-setup-time = "13:33:44.535 EST MAY 06 2009"

h323-connect-time = "13: 33: 49. 101 EST MAY 06 2009"  
 h323-disconnect-time = "13: 33: 56. 658 EST MAY 06 2009"  
 h323-disconnect-cause = "16"  
 Acme-Session-Ingress-Realm = "h323"  
 Acme-Firmware-Version = "D7. 0. 0"  
 Acme-Local-Time-Zone = "GMT+08: 40"  
 Acme-Post-Dial-Delay = 4566  
 Acme-Ingress-Local-Addr = "192. 168. 60. 100: 1720"  
 Acme-Ingress-Remote-Addr = "192. 168. 60. 27: 1521"  
 Acme-Egress-Local-Addr = "0. 0. 0. 0: 0"  
 Acme-Egress-Remote-Addr = "0. 0. 0. 0: 0"  
 Acme-Session-Disposition = 3  
 Acme-Disconnect-Initiator = 1  
 Acme-Disconnect-Cause = 16  
 Acme-SIP-Status = 0  
 Acme-CDR-Sequence-Number = 77  
 Client-IP-Address = 172. 30. 20. 120  
 Acct-Unique-Session-Id = "94111c11fe8233bf"  
 Timestamp = 1181167970

Wed May 6 18: 12: 50 2009

Acct-Status-Type = Stop  
 NAS-IP-Address = 192. 168. 70. 100  
 NAS-Port = 5060  
 Acct-Session-Id = "SD7kvl 801-  
 1693bc418a00f4fae8829303648e358a-06ad4i 1"  
 Acme-Session-Ingress-CallId =  
 "7f00000113ce0000076600062638@127. 0. 0. 1"  
 Acme-Session-Egress-CallId = "SD7kvl 801-  
 1693bc418a00f4fae8829303648e358a-06ad4i 1"  
 Acme-Session-Protocol-Type = "SIP"  
 Acme-Session-Generic-Id = "118116802400004@000825013500"  
 Calling-Station-Id =  
 ""4445558080"<si p: 192. 168. 70. 100: 5060>; tag=00000766000631  
 f0"  
 Called-Station-Id = "<si p: 4445556060@192. 168. 70. 27: 5060>"  
 Acct-Terminate-Cause = User-Request  
 Acct-Session-Time = 7  
 h323-setup-time = "13: 33: 44. 550 EST MAY 06 2009"  
 h323-connect-time = "13: 33: 49. 075 EST MAY 06 2009"  
 h323-disconnect-time = "13: 33: 56. 778 EST MAY 06 2009"  
 h323-disconnect-cause = "1"  
 Acme-Session-Egress-Realm = "si p"  
 Acme-Session-Ingress-Realm = "h323"  
 Acme-FlowID\_FS1\_F = "Iocal host: 65544"  
 Acme-FlowType\_FS1\_F = ""  
 Acme-Flow-In-Realm\_FS1\_F = "h323"  
 Acme-Flow-In-Src-Addr\_FS1\_F = 192. 168. 60. 27

```
Acme-Flow-In-Src-Port_FS1_F = 16412
Acme-Flow-In-Dst-Addr_FS1_F = 192.168.60.100
Acme-Flow-In-Dst-Port_FS1_F = 10008
Acme-Flow-Out-Realm_FS1_F = "sip"
Acme-Flow-Out-Src-Addr_FS1_F = 192.168.70.100
Acme-Flow-Out-Src-Port_FS1_F = 20008
Acme-Flow-Out-Dst-Addr_FS1_F = 192.168.70.27
Acme-Flow-Out-Dst-Port_FS1_F = 5062
Acme-Calling-RTCP-Packets-Lost_FS1 = 0
Acme-Calling-RTCP-Avg-Jitter_FS1 = 0
Acme-Calling-RTCP-Avg-Latency_FS1 = 0
Acme-Calling-RTCP-MaxJitter_FS1 = 0
Acme-Calling-RTCP-MaxLatency_FS1 = 0
Acme-Calling-RTP-Packets-Lost_FS1 = 0
Acme-Calling-RTP-Avg-Jitter_FS1 = 4
Acme-Calling-RTP-MaxJitter_FS1 = 17
Acme-Calling-Octets_FS1 = 78110
Acme-Calling-Packets_FS1 = 365
Acme-FlowID_FS1_R = "local host: 65545"
Acme-FlowType_FS1_R = ""
Acme-Flow-In-Realm_FS1_R = "sip"
Acme-Flow-In-Src-Addr_FS1_R = 192.168.70.27
Acme-Flow-In-Src-Port_FS1_R = 5062
Acme-Flow-In-Dst-Addr_FS1_R = 192.168.70.100
Acme-Flow-In-Dst-Port_FS1_R = 20008
Acme-Flow-Out-Realm_FS1_R = "h323"
Acme-Flow-Out-Src-Addr_FS1_R = 192.168.60.100
Acme-Flow-Out-Src-Port_FS1_R = 10008
Acme-Flow-Out-Dst-Addr_FS1_R = 192.168.60.27
Acme-Flow-Out-Dst-Port_FS1_R = 16412
Acme-Called-RTCP-Packets-Lost_FS1 = 0
Acme-Called-RTCP-Avg-Jitter_FS1 = 62
Acme-Called-RTCP-Avg-Latency_FS1 = 0
Acme-Called-RTCP-MaxJitter_FS1 = 71
Acme-Called-RTCP-MaxLatency_FS1 = 0
Acme-Called-RTP-Packets-Lost_FS1 = 0
Acme-Called-RTP-Avg-Jitter_FS1 = 4
Acme-Called-RTP-MaxJitter_FS1 = 97
Acme-Called-Octets_FS1 = 81744
Acme-Called-Packets_FS1 = 379
Acme-Firmware-Version = "D7.0.0"
Acme-Local-Time-Zone = "GMT+08:40"
Acme-Post-Dial-Delay = 107
Acme-Primary-Routing-Number =
"sip:4445556060@192.168.70.27:5060"
Acme-Ingress-Local-Addr = "0.0.0.0:0"
Acme-Ingress-Remote-Addr = "127.0.0.1:5070"
```

```

Acme-Egress-Local -Addr = "0. 0. 0. 0: 0"
Acme-Egress-Remote-Addr = "192. 168. 70. 27: 5060"
Acme-Sessi on-Di sposi ti on = 3
Acme-Di sconnect-I ni ti ator = 1
Acme-Di sconnect-Cause = 0
Acme-SI P-Status = 0
Acme-Egress-Fi nal -Routi ng-Number =
"si p: 4445556060@192. 168. 70. 27: 5060"
Acme-CDR-Sequence-Number = 78
Cl i ent-I P-Address = 172. 30. 20. 120
Acct-Uni que-Sessi on-I d = "8ce0c0bed743f835"
Ti mestamp = 1181167970

```

## Sample CDR for Transcoding

This section offers a sample of a RADIUS Stop record for a transcoded call.

```

Acct-Status-Type = Start
NAS-I P-Address = 192. 168. 1. 84
NAS-Port = 5060
Acme-Sessi on-I ngress-Cal l I d = "1-2995@192. 168. 1. 211"
Acme-Sessi on-Egress-Cal l I d = "1-2995@192. 168. 1. 211"
Acme-Sessi on-Protocol -Type = "SI P"
Acct-Sessi on-I d = "118F31000002"
Cal l i ng-Stati on-I d = "<si p: user@192. 168. 1. 211: 5060>"
Cal l ed-Stati on-I d = "<si p: servi ce@192. 168. 1. 84: 5060>"
h323-setup-ti me = "18: 34: 12. 102 MAY 05 2009"
h323-connect-ti me = "18: 34: 12. 105 MAY 05 2009"
Acme-Egress-Network-I nterface-I d = "publ ic"
Acme-Egress-VI an-Tag-Val ue = 0
Acme-I ngress-Network-I nterface-I d = "pri vate"
Acme-I ngress-VI an-Tag-Val ue = 0
Acme-Sessi on-Egress-Real m = "net200"
Acme-Sessi on-I ngress-Real m = "net1"
Acme-Sessi on-Medi a-Process = "transparent"
Acme-FI owI D_FS1_F = "l ocal host: 65539"
Acme-FI owType_FS1_F = "G722"
Acme-FI owMedi aType_FS1_F = "audi o"
Acme-FI ow-I n-Real m_FS1_F = "net1"
Acme-FI ow-I n-Src-Addr_FS1_F = 0. 0. 0. 0
Acme-FI ow-I n-Src-Port_FS1_F = 0
Acme-FI ow-I n-Dst-Addr_FS1_F = 192. 168. 1. 84
Acme-FI ow-I n-Dst-Port_FS1_F = 10002
Acme-FI ow-Out-Real m_FS1_F = "net200"
Acme-FI ow-Out-Src-Addr_FS1_F = 192. 168. 200. 84
Acme-FI ow-Out-Src-Port_FS1_F = 10002
Acme-FI ow-Out-Dst-Addr_FS1_F = 0. 0. 0. 0
Acme-FI ow-Out-Dst-Port_FS1_F = 0
Acme-FI ow-PTi me_FS1_F = 0

```

```

Acme-FlowID_FS1_R = "local host: 65540"
Acme-FlowType_FS1_R = "G722"
Acme-Flow-In-Realm_FS1_R = "net200"
Acme-Flow-In-Src-Addr_FS1_R = 0. 0. 0. 0
Acme-Flow-In-Src-Port_FS1_R = 0
Acme-Flow-In-Dst-Addr_FS1_R = 192. 168. 200. 84
Acme-Flow-In-Dst-Port_FS1_R = 10002
Acme-Flow-Out-Realm_FS1_R = "net1"
Acme-Flow-Out-Src-Addr_FS1_R = 192. 168. 1. 84
Acme-Flow-Out-Src-Port_FS1_R = 10002
Acme-Flow-Out-Dst-Addr_FS1_R = 192. 168. 1. 211
Acme-Flow-Out-Dst-Port_FS1_R = 6000
Acme-Flow-PTime_FS1_R = 0
Acme-FlowID_FS2_F = ""
Acme-FlowType_FS2_F = ""
Acme-Flow-In-Realm_FS2_F = ""
Acme-Flow-In-Src-Addr_FS2_F = 0. 0. 0. 0
Acme-Flow-In-Src-Port_FS2_F = 0
Acme-Flow-In-Dst-Addr_FS2_F = 0. 0. 0. 0
Acme-Flow-In-Dst-Port_FS2_F = 0
Acme-Flow-Out-Realm_FS2_F = ""
Acme-Flow-Out-Src-Addr_FS2_F = 0. 0. 0. 0
Acme-Flow-Out-Src-Port_FS2_F = 0
Acme-Flow-Out-Dst-Addr_FS2_F = 0. 0. 0. 0
Acme-Flow-Out-Dst-Port_FS2_F = 0
Acme-Flow-PTime_FS2_F = 0
Acme-FlowID_FS2_R = ""
Acme-FlowType_FS2_R = ""
Acme-Flow-In-Realm_FS2_R = ""
Acme-Flow-In-Src-Addr_FS2_R = 0. 0. 0. 0
Acme-Flow-In-Src-Port_FS2_R = 0
Acme-Flow-In-Dst-Addr_FS2_R = 0. 0. 0. 0
Acme-Flow-In-Dst-Port_FS2_R = 0
Acme-Flow-Out-Realm_FS2_R = ""
Acme-Flow-Out-Src-Addr_FS2_R = 0. 0. 0. 0
Acme-Flow-Out-Src-Port_FS2_R = 0
Acme-Flow-Out-Dst-Addr_FS2_R = 0. 0. 0. 0
Acme-Flow-Out-Dst-Port_FS2_R = 0
Acme-Flow-PTime_FS2_R = 0
Acme-Firmware-Version = "D7. 0. 0"
Acme-Local-Time-Zone = "GMT00: 00"
Acme-Post-Dial-Delay = 6
Acme-Primary-Routing-Number =
"si p: service@192. 168. 1. 84: 5060"
Acme-Ingress-Local-Addr = "192. 168. 1. 84: 5060"
Acme-Ingress-Remote-Addr = "192. 168. 1. 211: 5060"
Acme-Egress-Local-Addr = "192. 168. 200. 84: 5060"

```

Acme-Egress-Remote-Addr = "192.168.200.211:5060"  
Acme-Egress-Final-Routing-Number =  
"sip:service@192.168.200.211:5060"  
Acme-CDR-Sequence-Number = 1750588046





# Appendix B

## Net-Net 9000 D7.0 RADIUS Dictionary

---

Note that VSA 141 (Acme-Refer-Call-Transfer-Id) is not currently used on the Net-Net 9200.

```
#
# dictionary.acme
#

#
# Version:      Updated 2009/05/29
#
# For documentation on Acme Packet RADIUS attributes, see:
#
# Acme Packet RADIUS Design specification
#

VENDOR          Acme          9148

#
# Voice over IP attributes.
#
ATTRIBUTE       Acme-FlowID_FS1_F          1      string      Acme
ATTRIBUTE       Acme-FlowType_FS1_F        2      string      Acme
ATTRIBUTE       Acme-Session-Ingress-CallId 3      string      Acme
ATTRIBUTE       Acme-Session-Egress-CallId 4      string      Acme

ATTRIBUTE       Acme-Flow-In-Realm_FS1_F   10     string      Acme
ATTRIBUTE       Acme-Flow-In-Src-Addr_FS1_F 11     ipaddr      Acme
ATTRIBUTE       Acme-Flow-In-Src-Port_FS1_F 12     integer     Acme
ATTRIBUTE       Acme-Flow-In-Dst-Addr_FS1_F 13     ipaddr      Acme
ATTRIBUTE       Acme-Flow-In-Dst-Port_FS1_F 14     integer     Acme

ATTRIBUTE       Acme-Flow-Out-Realm_FS1_F   20     string      Acme
ATTRIBUTE       Acme-Flow-Out-Src-Addr_FS1_F 21     ipaddr      Acme
ATTRIBUTE       Acme-Flow-Out-Src-Port_FS1_F 22     integer     Acme
ATTRIBUTE       Acme-Flow-Out-Dst-Addr_FS1_F 23     ipaddr      Acme
ATTRIBUTE       Acme-Flow-Out-Dst-Port_FS1_F 24     integer     Acme
ATTRIBUTE       Acme-Calling-Octets_FS1     28     integer     Acme
ATTRIBUTE       Acme-Calling-Packets_FS1    29     integer     Acme
ATTRIBUTE       Acme-Calling-RTCP-Packets-Lost_FS1 32     integer     Acme
ATTRIBUTE       Acme-Calling-RTCP-Avg-Jitter_FS1 33     integer     Acme
ATTRIBUTE       Acme-Calling-RTCP-Avg-Latency_FS1 34     integer     Acme
ATTRIBUTE       Acme-Calling-RTCP-MaxJitter_FS1 35     integer     Acme
ATTRIBUTE       Acme-Calling-RTCP-MaxLatency_FS1 36     integer     Acme
ATTRIBUTE       Acme-Calling-RTP-Packets-Lost_FS1 37     integer     Acme
ATTRIBUTE       Acme-Calling-RTP-Avg-Jitter_FS1 38     integer     Acme
ATTRIBUTE       Acme-Calling-RTP-MaxJitter_FS1 39     integer     Acme

ATTRIBUTE       Acme-Session-Generic-Id     40     string      Acme
ATTRIBUTE       Acme-Session-Ingress-Realm  41     string      Acme
ATTRIBUTE       Acme-Session-Egress-Realm   42     string      Acme
ATTRIBUTE       Acme-Session-Protocol-Type  43     string      Acme

ATTRIBUTE       Acme-Called-Octets_FS1      44     integer     Acme
ATTRIBUTE       Acme-Called-Packets_FS1     45     integer     Acme
```

|             |                                        |     |         |      |
|-------------|----------------------------------------|-----|---------|------|
| ATTRIBUTE   | Acme-Called-RTCP-Packets-Lost_FS1      | 46  | integer | Acme |
| ATTRIBUTE   | Acme-Called-RTCP-Avg-Jitter_FS1        | 47  | integer | Acme |
| ATTRIBUTE   | Acme-Called-RTCP-Avg-Latency_FS1       | 48  | integer | Acme |
| ATTRIBUTE   | Acme-Called-RTCP-MaxJitter_FS1         | 49  | integer | Acme |
| ATTRIBUTE   | Acme-Called-RTCP-MaxLatency_FS1        | 50  | integer | Acme |
| ATTRIBUTE   | Acme-Called-RTP-Packets-Lost_FS1       | 51  | integer | Acme |
| ATTRIBUTE   | Acme-Called-RTP-Avg-Jitter_FS1         | 52  | integer | Acme |
| ATTRIBUTE   | Acme-Called-RTP-MaxJitter_FS1          | 53  | integer | Acme |
| ATTRIBUTE   | Acme-Session-Charging-Vector           | 54  | string  | Acme |
| ATTRIBUTE   | Acme-Session-Charging-Function_Address | 55  | string  | Acme |
| ATTRIBUTE   | Acme-Firmware-Version                  | 56  | string  | Acme |
| ATTRIBUTE   | Acme-Local-Time-Zone                   | 57  | string  | Acme |
| ATTRIBUTE   | Acme-Post-Dial-Delay                   | 58  | integer | Acme |
| ATTRIBUTE   | Acme-CDR-Sequence-Number               | 59  | integer | Acme |
| ATTRIBUTE   | Acme-Session-Disposition               | 60  | integer | Acme |
| ATTRIBUTE   | Acme-Disconnect-Initiator              | 61  | integer | Acme |
| ATTRIBUTE   | Acme-Disconnect-Cause                  | 62  | integer | Acme |
| ATTRIBUTE   | Acme-Intermediate-Time                 | 63  | string  | Acme |
| ATTRIBUTE   | Acme-Primary-Routing-Number            | 64  | string  | Acme |
| ATTRIBUTE   | Acme-Originating-Trunk-Group           | 65  | string  | Acme |
| ATTRIBUTE   | Acme-Terminating-Trunk-Group           | 66  | string  | Acme |
| ATTRIBUTE   | Acme-Originating-Trunk-Context         | 67  | string  | Acme |
| ATTRIBUTE   | Acme-Terminating-Trunk-Context         | 68  | string  | Acme |
| ATTRIBUTE   | Acme-P-Asserted-ID                     | 69  | string  | Acme |
| ATTRIBUTE   | Acme-SIP-Diversion                     | 70  | string  | Acme |
| ATTRIBUTE   | Acme-SIP-Status                        | 71  | integer | Acme |
| # 72 unused |                                        |     |         |      |
| # 73 unused |                                        |     |         |      |
| ATTRIBUTE   | Acme-Ingress-Local-Addr                | 74  | string  | Acme |
| ATTRIBUTE   | Acme-Ingress-Remote-Addr               | 75  | string  | Acme |
| ATTRIBUTE   | Acme-Egress-Local-Addr                 | 76  | string  | Acme |
| ATTRIBUTE   | Acme-Egress-Remote-Addr                | 77  | string  | Acme |
| ATTRIBUTE   | Acme-FlowID_FS1_R                      | 78  | string  | Acme |
| ATTRIBUTE   | Acme-FlowType_FS1_R                    | 79  | string  | Acme |
| ATTRIBUTE   | Acme-Flow-In-Realm_FS1_R               | 80  | string  | Acme |
| ATTRIBUTE   | Acme-Flow-In-Src-Addr_FS1_R            | 81  | ipaddr  | Acme |
| ATTRIBUTE   | Acme-Flow-In-Src-Port_FS1_R            | 82  | integer | Acme |
| ATTRIBUTE   | Acme-Flow-In-Dst-Addr_FS1_R            | 83  | ipaddr  | Acme |
| ATTRIBUTE   | Acme-Flow-In-Dst-Port_FS1_R            | 84  | integer | Acme |
| ATTRIBUTE   | Acme-Flow-Out-Realm_FS1_R              | 85  | string  | Acme |
| ATTRIBUTE   | Acme-Flow-Out-Src-Addr_FS1_R           | 86  | ipaddr  | Acme |
| ATTRIBUTE   | Acme-Flow-Out-Src-Port_FS1_R           | 87  | integer | Acme |
| ATTRIBUTE   | Acme-Flow-Out-Dst-Addr_FS1_R           | 88  | ipaddr  | Acme |
| ATTRIBUTE   | Acme-Flow-Out-Dst-Port_FS1_R           | 89  | integer | Acme |
| ATTRIBUTE   | Acme-FlowID_FS2_F                      | 90  | string  | Acme |
| ATTRIBUTE   | Acme-FlowType_FS2_F                    | 91  | string  | Acme |
| ATTRIBUTE   | Acme-Flow-In-Realm_FS2_F               | 92  | string  | Acme |
| ATTRIBUTE   | Acme-Flow-In-Src-Addr_FS2_F            | 93  | ipaddr  | Acme |
| ATTRIBUTE   | Acme-Flow-In-Src-Port_FS2_F            | 94  | integer | Acme |
| ATTRIBUTE   | Acme-Flow-In-Dst-Addr_FS2_F            | 95  | ipaddr  | Acme |
| ATTRIBUTE   | Acme-Flow-In-Dst-Port_FS2_F            | 96  | integer | Acme |
| ATTRIBUTE   | Acme-Flow-Out-Realm_FS2_F              | 97  | string  | Acme |
| ATTRIBUTE   | Acme-Flow-Out-Src-Addr_FS2_F           | 98  | ipaddr  | Acme |
| ATTRIBUTE   | Acme-Flow-Out-Src-Port_FS2_F           | 99  | integer | Acme |
| ATTRIBUTE   | Acme-Flow-Out-Dst-Addr_FS2_F           | 100 | ipaddr  | Acme |
| ATTRIBUTE   | Acme-Flow-Out-Dst-Port_FS2_F           | 101 | integer | Acme |
| ATTRIBUTE   | Acme-Calling-Octets_FS2                | 102 | integer | Acme |
| ATTRIBUTE   | Acme-Calling-Packets_FS2               | 103 | integer | Acme |
| ATTRIBUTE   | Acme-Calling-RTCP-Packets-Lost_FS2     | 104 | integer | Acme |
| ATTRIBUTE   | Acme-Calling-RTCP-Avg-Jitter_FS2       | 105 | integer | Acme |
| ATTRIBUTE   | Acme-Calling-RTCP-Avg-Latency_FS2      | 106 | integer | Acme |
| ATTRIBUTE   | Acme-Calling-RTCP-MaxJitter_FS2        | 107 | integer | Acme |
| ATTRIBUTE   | Acme-Calling-RTCP-MaxLatency_FS2       | 108 | integer | Acme |

|           |                                   |     |         |      |
|-----------|-----------------------------------|-----|---------|------|
| ATTRIBUTE | Acme-Calling-RTP-Packets-Lost_FS2 | 109 | integer | Acme |
| ATTRIBUTE | Acme-Calling-RTP-Avg-Jitter_FS2   | 110 | integer | Acme |
| ATTRIBUTE | Acme-Calling-RTP-MaxJitter_FS2    | 111 | integer | Acme |
| ATTRIBUTE | Acme-FlowID_FS2_R                 | 112 | string  | Acme |
| ATTRIBUTE | Acme-FlowType_FS2_R               | 113 | string  | Acme |
| ATTRIBUTE | Acme-Flow-In-Realm_FS2_R          | 114 | string  | Acme |
| ATTRIBUTE | Acme-Flow-In-Src-Addr_FS2_R       | 115 | ipaddr  | Acme |
| ATTRIBUTE | Acme-Flow-In-Src-Port_FS2_R       | 116 | integer | Acme |
| ATTRIBUTE | Acme-Flow-In-Dst-Addr_FS2_R       | 117 | ipaddr  | Acme |
| ATTRIBUTE | Acme-Flow-In-Dst-Port_FS2_R       | 118 | integer | Acme |
| ATTRIBUTE | Acme-Flow-Out-Realm_FS2_R         | 119 | string  | Acme |
| ATTRIBUTE | Acme-Flow-Out-Src-Addr_FS2_R      | 120 | ipaddr  | Acme |
| ATTRIBUTE | Acme-Flow-Out-Src-Port_FS2_R      | 121 | integer | Acme |
| ATTRIBUTE | Acme-Flow-Out-Dst-Addr_FS2_R      | 122 | ipaddr  | Acme |
| ATTRIBUTE | Acme-Flow-Out-Dst-Port_FS2_R      | 123 | integer | Acme |
| ATTRIBUTE | Acme-Called-Octets_FS2            | 124 | integer | Acme |
| ATTRIBUTE | Acme-Called-Packets_FS2           | 125 | integer | Acme |
| ATTRIBUTE | Acme-Called-RTCP-Packets-Lost_FS2 | 126 | integer | Acme |
| ATTRIBUTE | Acme-Called-RTCP-Avg-Jitter_FS2   | 127 | integer | Acme |
| ATTRIBUTE | Acme-Called-RTCP-Avg-Latency_FS2  | 128 | integer | Acme |
| ATTRIBUTE | Acme-Called-RTCP-MaxJitter_FS2    | 129 | integer | Acme |
| ATTRIBUTE | Acme-Called-RTCP-MaxLatency_FS2   | 130 | integer | Acme |
| ATTRIBUTE | Acme-Called-RTP-Packets-Lost_FS2  | 131 | integer | Acme |
| ATTRIBUTE | Acme-Called-RTP-Avg-Jitter_FS2    | 132 | integer | Acme |
| ATTRIBUTE | Acme-Called-RTP-MaxJitter_FS2     | 133 | integer | Acme |
| ATTRIBUTE | Acme-Egress-Final-Routing-Number  | 134 | string  | Acme |
| ATTRIBUTE | Acme-Session-Ingress-RPH          | 135 | string  | Acme |
| ATTRIBUTE | Acme-Session-Egress-RPH           | 136 | string  | Acme |
| ATTRIBUTE | Acme-Ingress-Network-Interface-Id | 137 | string  | Acme |
| ATTRIBUTE | Acme-Ingress-Vlan-Tag-Value       | 138 | integer | Acme |
| ATTRIBUTE | Acme-Egress-Network-Interface-Id  | 139 | string  | Acme |
| ATTRIBUTE | Acme-Egress-Vlan-Tag-Value        | 140 | integer | Acme |
| ATTRIBUTE | Acme-FlowMediaType_FS1_F          | 142 | string  | Acme |
| ATTRIBUTE | Acme-FlowMediaType_FS1_R          | 143 | string  | Acme |
| ATTRIBUTE | Acme-FlowMediaType_FS2_F          | 144 | string  | Acme |
| ATTRIBUTE | Acme-FlowMediaType_FS2_R          | 145 | string  | Acme |
| ATTRIBUTE | Acme-Flow-PTIME_FS1_F             | 146 | integer | Acme |
| ATTRIBUTE | Acme-Flow-PTIME_FS1_R             | 147 | integer | Acme |
| ATTRIBUTE | Acme-Flow-PTIME_FS2_F             | 148 | integer | Acme |
| ATTRIBUTE | Acme-Flow-PTIME_FS2_R             | 149 | integer | Acme |
| ATTRIBUTE | Acme-Session-Media-Process        | 150 | string  | Acme |
| ATTRIBUTE | Acme-Session-Forked-Call-Id       | 171 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-200               | 200 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-201               | 201 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-202               | 202 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-203               | 203 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-204               | 204 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-205               | 205 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-206               | 206 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-207               | 207 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-208               | 208 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-209               | 209 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-210               | 210 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-211               | 211 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-212               | 212 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-213               | 213 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-214               | 214 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-215               | 215 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-216               | 216 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-217               | 217 | string  | Acme |
| ATTRIBUTE | Acme-Custom-VSA-218               | 218 | string  | Acme |

|           |                     |     |        |      |
|-----------|---------------------|-----|--------|------|
| ATTRIBUTE | Acme-Custom-VSA-219 | 219 | string | Acme |
| ATTRIBUTE | Acme-Custom-VSA-220 | 220 | string | Acme |
| ATTRIBUTE | Acme-Custom-VSA-221 | 221 | string | Acme |
| ATTRIBUTE | Acme-Custom-VSA-222 | 222 | string | Acme |
| ATTRIBUTE | Acme-Custom-VSA-223 | 223 | string | Acme |
| ATTRIBUTE | Acme-Custom-VSA-224 | 224 | string | Acme |
| ATTRIBUTE | Acme-Custom-VSA-225 | 225 | string | Acme |
| ATTRIBUTE | Acme-Custom-VSA-226 | 226 | string | Acme |
| ATTRIBUTE | Acme-Custom-VSA-227 | 227 | string | Acme |
| ATTRIBUTE | Acme-Custom-VSA-228 | 228 | string | Acme |
| ATTRIBUTE | Acme-Custom-VSA-229 | 229 | string | Acme |
| ATTRIBUTE | Acme-Custom-VSA-230 | 230 | string | Acme |
| ATTRIBUTE | Acme-User-Class     | 254 | string | Acme |

# Appendix C

## Local CSV file VSA placement

### Local File Format

---

Appendix C contains three tables that show where, in locally-generated CSV files, specific VSAs appear. There is one table for each of the following type of record: Start, Stop, Interim.

For more information about this feature and how to enable it, refer to the [Local CDR Storage and FTP Push \(54\)](#) section in this guide's [Configuring Accounting \(37\)](#) chapter.

### Start Record CSV Placement

| CSV Placement | Attribute Name                    | VSA ID Number |
|---------------|-----------------------------------|---------------|
| 1             | Acct-Status-Type                  |               |
| 2             | NAS-IP-Address                    |               |
| 3             | NAS-Port                          |               |
| 4             | Acct-Session-Id                   |               |
| 5             | Acme-Session-Ingress-CallId       | 3             |
| 6             | Acme-Session-Egress-CallId        | 4             |
| 7             | Acme-Session-Forked-Call-Id       | 171           |
| 8             | Acme-Session-Protocol-Type        | 43            |
| 9             | Acme-Session-Generic-Id           | 40            |
| 10            | Calling-Station-Id                |               |
| 11            | Called-Station-Id                 |               |
| 12            | h323-setup-time                   |               |
| 13            | h323-connect-time                 |               |
| 14            | Acme-Egress-Network-Interface-Id  | 139           |
| 15            | Acme-Egress-Vlan-Tag-Value        | 140           |
| 16            | Acme-Ingress-Network-Interface-Id | 137           |
| 17            | Acme-Ingress-Vlan-Tag-Value       | 138           |
| 18            | Acme-Session-Egress-Realm         | 42            |
| 19            | Acme-Session-Ingress-Realm        | 41            |
| 20            | Acme-Session-Media-Process        | 150           |
| 21            | Acme-FlowId_FS1_F                 | 1             |
| 22            | Acme-FlowType_FS1_F               | 2             |
| 23            | Acme-FlowMediaType_FS1_F          | 142           |

| CSV Placement | Attribute Name               | VSA ID Number |
|---------------|------------------------------|---------------|
| 24            | Acme-Flow-PTime_FS1_F        | 146           |
| 25            | Acme-Flow-In-REALM_FS1_F     | 10            |
| 26            | Acme-Flow-In-Src-Addr_FS1_F  | 11            |
| 27            | Acme-Flow-In-Src-Port_FS1_F  | 12            |
| 28            | Acme-Flow-In-Dst-Addr_FS1_F  | 13            |
| 29            | Acme-Flow-In-Dst-Port_FS1_F  | 14            |
| 30            | Acme-Flow-Out-REALM_FS1_F    | 20            |
| 31            | Acme-Flow-Out-Src-Addr_FS1_F | 21            |
| 32            | Acme-Flow-Out-Src-Port_FS1_F | 22            |
| 33            | Acme-Flow-Out-Dst-Addr_FS1_F | 23            |
| 34            | Acme-Flow-Out-Dst-Port_FS1_F | 24            |
| 35            | Acme-FlowID_FS1_R            | 78            |
| 36            | Acme-FlowType_FS1_R          | 79            |
| 37            | Acme-FlowMediaType_FS1_R     | 143           |
| 38            | Acme-Flow-PTime_FS1_R        | 147           |
| 39            | Acme-Flow-In-REALM_FS1_R     | 80            |
| 40            | Acme-Flow-In-Src-Addr_FS1_R  | 81            |
| 41            | Acme-Flow-In-Src-Port_FS1_R  | 82            |
| 42            | Acme-Flow-In-Dst-Addr_FS1_R  | 83            |
| 43            | Acme-Flow-In-Dst-Port_FS1_R  | 84            |
| 44            | Acme-Flow-Out-REALM_FS1_R    | 85            |
| 45            | Acme-Flow-Out-Src-Addr_FS1_R | 86            |
| 46            | Acme-Flow-Out-Src-Port_FS1_R | 87            |
| 47            | Acme-Flow-Out-Dst-Addr_FS1_R | 88            |
| 48            | Acme-Flow-Out-Dst-Port_FS1_R | 89            |
| 49            | Acme-FlowID_FS2_F            | 90            |
| 50            | Acme-FlowType_FS2_F          | 91            |
| 51            | Acme-FlowMediaType_FS2_F     | 144           |
| 52            | Acme-Flow-PTime_FS2_F        | 148           |
| 53            | Acme-Flow-In-REALM_FS2_F     | 92            |
| 54            | Acme-Flow-In-Src-Addr_FS2_F  | 93            |
| 55            | Acme-Flow-In-Src-Port_FS2_F  | 94            |
| 56            | Acme-Flow-In-Dst-Addr_FS2_F  | 95            |
| 57            | Acme-Flow-In-Dst-Port_FS2_F  | 96            |

| CSV Placement | Attribute Name                         | VSA ID Number |
|---------------|----------------------------------------|---------------|
| 58            | Acme-Flow-Out-Realm_FS2_F              | 97            |
| 59            | Acme-Flow-Out-Src-Addr_FS2_F           | 98            |
| 60            | Acme-Flow-Out-Src-Port_FS2_F           | 99            |
| 61            | Acme-Flow-Out-Dst-Addr_FS2_F           | 100           |
| 62            | Acme-Flow-Out-Dst-Port_FS2_F           | 101           |
| 63            | Acme-FlowID_FS2_R                      | 112           |
| 64            | Acme-FlowType_FS2_R                    | 113           |
| 65            | Acme-FlowMediaType_FS2_R               | 145           |
| 66            | Acme-Flow-PTime_FS2_R                  | 149           |
| 67            | Acme-Flow-In-Realm_FS2_R               | 114           |
| 68            | Acme-Flow-In-Src-Addr_FS2_R            | 115           |
| 69            | Acme-Flow-In-Src-Port_FS2_R            | 116           |
| 70            | Acme-Flow-In-Dst-Addr_FS2_R            | 117           |
| 71            | Acme-Flow-In-Dst-Port_FS2_R            | 118           |
| 72            | Acme-Flow-Out-Realm_FS2_R              | 119           |
| 73            | Acme-Flow-Out-Src-Addr_FS2_R           | 120           |
| 74            | Acme-Flow-Out-Src-Port_FS2_R           | 121           |
| 75            | Acme-Flow-Out-Dst-Addr_FS2_R           | 122           |
| 76            | Acme-Flow-Out-Dst-Port_FS2_R           | 123           |
| 77            | Acme-Session-Charging-Vector           | 54            |
| 78            | Acme-Session-Charging-Function_Address | 55            |
| 79            | Acme-Firmware-Version                  | 56            |
| 80            | Acme-Local-Time-Zone                   | 57            |
| 81            | Acme-Post-Dial-Delay                   | 58            |
| 82            | Acme-Primary-Routing-Number            | 64            |
| 83            | Acme-Originating-Trunk-Group           | 65            |
| 84            | Acme-Terminating-Trunk-Group           | 66            |
| 85            | Acme-Originating-Trunk-Context         | 67            |
| 86            | Acme-Terminating-Trunk-Context         | 68            |
| 87            | Acme-P-Asserted-ID                     | 69            |
| 88            | Acme-Ingress-Local-Addr                | 74            |
| 89            | Acme-Ingress-Remote-Addr               | 75            |
| 90            | Acme-Egress-Local-Addr                 | 76            |
| 91            | Acme-Egress-Remote-Addr                | 77            |

| <b>CSV Placement</b> | <b>Attribute Name</b>            | <b>VSA ID Number</b> |
|----------------------|----------------------------------|----------------------|
| 92                   | Acme-SIP-Diversion               | 70                   |
| 93                   | Acme-Egress-Final-Routing-Number | 134                  |
| 94                   | Acme-Session-Ingress-RPH         | 135                  |
| 95                   | Acme-Session-Egress-RPH          | 136                  |
| 96                   | Acme-Custom-VSA-200              | 200                  |
| 97                   | Acme-Custom-VSA-201              | 201                  |
| 98                   | Acme-Custom-VSA-202              | 202                  |
| 99                   | Acme-Custom-VSA-203              | 203                  |
| 100                  | Acme-Custom-VSA-204              | 204                  |
| 101                  | Acme-Custom-VSA-205              | 205                  |
| 102                  | Acme-Custom-VSA-206              | 206                  |
| 103                  | Acme-Custom-VSA-207              | 207                  |
| 104                  | Acme-Custom-VSA-208              | 208                  |
| 105                  | Acme-Custom-VSA-209              | 209                  |
| 106                  | Acme-Custom-VSA-210              | 210                  |
| 107                  | Acme-Custom-VSA-211              | 211                  |
| 108                  | Acme-Custom-VSA-212              | 212                  |
| 109                  | Acme-Custom-VSA-213              | 213                  |
| 110                  | Acme-Custom-VSA-214              | 214                  |
| 111                  | Acme-Custom-VSA-215              | 215                  |
| 112                  | Acme-Custom-VSA-216              | 216                  |
| 113                  | Acme-Custom-VSA-217              | 217                  |
| 114                  | Acme-Custom-VSA-218              | 218                  |
| 115                  | Acme-Custom-VSA-219              | 219                  |
| 116                  | Acme-Custom-VSA-220              | 220                  |
| 117                  | Acme-Custom-VSA-221              | 221                  |
| 118                  | Acme-Custom-VSA-222              | 222                  |
| 119                  | Acme-Custom-VSA-223              | 223                  |
| 120                  | Acme-Custom-VSA-224              | 224                  |
| 121                  | Acme-Custom-VSA-225              | 225                  |
| 122                  | Acme-Custom-VSA-226              | 226                  |
| 123                  | Acme-Custom-VSA-227              | 227                  |
| 124                  | Acme-Custom-VSA-228              | 228                  |
| 125                  | Acme-Custom-VSA-229              | 229                  |



| CSV Placement | Attribute Name           | VSA ID Number |
|---------------|--------------------------|---------------|
| 126           | Acme-Custom-VSA-230      | 230           |
| 127           | Acme-CDR-Sequence-Number | 59            |

## Interim Record CSV Placement

| CSV Placement | Attribute Name                    | VSA ID Number |
|---------------|-----------------------------------|---------------|
| 1             | Acct-Status-Type                  |               |
| 2             | NAS-IP-Address                    |               |
| 3             | NAS-Port                          |               |
| 4             | Acct-Session-Id                   |               |
| 5             | Acme-Session-Ingress-CallId       | 3             |
| 6             | Acme-Session-Egress-CallId        | 4             |
| 7             | Acme-Session-Forked-Call-Id       | 171           |
| 8             | Acme-Session-Protocol-Type        | 43            |
| 9             | Acme-Session-Generic-Id           | 40            |
| 10            | Calling-Station-Id                |               |
| 11            | Called-Station-Id                 |               |
| 12            | h323-setup-time                   |               |
| 13            | h323-connect-time                 |               |
| 14            | Acme-Egress-Network-Interface-Id  | 139           |
| 15            | Acme-Egress-Vlan-Tag-Value        | 140           |
| 16            | Acme-Ingress-Network-Interface-Id | 137           |
| 17            | Acme-Ingress-Vlan-Tag-Value       | 138           |
| 18            | Acme-Session-Egress-Realm         | 42            |
| 19            | Acme-Session-Ingress-Realm        | 41            |
| 20            | Acme-Session-Media-Process        | 150           |
| 21            | Acme-FlowId_FS1_F                 | 1             |
| 22            | Acme-FlowType_FS1_F               | 2             |
| 23            | Acme-FlowMediaType_FS1_F          | 142           |
| 24            | Acme-Flow-PTIME_FS1_F             | 146           |
| 25            | Acme-Flow-In-Realm_FS1_F          | 10            |
| 26            | Acme-Flow-In-Src-Addr_FS1_F       | 11            |
| 27            | Acme-Flow-In-Src-Port_FS1_F       | 12            |

| CSV Placement | Attribute Name                     | VSA ID Number |
|---------------|------------------------------------|---------------|
| 28            | Acme-Flow-In-Dst-Addr_FS1_F        | 13            |
| 29            | Acme-Flow-In-Dst-Port_FS1_F        | 14            |
| 30            | Acme-Flow-Out-Realm_FS1_F          | 20            |
| 31            | Acme-Flow-Out-Src-Addr_FS1_F       | 21            |
| 32            | Acme-Flow-Out-Src-Port_FS1_F       | 22            |
| 33            | Acme-Flow-Out-Dst-Addr_FS1_F       | 23            |
| 34            | Acme-Flow-Out-Dst-Port_FS1_F       | 24            |
| 35            | Acme-Calling-RTCP-Packets-Lost_FS1 | 32            |
| 36            | Acme-Calling-RTCP-Avg-Jitter_FS1   | 33            |
| 37            | Acme-Calling-RTCP-Avg-Latency_FS1  | 34            |
| 38            | Acme-Calling-RTCP-MaxJitter_FS1    | 35            |
| 39            | Acme-Calling-RTCP-MaxLatency_FS1   | 36            |
| 40            | Acme-Calling-RTP-Packets-Lost_FS1  | 37            |
| 41            | Acme-Calling-RTP-Avg-Jitter_FS1    | 38            |
| 42            | Acme-Calling-RTP-MaxJitter_FS1     | 39            |
| 43            | Acme-Calling-Octets_FS1            | 28            |
| 44            | Acme-Calling-Packets_FS1           | 29            |
| 45            | Acme-FlowID_FS1_R                  | 78            |
| 46            | Acme-FlowType_FS1_R                | 79            |
| 47            | Acme-FlowMediaType_FS1_R           | 143           |
| 48            | Acme-Flow-PTime_FS1_R              | 147           |
| 49            | Acme-Flow-In-Realm_FS1_R           | 80            |
| 50            | Acme-Flow-In-Src-Addr_FS1_R        | 81            |
| 51            | Acme-Flow-In-Src-Port_FS1_R        | 82            |
| 52            | Acme-Flow-In-Dst-Addr_FS1_R        | 83            |
| 53            | Acme-Flow-In-Dst-Port_FS1_R        | 84            |
| 54            | Acme-Flow-Out-Realm_FS1_R          | 85            |
| 55            | Acme-Flow-Out-Src-Addr_FS1_R       | 86            |
| 56            | Acme-Flow-Out-Src-Port_FS1_R       | 87            |
| 57            | Acme-Flow-Out-Dst-Addr_FS1_R       | 88            |
| 58            | Acme-Flow-Out-Dst-Port_FS1_R       | 89            |
| 59            | Acme-Called-RTCP-Packets-Lost_FS1  | 46            |
| 60            | Acme-Called-RTCP-Avg-Jitter_FS1    | 47            |
| 61            | Acme-Called-RTCP-Avg-Latency_FS1   | 48            |

| CSV Placement | Attribute Name                     | VSA ID Number |
|---------------|------------------------------------|---------------|
| 62            | Acme-Called-RTCP-MaxJitter_FS1     | 49            |
| 63            | Acme-Called-RTCP-MaxLatency_FS1    | 50            |
| 64            | Acme-Called-RTP-Packets-Lost_FS1   | 51            |
| 65            | Acme-Called-RTP-Avg-Jitter_FS1     | 52            |
| 66            | Acme-Called-RTP-MaxJitter_FS1      | 53            |
| 67            | Acme-Called-Octets_FS1             | 44            |
| 68            | Acme-Called-Packets_FS1            | 45            |
| 69            | Acme-FlowID_FS2_F                  | 90            |
| 70            | Acme-FlowType_FS2_F                | 91            |
| 71            | Acme-FlowMediaType_FS2_F           | 144           |
| 72            | Acme-Flow-PTime_FS2_F              | 148           |
| 73            | Acme-Flow-In-Realm_FS2_F           | 92            |
| 74            | Acme-Flow-In-Src-Addr_FS2_F        | 93            |
| 75            | Acme-Flow-In-Src-Port_FS2_F        | 94            |
| 76            | Acme-Flow-In-Dst-Addr_FS2_F        | 95            |
| 77            | Acme-Flow-In-Dst-Port_FS2_F        | 96            |
| 78            | Acme-Flow-Out-Realm_FS2_F          | 97            |
| 79            | Acme-Flow-Out-Src-Addr_FS2_F       | 98            |
| 80            | Acme-Flow-Out-Src-Port_FS2_F       | 99            |
| 81            | Acme-Flow-Out-Dst-Addr_FS2_F       | 100           |
| 82            | Acme-Flow-Out-Dst-Port_FS2_F       | 101           |
| 83            | Acme-Calling-RTCP-Packets-Lost_FS2 | 104           |
| 84            | Acme-Calling-RTCP-Avg-Jitter_FS2   | 105           |
| 85            | Acme-Calling-RTCP-Avg-Latency_FS2  | 106           |
| 86            | Acme-Calling-RTCP-MaxJitter_FS2    | 107           |
| 87            | Acme-Calling-RTCP-MaxLatency_FS2   | 108           |
| 88            | Acme-Calling-RTP-Packets-Lost_FS2  | 109           |
| 89            | Acme-Calling-RTP-Avg-Jitter_FS2    | 110           |
| 90            | Acme-Calling-RTP-MaxJitter_FS2     | 111           |
| 91            | Acme-Calling-Octets_FS2            | 102           |
| 92            | Acme-Calling-Packets_FS2           | 103           |
| 93            | Acme-FlowID_FS2_R                  | 112           |
| 94            | Acme-FlowType_FS2_R                | 113           |
| 95            | Acme-FlowMediaType_FS2_R           | 145           |

| CSV Placement | Attribute Name                         | VSA ID Number |
|---------------|----------------------------------------|---------------|
| 96            | Acme-Flow-PTime_FS2_R                  | 149           |
| 97            | Acme-Flow-In-Realm_FS2_R               | 114           |
| 98            | Acme-Flow-In-Src-Addr_FS2_R            | 115           |
| 99            | Acme-Flow-In-Src-Port_FS2_R            | 116           |
| 100           | Acme-Flow-In-Dst-Addr_FS2_R            | 117           |
| 101           | Acme-Flow-In-Dst-Port_FS2_R            | 118           |
| 102           | Acme-Flow-Out-Realm_FS2_R              | 119           |
| 103           | Acme-Flow-Out-Src-Addr_FS2_R           | 120           |
| 104           | Acme-Flow-Out-Src-Port_FS2_R           | 121           |
| 105           | Acme-Flow-Out-Dst-Addr_FS2_R           | 122           |
| 106           | Acme-Flow-Out-Dst-Port_FS2_R           | 123           |
| 107           | Acme-Called-RTCP-Packets-Lost_FS2      | 126           |
| 108           | Acme-Called-RTCP-Avg-Jitter_FS2        | 127           |
| 109           | Acme-Called-RTCP-Avg-Latency_FS2       | 128           |
| 110           | Acme-Called-RTCP-MaxJitter_FS2         | 129           |
| 111           | Acme-Called-RTCP-MaxLatency_FS2        | 130           |
| 112           | Acme-Called-RTP-Packets-Lost_FS2       | 131           |
| 113           | Acme-Called-RTP-Avg-Jitter_FS2         | 132           |
| 114           | Acme-Called-RTP-MaxJitter_FS2          | 133           |
| 115           | Acme-Called-Octets_FS2                 | 124           |
| 116           | Acme-Called-Packets_FS2                | 125           |
| 117           | Acme-Session-Charging-Vector           | 54            |
| 118           | Acme-Session-Charging-Function_Address | 55            |
| 119           | Acme-Firmware-Version                  | 56            |
| 120           | Acme-Local-Time-Zone                   | 57            |
| 121           | Acme-Post-Dial-Delay                   | 58            |
| 122           | Acme-Primary-Routing-Number            | 64            |
| 123           | Acme-Originating-Trunk-Group           | 65            |
| 124           | Acme-Terminating-Trunk-Group           | 66            |
| 125           | Acme-Originating-Trunk-Context         | 67            |
| 126           | Acme-Terminating-Trunk-Context         | 68            |
| 127           | Acme-P-Asserted-ID                     | 69            |
| 128           | Acme-Ingress-Local-Addr                | 74            |
| 129           | Acme-Ingress-Remote-Addr               | 75            |

| CSV Placement | Attribute Name                   | VSA ID Number |
|---------------|----------------------------------|---------------|
| 130           | Acme-Egress-Local-Addr           | 76            |
| 131           | Acme-Egress-Remote-Addr          | 77            |
| 132           | Acme-SIP-Diversion               | 70            |
| 133           | Acme-Intermediate_Time           | 63            |
| 134           | Acme-Egress-Final-Routing-Number | 134           |
| 135           | Acme-Session-Ingress-RPH         | 135           |
| 136           | Acme-Session-Egress-RPH          | 136           |
| 137           | Acme-Custom-VSA-200              | 200           |
| 138           | Acme-Custom-VSA-201              | 201           |
| 139           | Acme-Custom-VSA-202              | 202           |
| 140           | Acme-Custom-VSA-203              | 203           |
| 141           | Acme-Custom-VSA-204              | 204           |
| 142           | Acme-Custom-VSA-205              | 205           |
| 143           | Acme-Custom-VSA-206              | 206           |
| 144           | Acme-Custom-VSA-207              | 207           |
| 145           | Acme-Custom-VSA-208              | 208           |
| 146           | Acme-Custom-VSA-209              | 209           |
| 147           | Acme-Custom-VSA-210              | 210           |
| 148           | Acme-Custom-VSA-211              | 211           |
| 149           | Acme-Custom-VSA-212              | 212           |
| 150           | Acme-Custom-VSA-213              | 213           |
| 151           | Acme-Custom-VSA-214              | 214           |
| 152           | Acme-Custom-VSA-215              | 215           |
| 153           | Acme-Custom-VSA-216              | 216           |
| 154           | Acme-Custom-VSA-217              | 217           |
| 155           | Acme-Custom-VSA-218              | 218           |
| 156           | Acme-Custom-VSA-219              | 219           |
| 157           | Acme-Custom-VSA-220              | 220           |
| 158           | Acme-Custom-VSA-221              | 221           |
| 159           | Acme-Custom-VSA-222              | 222           |
| 160           | Acme-Custom-VSA-223              | 223           |
| 161           | Acme-Custom-VSA-224              | 224           |
| 162           | Acme-Custom-VSA-225              | 225           |
| 163           | Acme-Custom-VSA-226              | 226           |

| CSV Placement | Attribute Name           | VSA ID Number |
|---------------|--------------------------|---------------|
| 164           | Acme-Custom-VSA-227      | 227           |
| 165           | Acme-Custom-VSA-228      | 228           |
| 166           | Acme-Custom-VSA-229      | 229           |
| 167           | Acme-Custom-VSA-230      | 230           |
| 168           | Acme-CDR-Sequence-Number | 59            |

### Interim (unsuccessful attempt) Record CSV Placement

| CSV Placement | Attribute Name                    | VSA ID Number |
|---------------|-----------------------------------|---------------|
| 1             | Acct-Status-Type                  |               |
| 2             | NAS-IP-Address                    |               |
| 3             | NAS-Port                          |               |
| 4             | Acct-Session-Id                   |               |
| 5             | Acme-Session-Ingress-CallId       | 3             |
| 6             | Acme-Session-Egress-CallId        | 4             |
| 7             | Acme-Session-Forked-Call-Id       | 171           |
| 8             | Acme-Session-Protocol-Type        | 43            |
| 9             | Acme-Session-Generic-Id           | 40            |
| 10            | Calling-Station-Id                |               |
| 11            | Called-Station-Id                 |               |
| 12            | h323-setup-time                   |               |
| 13            | h323-connect-time                 |               |
| 14            | Acme-Egress-Network-Interface-Id  | 139           |
| 15            | Acme-Egress-Vlan-Tag-Value        | 140           |
| 16            | Acme-Ingress-Network-Interface-Id | 137           |
| 17            | Acme-Ingress-Vlan-Tag-Value       | 138           |
| 18            | Acme-Session-Egress-Realm         | 42            |
| 19            | Acme-Session-Ingress-Realm        | 41            |
| 20            | Acme-Session-Media-Process        | 150           |
| 21            | Acme-FlowId_FS1_F                 | 1             |
| 22            | Acme-FlowType_FS1_F               | 2             |
| 23            | Acme-FlowMediaType_FS1_F          | 142           |
| 24            | Acme-Flow-PTIME_FS1_F             | 146           |

| CSV Placement | Attribute Name                     | VSA ID Number |
|---------------|------------------------------------|---------------|
| 25            | Acme-Flow-In-Realm_FS1_F           | 10            |
| 26            | Acme-Flow-In-Src-Addr_FS1_F        | 11            |
| 27            | Acme-Flow-In-Src-Port_FS1_F        | 12            |
| 28            | Acme-Flow-In-Dst-Addr_FS1_F        | 13            |
| 29            | Acme-Flow-In-Dst-Port_FS1_F        | 14            |
| 30            | Acme-Flow-Out-Realm_FS1_F          | 20            |
| 31            | Acme-Flow-Out-Src-Addr_FS1_F       | 21            |
| 32            | Acme-Flow-Out-Src-Port_FS1_F       | 22            |
| 33            | Acme-Flow-Out-Dst-Addr_FS1_F       | 23            |
| 34            | Acme-Flow-Out-Dst-Port_FS1_F       | 24            |
| 35            | Acme-Calling-RTCP-Packets-Lost_FS1 | 32            |
| 36            | Acme-Calling-RTCP-Avg-Jitter_FS1   | 33            |
| 37            | Acme-Calling-RTCP-Avg-Latency_FS1  | 34            |
| 38            | Acme-Calling-RTCP-MaxJitter_FS1    | 35            |
| 39            | Acme-Calling-RTCP-MaxLatency_FS1   | 36            |
| 40            | Acme-Calling-RTP-Packets-Lost_FS1  | 37            |
| 41            | Acme-Calling-RTP-Avg-Jitter_FS1    | 38            |
| 42            | Acme-Calling-RTP-MaxJitter_FS1     | 39            |
| 43            | Acme-Calling-Octets_FS1            | 28            |
| 44            | Acme-Calling-Packets_FS1           | 29            |
| 45            | Acme-FlowID_FS1_R                  | 78            |
| 46            | Acme-FlowType_FS1_R                | 79            |
| 47            | Acme-FlowMediaType_FS1_R           | 143           |
| 48            | Acme-Flow-PTime_FS1_R              | 147           |
| 49            | Acme-Flow-In-Realm_FS1_R           | 80            |
| 50            | Acme-Flow-In-Src-Addr_FS1_R        | 81            |
| 51            | Acme-Flow-In-Src-Port_FS1_R        | 82            |
| 52            | Acme-Flow-In-Dst-Addr_FS1_R        | 83            |
| 53            | Acme-Flow-In-Dst-Port_FS1_R        | 84            |
| 54            | Acme-Flow-Out-Realm_FS1_R          | 85            |
| 55            | Acme-Flow-Out-Src-Addr_FS1_R       | 86            |
| 56            | Acme-Flow-Out-Src-Port_FS1_R       | 87            |
| 57            | Acme-Flow-Out-Dst-Addr_FS1_R       | 88            |
| 58            | Acme-Flow-Out-Dst-Port_FS1_R       | 89            |

| CSV Placement | Attribute Name                     | VSA ID Number |
|---------------|------------------------------------|---------------|
| 59            | Acme-Called-RTCP-Packets-Lost_FS1  | 46            |
| 60            | Acme-Called-RTCP-Avg-Jitter_FS1    | 47            |
| 61            | Acme-Called-RTCP-Avg-Latency_FS1   | 48            |
| 62            | Acme-Called-RTCP-MaxJitter_FS1     | 49            |
| 63            | Acme-Called-RTCP-MaxLatency_FS1    | 50            |
| 64            | Acme-Called-RTP-Packets-Lost_FS1   | 51            |
| 65            | Acme-Called-RTP-Avg-Jitter_FS1     | 52            |
| 66            | Acme-Called-RTP-MaxJitter_FS1      | 53            |
| 67            | Acme-Called-Octets_FS1             | 44            |
| 68            | Acme-Called-Packets_FS1            | 45            |
| 69            | Acme-FlowID_FS2_F                  | 90            |
| 70            | Acme-FlowType_FS2_F                | 91            |
| 71            | Acme-FlowMediaType_FS2_F           | 144           |
| 72            | Acme-FlowPTime_FS2_F               | 148           |
| 73            | Acme-Flow-In-Realm_FS2_F           | 92            |
| 74            | Acme-Flow-In-Src-Addr_FS2_F        | 93            |
| 75            | Acme-Flow-In-Src-Port_FS2_F        | 94            |
| 76            | Acme-Flow-In-Dst-Addr_FS2_F        | 95            |
| 77            | Acme-Flow-In-Dst-Port_FS2_F        | 96            |
| 78            | Acme-Flow-Out-Realm_FS2_F          | 97            |
| 79            | Acme-Flow-Out-Src-Addr_FS2_F       | 98            |
| 80            | Acme-Flow-Out-Src-Port_FS2_F       | 99            |
| 81            | Acme-Flow-Out-Dst-Addr_FS2_F       | 100           |
| 82            | Acme-Flow-Out-Dst-Port_FS2_F       | 101           |
| 83            | Acme-Calling-RTCP-Packets-Lost_FS2 | 104           |
| 84            | Acme-Calling-RTCP-Avg-Jitter_FS2   | 105           |
| 85            | Acme-Calling-RTCP-Avg-Latency_FS2  | 106           |
| 86            | Acme-Calling-RTCP-MaxJitter_FS2    | 107           |
| 87            | Acme-Calling-RTCP-MaxLatency_FS2   | 108           |
| 88            | Acme-Calling-RTP-Packets-Lost_FS2  | 109           |
| 89            | Acme-Calling-RTP-Avg-Jitter_FS2    | 110           |
| 90            | Acme-Calling-RTP-MaxJitter_FS2     | 111           |
| 91            | Acme-Calling-Octets_FS2            | 102           |
| 92            | Acme-Calling-Packets_FS2           | 103           |



| CSV Placement | Attribute Name                    | VSA ID Number |
|---------------|-----------------------------------|---------------|
| 93            | Acme-FlowID_FS2_R                 | 112           |
| 94            | Acme-FlowType_FS2_R               | 113           |
| 95            | Acme-FlowMediaType_FS2_R          | 145           |
| 96            | Acme-Flow-PTime_FS2_R             | 149           |
| 97            | Acme-Flow-In-Realm_FS2_R          | 114           |
| 98            | Acme-Flow-In-Src-Addr_FS2_R       | 115           |
| 99            | Acme-Flow-In-Src-Port_FS2_R       | 116           |
| 100           | Acme-Flow-In-Dst-Addr_FS2_R       | 117           |
| 101           | Acme-Flow-In-Dst-Port_FS2_R       | 118           |
| 102           | Acme-Flow-Out-Realm_FS2_R         | 119           |
| 103           | Acme-Flow-Out-Src-Addr_FS2_R      | 120           |
| 104           | Acme-Flow-Out-Src-Port_FS2_R      | 121           |
| 105           | Acme-Flow-Out-Dst-Addr_FS2_R      | 122           |
| 106           | Acme-Flow-Out-Dst-Port_FS2_R      | 123           |
| 107           | Acme-Called-RTCP-Packets-Lost_FS2 | 126           |
| 108           | Acme-Called-RTCP-Avg-Jitter_FS2   | 127           |
| 109           | Acme-Called-RTCP-Avg-Latency_FS2  | 128           |
| 110           | Acme-Called-RTCP-MaxJitter_FS2    | 129           |
| 111           | Acme-Called-RTCP-MaxLatency_FS2   | 130           |
| 112           | Acme-Called-RTP-Packets-Lost_FS2  | 131           |
| 113           | Acme-Called-RTP-Avg-Jitter_FS2    | 132           |
| 114           | Acme-Called-RTP-MaxJitter_FS2     | 133           |
| 115           | Acme-Called-Octets_FS2            | 124           |
| 116           | Acme-Called-Packets_FS2           | 125           |
| 117           | Acme-Firmware-Version             | 56            |
| 118           | Acme-Local-Time-Zone              | 57            |
| 119           | Acme-Post-Dial-Delay              | 58            |
| 120           | Acme-Primary-Routing-Number       | 64            |
| 121           | Acme-Originating-Trunk-Group      | 65            |
| 122           | Acme-Terminating-Trunk-Group      | 66            |
| 123           | Acme-Originating-Trunk-Context    | 67            |
| 124           | Acme-Terminating-Trunk-Context    | 68            |
| 125           | Acme-P-Asserted-ID                | 69            |
| 126           | Acme-Ingress-Local-Addr           | 74            |

| CSV Placement | Attribute Name                   | VSA ID Number |
|---------------|----------------------------------|---------------|
| 127           | Acme-Ingress-Remote-Addr         | 75            |
| 128           | Acme-Egress-Local-Addr           | 76            |
| 129           | Acme-Egress-Remote-Addr          | 77            |
| 130           | Acme-SIP-Diversion               | 70            |
| 131           | Acme-Intermediate_Time           | 63            |
| 132           | Acme-Egress-Final-Routing-Number | 134           |
| 133           | Acme-Session-Disposition         | 60            |
| 134           | Acme-Disconnect-Initiator        | 61            |
| 135           | Acme-Disconnect-Cause            | 62            |
| 136           | Acme-SIP-Status                  | 71            |
| 137           | Acme-Custom-VSA-200              | 200           |
| 138           | Acme-Custom-VSA-201              | 201           |
| 139           | Acme-Custom-VSA-202              | 202           |
| 140           | Acme-Custom-VSA-203              | 203           |
| 141           | Acme-Custom-VSA-204              | 204           |
| 142           | Acme-Custom-VSA-205              | 205           |
| 143           | Acme-Custom-VSA-206              | 206           |
| 144           | Acme-Custom-VSA-207              | 207           |
| 145           | Acme-Custom-VSA-208              | 208           |
| 146           | Acme-Custom-VSA-209              | 209           |
| 147           | Acme-Custom-VSA-210              | 210           |
| 148           | Acme-Custom-VSA-211              | 211           |
| 149           | Acme-Custom-VSA-212              | 212           |
| 150           | Acme-Custom-VSA-213              | 213           |
| 151           | Acme-Custom-VSA-214              | 214           |
| 152           | Acme-Custom-VSA-215              | 215           |
| 153           | Acme-Custom-VSA-216              | 216           |
| 154           | Acme-Custom-VSA-217              | 217           |
| 155           | Acme-Custom-VSA-218              | 218           |
| 156           | Acme-Custom-VSA-219              | 219           |
| 157           | Acme-Custom-VSA-220              | 220           |
| 158           | Acme-Custom-VSA-221              | 221           |
| 159           | Acme-Custom-VSA-222              | 222           |
| 160           | Acme-Custom-VSA-223              | 223           |

| CSV Placement | Attribute Name           | VSA ID Number |
|---------------|--------------------------|---------------|
| 161           | Acme-Custom-VSA-224      | 224           |
| 162           | Acme-Custom-VSA-225      | 225           |
| 163           | Acme-Custom-VSA-226      | 226           |
| 164           | Acme-Custom-VSA-227      | 227           |
| 165           | Acme-Custom-VSA-228      | 228           |
| 166           | Acme-Custom-VSA-229      | 229           |
| 167           | Acme-Custom-VSA-230      | 230           |
| 168           | Acme-CDR-Sequence-Number | 59            |

## Stop Record CSV Placement

| CSV Placement | Attribute Name                    | VSA ID Number |
|---------------|-----------------------------------|---------------|
| 1             | Acct-Status-Type                  |               |
| 2             | NAS-IP-Address                    |               |
| 3             | NAS-Port                          |               |
| 4             | Acct-Session-Id                   |               |
| 5             | Acme-Session-Ingress-CallId       | 3             |
| 6             | Acme-Session-Egress-CallId        | 4             |
| 7             | Acme-Session-Forked-Call-Id       | 171           |
| 8             | Acme-Session-Protocol-Type        | 43            |
| 9             | Acme-Session-Generic-Id           | 40            |
| 10            | Calling-Station-Id                |               |
| 11            | Called-Station-Id                 |               |
| 12            | Acct-Terminate-Cause              |               |
| 13            | Acct-Session-Time                 |               |
| 14            | h323-setup-time                   |               |
| 15            | h323-connect-time                 |               |
| 16            | h323-disconnect-time              |               |
| 17            | h323-disconnect-cause             |               |
| 18            | Acme-Egress-Network-Interface-Id  | 139           |
| 19            | Acme-Egress-Vlan-Tag-Value        | 140           |
| 20            | Acme-Ingress-Network-Interface-Id | 137           |
| 21            | Acme-Ingress-Vlan-Tag-Value       | 138           |

| CSV Placement | Attribute Name                     | VSA ID Number |
|---------------|------------------------------------|---------------|
| 22            | Acme-Session-Egress-Realm          | 42            |
| 23            | Acme-Session-Ingress-Realm         | 41            |
| 24            | Acme-Session-Media-Process         | 150           |
| 25            | Acme-FlowId_FS1_F                  | 1             |
| 26            | Acme-FlowType_FS1_F                | 2             |
| 27            | Acme-FlowMediaType_FS1_F           | 142           |
| 28            | Acme-Flow-PTime_FS1_F              | 146           |
| 29            | Acme-Flow-In-Realm_FS1_F           | 10            |
| 30            | Acme-Flow-In-Src-Addr_FS1_F        | 11            |
| 31            | Acme-Flow-In-Src-Port_FS1_F        | 12            |
| 32            | Acme-Flow-In-Dst-Addr_FS1_F        | 13            |
| 33            | Acme-Flow-In-Dst-Port_FS1_F        | 14            |
| 34            | Acme-Flow-Out-Realm_FS1_F          | 20            |
| 35            | Acme-Flow-Out-Src-Addr_FS1_F       | 21            |
| 36            | Acme-Flow-Out-Src-Port_FS1_F       | 22            |
| 37            | Acme-Flow-Out-Dst-Addr_FS1_F       | 23            |
| 38            | Acme-Flow-Out-Dst-Port_FS1_F       | 24            |
| 39            | Acme-Calling-RTCP-Packets-Lost_FS1 | 32            |
| 40            | Acme-Calling-RTCP-Avg-Jitter_FS1   | 33            |
| 41            | Acme-Calling-RTCP-Avg-Latency_FS1  | 34            |
| 42            | Acme-Calling-RTCP-MaxJitter_FS1    | 35            |
| 43            | Acme-Calling-RTCP-MaxLatency_FS1   | 36            |
| 44            | Acme-Calling-RTP-Packets-Lost_FS1  | 37            |
| 45            | Acme-Calling-RTP-Avg-Jitter_FS1    | 38            |
| 46            | Acme-Calling-RTP-MaxJitter_FS1     | 39            |
| 47            | Acme-Calling-Octets_FS1            | 28            |
| 48            | Acme-Calling-Packets_FS1           | 29            |
| 49            | Acme-FlowID_FS1_R                  | 78            |
| 50            | Acme-FlowType_FS1_R                | 79            |
| 51            | Acme-FlowMediaType_FS1_R           | 143           |
| 52            | Acme-Flow-PTime_FS1_R              | 147           |
| 53            | Acme-Flow-In-Realm_FS1_R           | 80            |
| 54            | Acme-Flow-In-Src-Addr_FS1_R        | 81            |
| 55            | Acme-Flow-In-Src-Port_FS1_R        | 82            |

| CSV Placement | Attribute Name                     | VSA ID Number |
|---------------|------------------------------------|---------------|
| 56            | Acme-Flow-In-Dst-Addr_FS1_R        | 83            |
| 57            | Acme-Flow-In-Dst-Port_FS1_R        | 84            |
| 58            | Acme-Flow-Out-Realm_FS1_R          | 85            |
| 59            | Acme-Flow-Out-Src-Addr_FS1_R       | 86            |
| 60            | Acme-Flow-Out-Src-Port_FS1_R       | 87            |
| 61            | Acme-Flow-Out-Dst-Addr_FS1_R       | 88            |
| 62            | Acme-Flow-Out-Dst-Port_FS1_R       | 89            |
| 63            | Acme-Called-RTCP-Packets-Lost_FS1  | 46            |
| 64            | Acme-Called-RTCP-Avg-Jitter_FS1    | 47            |
| 65            | Acme-Called-RTCP-Avg-Latency_FS1   | 48            |
| 66            | Acme-Called-RTCP-MaxJitter_FS1     | 49            |
| 67            | Acme-Called-RTCP-MaxLatency_FS1    | 50            |
| 68            | Acme-Called-RTP-Packets-Lost_FS1   | 51            |
| 69            | Acme-Called-RTP-Avg-Jitter_FS1     | 52            |
| 70            | Acme-Called-RTP-MaxJitter_FS1      | 53            |
| 71            | Acme-Called-Octets_FS1             | 44            |
| 72            | Acme-Called-Packets_FS1            | 45            |
| 73            | Acme-FlowID_FS2_F                  | 90            |
| 74            | Acme-FlowType_FS2_F                | 91            |
| 75            | Acme-FlowMediaType_FS2_F           | 144           |
| 76            | Acme-Flow-PTime_FS2_F              | 148           |
| 77            | Acme-Flow-In-Realm_FS2_F           | 92            |
| 78            | Acme-Flow-In-Src-Addr_FS2_F        | 93            |
| 79            | Acme-Flow-In-Src-Port_FS2_F        | 94            |
| 80            | Acme-Flow-In-Dst-Addr_FS2_F        | 95            |
| 81            | Acme-Flow-In-Dst-Port_FS2_F        | 96            |
| 82            | Acme-Flow-Out-Realm_FS2_F          | 97            |
| 83            | Acme-Flow-Out-Src-Addr_FS2_F       | 98            |
| 84            | Acme-Flow-Out-Src-Port_FS2_F       | 99            |
| 85            | Acme-Flow-Out-Dst-Addr_FS2_F       | 100           |
| 86            | Acme-Flow-Out-Dst-Port_FS2_F       | 101           |
| 87            | Acme-Calling-RTCP-Packets-Lost_FS2 | 104           |
| 88            | Acme-Calling-RTCP-Avg-Jitter_FS2   | 105           |
| 89            | Acme-Calling-RTCP-Avg-Latency_FS2  | 106           |

| CSV Placement | Attribute Name                         | VSA ID Number |
|---------------|----------------------------------------|---------------|
| 90            | Acme-Calling-RTCP-MaxJitter_FS2        | 107           |
| 91            | Acme-Calling-RTCP-MaxLatency_FS2       | 108           |
| 92            | Acme-Calling-RTP-Packets-Lost_FS2      | 109           |
| 93            | Acme-Calling-RTP-Avg-Jitter_FS2        | 110           |
| 94            | Acme-Calling-RTP-MaxJitter_FS2         | 111           |
| 95            | Acme-Calling-Octets_FS2                | 102           |
| 96            | Acme-Calling-Packets_FS2               | 103           |
| 97            | Acme-FlowID_FS2_R                      | 112           |
| 98            | Acme-FlowType_FS2_R                    | 113           |
| 99            | Acme-FlowMediaType_FS2_R               | 145           |
| 100           | Acme-Flow-PTime_FS2_R                  | 149           |
| 101           | Acme-Flow-In-Realm_FS2_R               | 114           |
| 102           | Acme-Flow-In-Src-Addr_FS2_R            | 115           |
| 103           | Acme-Flow-In-Src-Port_FS2_R            | 116           |
| 104           | Acme-Flow-In-Dst-Addr_FS2_R            | 117           |
| 105           | Acme-Flow-In-Dst-Port_FS2_R            | 118           |
| 106           | Acme-Flow-Out-Realm_FS2_R              | 119           |
| 107           | Acme-Flow-Out-Src-Addr_FS2_R           | 120           |
| 108           | Acme-Flow-Out-Src-Port_FS2_R           | 121           |
| 109           | Acme-Flow-Out-Dst-Addr_FS2_R           | 122           |
| 110           | Acme-Flow-Out-Dst-Port_FS2_R           | 123           |
| 111           | Acme-Called-RTCP-Packets-Lost_FS2      | 126           |
| 112           | Acme-Called-RTCP-Avg-Jitter_FS2        | 127           |
| 113           | Acme-Called-RTCP-Avg-Latency_FS2       | 128           |
| 114           | Acme-Called-RTCP-MaxJitter_FS2         | 129           |
| 115           | Acme-Called-RTCP-MaxLatency_FS2        | 130           |
| 116           | Acme-Called-RTP-Packets-Lost_FS2       | 131           |
| 117           | Acme-Called-RTP-Avg-Jitter_FS2         | 132           |
| 118           | Acme-Called-RTP-MaxJitter_FS2          | 133           |
| 119           | Acme-Called-Octets_FS2                 | 124           |
| 120           | Acme-Called-Packets_FS2                | 125           |
| 121           | Acme-Session-Charging-Vector           | 54            |
| 122           | Acme-Session-Charging-Function-Address | 55            |
| 123           | Acme-Firmware-Version                  | 56            |

| CSV Placement | Attribute Name                   | VSA ID Number |
|---------------|----------------------------------|---------------|
| 124           | Acme-Local-Time-Zone             | 57            |
| 125           | Acme-Post-Dial-Delay             | 58            |
| 126           | Acme-Primary-Routing-Number      | 64            |
| 127           | Acme-Originating-Trunk-Group     | 65            |
| 128           | Acme-Terminating-Trunk-Group     | 66            |
| 129           | Acme-Originating-Trunk-Context   | 67            |
| 130           | Acme-Terminating-Trunk-Context   | 68            |
| 131           | Acme-P-Asserted-ID               | 69            |
| 132           | Acme-Ingress-Local-Addr          | 74            |
| 133           | Acme-Ingress-Remote-Addr         | 75            |
| 134           | Acme-Egress-Local-Addr           | 76            |
| 135           | Acme-Egress-Remote-Addr          | 77            |
| 136           | Acme-SIP-Diversion               | 70            |
| 137           | Acme-Session-Disposition         | 60            |
| 138           | Acme-Disconnect-Initiator        | 61            |
| 139           | Acme-Disconnect-Cause            | 62            |
| 140           | Acme-SIP-Status                  | 71            |
| 141           | Acme-Egress-Final-Routing-Number | 134           |
| 142           | Acme-Session-Ingress-RPH         | 135           |
| 143           | Acme-Session-Egress-RPH          | 136           |
| 144           | Acme-Custom-VSA-200              | 200           |
| 145           | Acme-Custom-VSA-201              | 201           |
| 146           | Acme-Custom-VSA-202              | 202           |
| 147           | Acme-Custom-VSA-203              | 203           |
| 148           | Acme-Custom-VSA-204              | 204           |
| 149           | Acme-Custom-VSA-205              | 205           |
| 150           | Acme-Custom-VSA-206              | 206           |
| 151           | Acme-Custom-VSA-207              | 207           |
| 152           | Acme-Custom-VSA-208              | 208           |
| 153           | Acme-Custom-VSA-209              | 209           |
| 154           | Acme-Custom-VSA-210              | 210           |
| 155           | Acme-Custom-VSA-211              | 211           |
| 156           | Acme-Custom-VSA-212              | 212           |
| 157           | Acme-Custom-VSA-213              | 213           |

| <b>CSV Placement</b> | <b>Attribute Name</b>    | <b>VSA ID Number</b> |
|----------------------|--------------------------|----------------------|
| 158                  | Acme-Custom-VSA-214      | 214                  |
| 159                  | Acme-Custom-VSA-215      | 215                  |
| 160                  | Acme-Custom-VSA-216      | 216                  |
| 161                  | Acme-Custom-VSA-217      | 217                  |
| 162                  | Acme-Custom-VSA-218      | 218                  |
| 163                  | Acme-Custom-VSA-219      | 219                  |
| 164                  | Acme-Custom-VSA-220      | 220                  |
| 165                  | Acme-Custom-VSA-221      | 221                  |
| 166                  | Acme-Custom-VSA-222      | 222                  |
| 167                  | Acme-Custom-VSA-223      | 223                  |
| 168                  | Acme-Custom-VSA-224      | 224                  |
| 169                  | Acme-Custom-VSA-225      | 225                  |
| 170                  | Acme-Custom-VSA-226      | 226                  |
| 171                  | Acme-Custom-VSA-227      | 227                  |
| 172                  | Acme-Custom-VSA-228      | 228                  |
| 173                  | Acme-Custom-VSA-229      | 229                  |
| 174                  | Acme-Custom-VSA-230      | 230                  |
| 175                  | Acme-CDR-Sequence-Number | 59                   |