Oracle® Communications Session Director

Accounting Guide

Release S-D7.2.0

Formerly Net-Net Session Director

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ORACLE

About this Guide

The *Oracle Communications Session Director Accounting Guide* describes the SD'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.

Supported Platforms

Release Version S-D7.2.0 is supported on the Net-Net 9200.

Related Documentation

The following table lists the members that comprise the documentation set for this release:

Document Name	Document Description
ACLI Configuration Guide	Contains information about the administration and software configuration of the SBC.
ACLI Reference Guide	Contains explanations of how to use the ACLI, as an alphabetical listings and descriptions of all ACLI commands and configuration parameters.
Maintenance and Troubleshooting Guide	Contains information about SBC logs, performance announcements, system management, inventory management, upgrades, working with configurations, and managing backups and archives.

Document Name	Document Description
MIB Reference Guide	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.
Accounting Guide	Contains information about the SBC's accounting support, including details about RADIUS accounting.
Release Notes	Contains information about the current documentation set release, including new features and management changes.

Revision History

This section contains a revision history for this document.

Date	Revision Number	Description
July 12, 2013	Revision 1.00	• Initial Release
January 31, 2014	Revision 1.01	• Updates supported CF Card list

Contents

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 (35) 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 (10) 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

VSAs 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	• Start • Interim-Update • Stop • On • Off
NAS-Port	SIP proxy port call signaling RAS port.	5	integer	• 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).	30	string	• Start • Interim-Update • Stop
Calling-Station-Id	"From" field value of the SIP INVITE message.	31	string	• Start • Interim-Update • Stop

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
NAS-Identifier	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. The remote server to which the accounting configuration will send messages uses at least one of two pieces of information for identification: • NAS IP address: always included in the accounting message • NAS identifier: configured in the NAS-ID parameter of the accounting server; if configured, the NAS identifier is sent to the remote server This attribute only appears if a value is configured in the NAS-ID field.	32	string	• Start • Interim-Update • Stop • On • Off
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	• Start (1) • Interim-Update • Stop (2) • On • Off
Acct-Session-Id	Either the “Call-ID” field value of the SIP INVITE message.	44	string	• Start • Interim-Update • Stop • On • Off
Acct-Session-Time	How much time in seconds the user has received service.	46	integer	• Interim-Update • Stop • Off
Acct-Terminate-Cause	How or why the session ended.	49	integer	• Stop • Off

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 (73) 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
General Attributes				
Acme-CDR-Sequence-Number	Sequence number (that increases by 1) the Net-Net SBC generates; recorded in each CDR.	59	integer	• Start • Interim-Update • Stop
Acme-Intermediate-Time	Time interval at which periodic interim records are generated during a call.	63	string	• Interim-Update
Acme-Local-Time-Zone	Local GMT/UTC time zone that is provisioned on the Net-Net SBC.	57	string	• Start • Interim-Update • Stop
Acme-Firmware-Version	Current software version running on the Net-Net SBC.	56	string	• Start • Interim-Update • Stop
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	• Start • Stop
General Flow Attributes				
Acme-FlowID_FS1_F	Unique identifier for every media flow processed by the Net-Net SBC, flow-set 1 forward direction. This VSA always prefaces other flow information.	1	string	• Start • Interim-Update • Stop • On • Off
Acme-FlowID_FS1_R	Unique identifier for every media flow processed by the Net-Net SBC, flow-set 1 reverse direction. This VSA always prefaces other flow information.	78	string	• Start • Interim-Update • Stop • On • Off
Acme-FlowID_FS2_F	Unique identifier for every media flow processed by the Net-Net SBC, flow-set 2 forward direction. This VSA always prefaces other flow information.	90	string	• Start • Interim-Update • Stop • On • Off
Acme-FlowID_FS2_R	Unique identifier for every media flow processed by the Net-Net SBC, flow-set 2 reverse direction. This VSA always prefaces other flow information.	112	string	• Start • Interim-Update • Stop • On • Off
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	• Start • Interim-Update • Stop • On • Off

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	• Start • Interim-Update • Stop • On • Off
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	• Start • Interim-Update • Stop • On • Off
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	• Start • Interim-Update • Stop • On • Off
Inbound Flow Attributes				
Acme-Flow-In-Realm_FS1_F	Inbound realm identifier for flow-set 1, forward direction.	10	string	• Start • Interim-Update • Stop
Acme-Flow-In-Realm_FS1_R	Inbound realm identifier for flow-set 1, reverse direction.	80	string	• Start • Interim-Update • Stop
Acme-Flow-In-Realm_FS2_F	Inbound realm identifier for flow-set 2, forward direction.	92	string	• Start • Interim-Update • Stop
Acme-Flow-In-Realm_FS2_R	Inbound realm identifier for flow-set 2, reverse direction.	114	string	• Start • Interim-Update • Stop
Acme-Flow-In-Src-Addr_FS1_F	Inbound source address (remote) information for flow-set 1, forward direction.	11	IP address	• Start • Interim-Update • Stop
Acme-Flow-In-Src-Addr_FS1_R	Inbound source address (remote) information for flow-set 1, reverse direction.	81	IP address	• Start • Interim-Update • Stop
Acme-Flow-In-Src-Addr_FS2_F	Inbound source address (remote) information for flow-set 2, forward direction.	93	IP address	• Start • Interim-Update • Stop
Acme-Flow-In-Src-Addr_FS2_R	Inbound source address (remote) information for flow-set 2, reverse direction.	115	IP address	• Start • Interim-Update • Stop
Acme-Flow-In-Src-Port_FS1_F	Inbound source (remote) port information for flow-set 1, forward direction.	12	integer	• Start • Interim-Update • Stop
Acme-Flow-In-Src-Port_FS1_R	Inbound source (remote) port information for flow-set 1, reverse direction.	82	integer	• Start • Interim-Update • Stop
Acme-Flow-In-Src-Port_FS2_F	Inbound source (remote) port information for flow-set 2, forward direction.	94	integer	• Start • Interim-Update • Stop

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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
Outbound Flow Attributes				
Acme-Flow-Out-Realm_FS1_F	Outbound realm identifier for flow-set 1, forward direction.	20	string	• Start • Interim-Update • Stop
Acme-Flow-Out-Realm_FS1_R	Outbound realm identifier for flow-set 1, reverse direction.	85	string	• Start • Interim-Update • Stop
Acme-Flow-Out-Realm_FS2_F	Outbound realm identifier for flow-set 2, forward direction.	97	string	• Start • Interim-Update • Stop

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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
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	• Start • Interim-Update • Stop
Acme-Flow-Out-Dst-Addr_FS1_F	Outbound destination (remote) address information for flow-set 1, forward direction.	23	IP address	• Start • Interim-Update • Stop
Acme-Flow-Out-Dst-Addr_FS1_R	Outbound destination (remote) address information for flow-set 1, reverse direction.	88	IP address	• Start • Interim-Update • Stop
Acme-Flow-Out-Dst-Addr_FS2_F	Outbound destination (remote) address information for flow-set 2, forward direction.	100	IP address	• Start • Interim-Update • Stop
Acme-Flow-Out-Dst-Addr_FS2_R	Outbound destination (remote) address information for flow-set 2, reverse direction.	122	IP address	• Start • Interim-Update • Stop

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	• Start • Interim-Update • Stop
Acme-Flow-Out-Dst-Port_FS1_R	Outbound destination (remote) port information for flow-set 1, reverse direction.	89	integer	• Start • Interim-Update • Stop
Acme-Flow-Out-Dst-Port_FS2_F	Outbound destination (remote) port information for flow-set 2, forward direction.	101	integer	• Start • Interim-Update • Stop
Acme-Flow-Out-Dst-Port_FS2_R	Outbound destination (remote) port information for flow-set 2, reverse direction.	123	integer	• Start • Interim-Update • Stop
Session Attributes				
Acme-Session-Generic-Id	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). This VSA is not configurable; all CDRs contain this attribute.	40	string	• Start • Interim-Update • Stop
Acme-Session-Ingress-CallId	Call ID generated by the originating device.	3	string	• Start • Interim-Update • Stop
Acme-Session-Egress-CallId	Call ID generated by the Net-Net SBC to represent a two-way transaction.	4	string	• Start • Interim-Update • Stop
Acme-Session-Ingress-Realm	Explicitly identifies the ingress realm, and contains the name of the ingress realm for the session. All CDRs contain this attribute. This VSA is not configurable; all CDRs contain this attribute.	41	string	• Start • Interim-Update • Stop
Acme-Session-Egress-Realm	Explicitly identifies the egress realm, and contains the name of the egress realm for the session. All CDRs contain this attribute. 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.	42	string	• Start • Interim-Update • Stop

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Session-Protocol-Type	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. This VSA is not configurable; all CDRs contain this attribute.	43	string	• Start • Interim-Update • Stop
Acme-Session-Charging-Vector	Appears when the Net-Net SBC inserts, passes, or deletes the P-Charging-Vector header (SIP). This attribute is only populated for SIP CDRs, and is not populated if the Net-Net SBC does not have P-Charging-Vector information.	54	string	• Start • Interim-Update • Stop
Acme-Session-Charging-Function_Address	Appears when the Net-Net SBC inserts, passes, or deletes the P-Charging-Function-Address. 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.	55	string	• Start • Interim-Update • Stop
Acme-Session-Disposition	Status of the call attempt as it progresses from being initiated (using a SIP INVITE) to being either answered or failing to be answered.	60	integer	• Start • Interim-Update • Stop
Acme-Post-Dial-Delay	Amount of time between session initiation and an alerting event.	58	integer	• Start • Interim-Update • Stop
Acme-P-Asserted-ID	P-Asserted ID as described in RFC 3325.	69	string	• Start • Interim-Update • Stop
Acme-SIP-Diversion	SIP Diversion header; communicates to the called party from whom and why a call diverted.	70	string	• Start • Interim-Update • Stop
Acme-Primary-Routing-Number	Primary routing number and phone context (or ingress SIP Request-URI).	64	string	• Start • Interim-Update • Stop
Acme-Egress-Final-Routing-Number	Final routing number and phone context (or egress SIP Request-URI).	134	integer	• Stop
Acme-Disconnect-Initiator	Initiator of a call disconnect.	61	integer	• Stop
Acme-Disconnect-Cause	Q.850 cause code value.	62	integer	• Stop
Acme-SIP-Status	SIP status code for RFC 3326 support.	71	integer	• Stop
Acme-Originating-Trunk-Group	Originating trunk group.	65	string	• Start • Interim-Update • Stop

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Originating-Trunk-Context	Originating trunk group context.	67	string	• Start • Interim-Update • Stop
Acme-Terminating-Trunk-Group	Terminating trunk group.	66	string	• Start • Interim-Update • Stop
Acme-Terminating-Trunk-Context	Terminating trunk group context.	68	string	• Start • Interim-Update • Stop
Acme-Ingress-Local-Addr	Signaling IP address and port of the ingress Net-Net SBC signaling interface.	74	string	• Start • Interim-Update • Stop
Acme-Ingress-Remote-Addr	Signaling IP address and port of the ingress remote signaling element.	75	string	• Start • Interim-Update • Stop
Acme-Egress-Local-Addr	Signaling IP address and port of the egress Net-Net SBC signaling interface.	76	string	• Start • Interim-Update • Stop
Acme-Egress-Remote-Addr	Signaling IP address and port of the destination signaling element.	77	string	• Start • Interim-Update • Stop
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
QoS Attributes				
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	• Stop

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
Transcoding Attributes				
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	• Start • Interim • Stop
SIP Custom VSAs				
Acme-Custom-VSA-200	SIP Custom VSA 200 ***To use this feature, refer to this guide's* Configuring RADIUS *chapter.***	200	string	• Start • Interim • Stop
Acme-Custom-VSA-201	SIP Custom VSA 201	201	string	• Start • Interim • Stop
Acme-Custom-VSA-202	SIP Custom VSA 202	202	string	• Start • Interim • Stop
Acme-Custom-VSA-203	SIP Custom VSA 203	203	string	• Start • Interim • Stop
Acme-Custom-VSA-204	SIP Custom VSA 204	204	string	• Start • Interim • Stop
Acme-Custom-VSA-205	SIP Custom VSA 205	205	string	• Start • Interim • Stop
Acme-Custom-VSA-206	SIP Custom VSA 206	206	string	• Start • Interim • Stop
Acme-Custom-VSA-207	SIP Custom VSA 207	207	string	• Start • Interim • Stop
Acme-Custom-VSA-208	SIP Custom VSA 208	208	string	• Start • Interim • Stop
Acme-Custom-VSA-209	SIP Custom VSA 209	209	string	• Start • Interim • Stop
Acme-Custom-VSA-210	SIP Custom VSA 210	210	string	• Start • Interim • Stop
Acme-Custom-VSA-211	SIP Custom VSA 211	211	string	• Start • Interim • Stop
Acme-Custom-VSA-212	SIP Custom VSA 212	212	string	• Start • Interim • Stop
Acme-Custom-VSA-213	SIP Custom VSA 213	213	string	• Start • Interim • Stop

Attribute Name	Attribute Description	Attribute Value	Attribute Value Type	Messages
Acme-Custom-VSA-214	SIP Custom VSA 214	214	string	• Start • Interim • Stop
Acme-Custom-VSA-215	SIP Custom VSA 215	215	string	• Start • Interim • Stop
Acme-Custom-VSA-216	SIP Custom VSA 216	216	string	• Start • Interim • Stop
Acme-Custom-VSA-217	SIP Custom VSA 217	217	string	• Start • Interim • Stop
Acme-Custom-VSA-218	SIP Custom VSA 218	218	string	• Start • Interim • Stop
Acme-Custom-VSA-219	SIP Custom VSA 219	219	string	• Start • Interim • Stop
Acme-Custom-VSA-220	SIP Custom VSA 220	220	string	• Start • Interim • Stop
Acme-Custom-VSA-221	SIP Custom VSA 221	221	string	• Start • Interim • Stop
Acme-Custom-VSA-222	SIP Custom VSA 222	222	string	• Start • Interim • Stop
Acme-Custom-VSA-223	SIP Custom VSA 223	223	string	• Start • Interim • Stop
Acme-Custom-VSA-224	SIP Custom VSA 224	224	string	• Start • Interim • Stop
Acme-Custom-VSA-225	SIP Custom VSA 225	225	string	• Start • Interim • Stop
Acme-Custom-VSA-226	SIP Custom VSA 226	226	string	• Start • Interim • Stop
Acme-Custom-VSA-227	SIP Custom VSA 227	227	string	• Start • Interim • Stop
Acme-Custom-VSA-228	SIP Custom VSA 228	228	string	• Start • Interim • Stop
Acme-Custom-VSA-229	SIP Custom VSA 229	229	string	• Start • Interim • Stop

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	• 0=unknown • 1=call_attempt • 2=ringing • 3=answered
Acme-Disconnect-Initiator	61	• 0=UNKNOWN_DISCONNECT_INITIATOR • 1=CALLING_PARTY_DISCONNECT • 2=CALLED_PARTY_DISCONNECT • 3=INTERNAL_DISCONNECT
Acme-Disconnect-Cause	62	• 34=No circuit/channel available • 47=Resource unavailable • 3=No route destination • 31=Normal, unspecified • 88=Incompatible destination • 111=Interworking, unspecified • 38=Network out of order • 42=Switching equip congestion • 28=Invalid number format • 41=Temporary failure • 17=User busy • 16=Normal call clearing • 20=Subscriber absent • 31=Normal call clearing

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	This is a complete list of support status codes; only a subset would be reported in a Stop record: • RESP_STATUS_TRYING 100 • RESP_STATUS_RINGING 180 • RESP_STATUS_FORWARD 181 • RESP_STATUS_QUEUED 182 • RESP_STATUS_PROGRESS 183 • RESP_STATUS_OK 200 • RESP_STATUS_CREATED 201 • RESP_STATUS_ACCEPTED 202 • RESP_STATUS_PART 206 • RESP_STATUS_MAX_OK 299 • RESP_STATUS_MULTIPLE 300 • RESP_STATUS_MOVED 301 • RESP_STATUS_MOVED_TMP 302 • RESP_STATUS_USE_PROXY 305 • RESP_STATUS_ALTERNATE 380 • RESP_STATUS_BAD 400 • RESP_STATUS_UNAUTH 401 • RESP_STATUS_PAY_REQ 402 • RESP_STATUS_FORBIDDEN 403 • RESP_STATUS_NOT_FOUND 404 • RESP_STATUS_NOT_ALLOW 405 • RESP_STATUS_NOT_ACCEPT 406 • RESP_STATUS_AUTH_REQ 407 • RESP_STATUS_REQ_TMO 408 • RESP_STATUS_CONFLICT 409 • RESP_STATUS_GONE 410 • RESP_STATUS_LEN_REQ 411 • RESP_STATUS_TOO_BIG 413 • RESP_STATUS_URI_TOO_BIG 414 • RESP_STATUS_MEDIA 415 • RESP_STATUS_URI_SCHEME 416 • RESP_STATUS_BAD_EXT 420 • RESP_STATUS_EXT_REQ 421 • RESP_STATUS_TOO_SMALL 422 • RESP_STATUS_TOO_BRIEF 423 • RESP_STATUS_TMP_UNAVAIL 480 • RESP_STATUS_NO_EXIST 481 • RESP_STATUS_LOOP 482 • RESP_STATUS_TOOMNY_HOPS 483 • RESP_STATUS_ADDR_INCMPL 484 • RESP_STATUS_AMBIGUOUS 485 • RESP_STATUS_BUSY_HERE 486 • RESP_STATUS_CANCELLED 487 • RESP_STATUS_NOT_HERE 488 • RESP_STATUS_BAD_EVENT 489 • RESP_STATUS_PENDING 491 • RESP_STATUS_UNDECIPH 493 • RESP_STATUS_INT_ERR 500 • RESP_STATUS_NOT_IMPL 501 • RESP_STATUS_BAD_GTWY 502 • RESP_STATUS_SVC_UNAVAIL 503 • RESP_STATUS_GTWY_TMO 504 • RESP_STATUS_BAD_VER 505 • RESP_STATUS_MSG_TOO_BIG 513 • RESP_STATUS_PRE_FAIL 580 • RESP_STATUS_BUSY 600 • RESP_STATUS_DECLINE 603 • RESP_STATUS_DONT_EXIST 604 • RESP_STATUS_NOTACCEPT 606

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	• Start • Interim • Stop
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	• Start • Interim • Stop
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	• Stop
Disconnect Cause	SIP Reasons for Disconnection (normal, redirection, client error, network error, global error, time-out, or user abandon). For more information, refer to this guide's Mappings and Disconnect Cause Values (29) section.	30	string	• Stop

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 (30).

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 (29).

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

H.323 ReleaseCompleteReason	H.323 CDR Disconnect Cause	SIP Status	SIP CDR Disconnect Cause
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 (30).

H.225 RAS Error	SIP Status	SIP CDR Disconnect Cause
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

2 Configuring Accounting

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 results 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	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. The remote server to which the accounting configuration will send messages uses at least one of two pieces of information for identification: • NAS IP address: always included in the accounting message • NAS identifier: configured in the NAS-ID parameter of the accounting server; if configured, the NAS identifier is sent to the remote server This attribute only appears if a value is configured in the NAS-ID field.	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:

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

   ```
   ACMEPACKET# configure terminal
   ```

2. Type **session-router** and press <Enter> to access the system-level configuration elements.

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

3. 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)#
   ```

4. 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:

1. **hostname**—Defaults to and must remain `localhost`.
2. **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 **`enabled`** if you want the account configuration active on the system. Enter **`disabled`** 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 it 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 **`disabled`** if you do not want to defer the transmission of message information to the close of a session. Enter **`enabled`** if you want to defer message transmission.
   - **`disabled`**—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
ok	RADIUS Start message is generated when the Net-Net SBC receives an OK message in response to an INVITE.
reinvite	RADIUS Interim message is generated when the Net-Net SBC receives a SIP session reINVITE message.
reinvite response (default)	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).
reinvite cancel	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.
unsuccessful-attempt	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.
   - minimum: 1025 milliseconds
   - maximum: 65535 milliseconds

   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-vsa**—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(realm-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 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 attributes 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**.

ACLI 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-config)# vsa-id-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-digit / dtmf-digit / pause-character)
phone-digit             =   DIGIT / visual-separator
DIGIT                   =   "0" / "1" / "2" / "3" / "4" / "5" / "6" / "7" / "8" / "9"
visual-separator        =   "-" / "." / "(" / ")"
dtnf-digit              =   "*" / "#" / "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# configure terminal
   ACMEPACKET(configure)#
   ```

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-val-type                  any
                        comparison-type                 pattern-rule
                        match-value                     ^225.*
                        new-value
        element-rule
                        name                            two
                        parameter-name
                        type                            header-value
                        action                          add
                        match-val-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 (49) 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:priv-lvl=15`	User automatically logged in as an administrator
`shell:priv-lvl=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                        localhost
        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
                                    Reinvite-Response
      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 (44) 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 sequency 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 entirity on the remote server, the Net-Net SBC uses an inital 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 RNTO 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 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 ACLI **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—S**et 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/ Health Degradation	Cause(s)	Log Message	Traps Generated
APP ALARM LOST ACCT CONN/ 51100001	CRITICAL: if all enabled and configured RADIUS accounting server connections have timed-out without response from the RADIUS server MAJOR: if some, but not all configured RADIUS accounting server connections have timed-out without response from the RADIUS server./ 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. MAJOR: One or more enabled accounting connections have been lost! Check accounting status for more details.	apSysMgmtRadiusDownTrap OR 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 `DISABLED`.

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: • Information about the state of the RADIUS client • Accounting strategy used (Hunt, Failover, RoundRobin, FastestRTT, or FewestPending) • IP address and port on which the Net-Net server is listening • Maximum message delay in seconds • Number of configured accounting servers
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, INIT`).
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"
              RoundTripTime         :0
```

```
                    MalformedAccessResponse: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
                    MalformedAccessResponse: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=last>            <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:                                as active   as standby
    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.

The following PCMCIA Compact Flash devices are supported:

- Sandisk SDCFX3-016G-A31 16 GB Extreme III CompactFlash Card
- Sandisk SDCFX-032G-A61 32GB Extreme 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-D7.2.0 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 pcmcia

/sys: 19695716352/19695749120 bytes (99%) remaining

/local: 19693335040/19693367808 bytes (99%) remaining

/logs: 19693335040/19693367808 bytes (99%) remaining

/misc: 19693335040/19693367808 bytes (99%) remaining
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# 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)#
```

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:

```
alarm-threshold
        type                            space
        volume                          /pcmcia
        severity                        major
        value                           80
alarm-threshold
        type                            space
        volume                          /pcmcia
        severity                        critical
        value                           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"
        <sip:9998776565@10.10.170.2:5060>;tag=2ed75b8317f"
        Called-Station-Id = "<sip: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 = "localhost: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 = "localhost: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 =
        "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-Egress-Final-Routing-Number =
        "sip: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-v3000i1"
Acme-Session-Ingress-CallId =
"8EDDDC21D3EC4A218FF41982146844310xac1ec85d"
Acme-Session-Egress-CallId = "SDgtu4401-
c587a3aba59dcae68ec76cb5e2c6fe6f-v3000i1"
Acme-Session-Protocol-Type = "SIP"
Calling-Station-Id = ""9998776565"
<sip:9998776565@10.10.170.2:5060>;tag=2ed75b8317f"
Called-Station-Id = "<sip: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 = "localhost: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 = "localhost: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 =
        "OTFkN2Y2NzUwYzFmMmNiYWYxNDk0NzFjNThkZTZlYzY."
        Acme-Session-Egress-CallId = "SDnhtv201-
        d75375c7948c975fc2524a65507b01a5-v3000i1"
        Acme-Session-Protocol-Type = "SIP"
```

```
Calling-Station-Id =
""8543221049"<sip:8543221049@10.10.130.2>;tag=a548ca3f"
Called-Station-Id =
""1121134786"<sip: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 =
"sip: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 =
"sip: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-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 = "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 =
                "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-Egress-Final-Routing-Number =
                "sip: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-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 = "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-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: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 = "10.10.170.2:5060"
            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 = "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 = 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: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-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 =
        "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 = "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 = 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: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-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 = 293
Client-IP-Address = 172.30.20.110
Acct-Unique-Session-Id = "aa2d2764581a19bd"
Timestamp = 1180468048

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 =
"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 = "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-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: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-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 = 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-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>"
        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 = "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-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 = "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-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-Session-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-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"
        h323-connect-time = "21:06:45.739 UTC MAY 13 2009"
        Acme-Session-Egress-Realm = "core"
        Acme-Session-Ingress-Realm = "peer"
        Acme-FlowID_FS1_F = "localhost: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 = "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-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>"
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 = "localhost: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 = "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-Session-Disposition = 3
Acme-Disconnect-Initiator = 2
Acme-Disconnect-Cause = 0
Acme-SIP-Status = 0
Acme-Egress-Final-Routing-Number =
"sip: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-Session-Generic-Id = "118125378800002@000825013500"
        Called-Station-Id = “9783926666”
        h323-setup-time = "13:23:08.943 EST MAY 07 2009"
        Acme-Session-Ingress-Realm = "backbone"
        Acme-Firmware-Version = "D7.0.0"
        Acme-Local-Time-Zone = "GMT+08:40"
        Acme-Post-Dial-Delay = 0
        Acme-Ingress-Local-Addr = "192.168.60.100:1720"
        Acme-Ingress-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
        Client-IP-Address = 172.30.20.120
        Acct-Unique-Session-Id = "39fd0d684beebaf7"
        Timestamp = 1181253717

Thu May 7 18:01:59 2009
        Acct-Status-Type = Interim-Update
        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-Session-Generic-Id = "118125378800002@000825013500"
        Called-Station-Id = “9783926666”
        h323-setup-time = "13:23:08.943 EST MAY 07 2009"
        h323-connect-time = "13:23:11.120 EST MAY 07 2009
        Acme-Session-Ingress-Realm = "backbone"
        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-Intermediate_Time = "21:48:16.000 EST FEB 05 2106"
        Acme-CDR-Sequence-Number = 30
        Client-IP-Address = 172.30.20.120
        Acct-Unique-Session-Id = "39fd0d684beebaf7"
        Timestamp = 1181253719

Thu May 7 18:02:06 2009
        Acct-Status-Type = Stop
        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-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 = "localhost: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 = "localhost: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 =
        "NDFjMDUyMjYzNDM1OGQyOGQ2NWEwNTBlYjRiYzJlMmE."
        Acme-Session-Egress-CallId = "SDtb7i001-
        1b1e041dd86147c74243eab6fbd1f8ff-06ad4i1"
        Acme-Session-Protocol-Type = "SIP"
```

```
        Acme-Session-Generic-Id = "1181168364000005@000825013500"
        Calling-Station-Id =
        ""1664329900"<sip:1664329900@192.168.70.100>;tag=e061715f
        "
        Called-Station-Id =
        ""1294226060"<sip:1294226060@192.168.70.100>"
        h323-setup-time = "13:39:24.501 EST MAY 06 2009"
        Acme-Session-Ingress-Realm = "sip"
        Acme-Firmware-Version = "D7.0.0"
        Acme-Local-Time-Zone = "GMT+08:40"
        Acme-Post-Dial-Delay = 0
        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-CDR-Sequence-Number = 86
        Client-IP-Address = 172.30.20.120
        Acct-Unique-Session-Id = "6b6c0698130e3699"
        Timestamp = 1181168298

Wed May 6 18:18:18 2009
        Acct-Status-Type = Start
        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 = "1181168364000005@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>"
        h323-setup-time = "13:39:24.515 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 = "0.0.0.0:0"
        Acme-Egress-Remote-Addr = "0.0.0.0:0"
        Acme-CDR-Sequence-Number = 87
        Client-IP-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=SDtb7i00
        1-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 =
        "NDFjMDUyMjYzNDM1OGQyOGQ2NWEwNTBlYjRiYzJlMmE."
        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>"
h323-setup-time = "13:39:24.501 EST MAY 06 2009"
h323-connect-time = "13:39:26.431 EST MAY 06 2009"
Acme-Session-Egress-Realm = "h323"
Acme-Session-Ingress-Realm = "sip"
Acme-FlowID_FS1_F = "localhost:65546"
Acme-FlowType_FS1_F = ""
Acme-Flow-In-Realm_FS1_F = "sip"
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 = 192.168.70.100
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 = 0
Acme-Calling-RTP-MaxJitter_FS1 = 0
Acme-Calling-Octets_FS1 = 0
Acme-Calling-Packets_FS1 = 0
Acme-FlowID_FS1_R = "localhost:65547"
Acme-FlowType_FS1_R = ""
Acme-Flow-In-Realm_FS1_R = "h323"
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 = 192.168.60.100
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 = 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_realm=h323;acme_irealm=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-Generic-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 =
        "NDFjMDUyMjYzNDM1OGQyOGQ2NWEwNTBlYjRiYzJlMmE."
        Acme-Session-Egress-CallId = "SDtb7i001-
        1b1e041dd86147c74243eab6fbd1f8ff-06ad4i1"
        Acme-Session-Protocol-Type = "SIP"
        Acme-Session-Generic-Id = "1181168364000005@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 = "localhost: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 = "localhost: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_realm=h323;acme_irealm=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-Generic-Id = "1181168024000004@000825013500"
        Called-Station-Id = 4445556060
        h323-setup-time = "13:33:44.535 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 = 0
        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-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 = "SD7kvl801-
        1693bc418a00f4fae8829303648e358a-06ad4i1"
        Acme-Session-Ingress-CallId =
        "7f00000113ce0000076600062638@127.0.0.1"
        Acme-Session-Egress-CallId = "SD7kvl801-
        1693bc418a00f4fae8829303648e358a-06ad4i1"
        Acme-Session-Protocol-Type = "SIP"
        Acme-Session-Generic-Id = "1181168024000004@000825013500"
```

```
        Calling-Station-Id =
        ""4445558080"<sip:192.168.70.100:5060>;tag=00000766000631
        f0"
        Called-Station-Id = "<sip:4445556060@192.168.70.27:5060>"
        h323-setup-time = "13:33:44.550 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 = 0
        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 = "0.0.0.0:0"
        Acme-CDR-Sequence-Number = 74
        Client-IP-Address = 172.30.20.120
        Acct-Unique-Session-Id = "8ce0c0bed743f835"
        Timestamp = 1181167958

Wed May 6 18:12:43 2009
        Acct-Status-Type = Interim-Update
        NAS-IP-Address = 192.168.70.100
        NAS-Port = 5060
        Acct-Session-Id = "SD7kvl801-
        1693bc418a00f4fae8829303648e358a-06ad4i1"
        Acme-Session-Ingress-CallId =
        "7f00000113ce0000076600062638@127.0.0.1"
        Acme-Session-Egress-CallId = "SD7kvl801-
        1693bc418a00f4fae8829303648e358a-06ad4i1"
        Acme-Session-Protocol-Type = "SIP"
        Acme-Session-Generic-Id = "118116802400004@000825013500"
        Calling-Station-Id =
        ""4445558080"<sip:192.168.70.100:5060>;tag=00000766000631
        f0"
        Called-Station-Id = "<sip: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-Session-Egress-Realm = "sip"
        Acme-Session-Ingress-Realm = "h323"
        Acme-FlowID_FS1_F = "localhost:65544"
        Acme-FlowType_FS1_F = ""
        Acme-Flow-In-Realm_FS1_F = "h323"
        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 = 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 = 0
Acme-Calling-RTP-MaxJitter_FS1 = 0
Acme-Calling-Octets_FS1 = 0
Acme-Calling-Packets_FS1 = 0
Acme-FlowID_FS1_R = "localhost: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 = "SD7kvl801-
        1693bc418a00f4fae8829303648e358a-06ad4i1"
        Acme-Session-Ingress-CallId =
        "7f00000113ce0000076600062638@127.0.0.1"
        Acme-Session-Egress-CallId = "SD7kvl801-
        1693bc418a00f4fae8829303648e358a-06ad4i1"
        Acme-Session-Protocol-Type = "SIP"
        Acme-Session-Generic-Id = "1181168024000004@000825013500"
        Calling-Station-Id =
        ""4445558080"<sip:192.168.70.100:5060>;tag=00000766000631
        f0"
        Called-Station-Id = "<sip: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 = "sip"
        Acme-Session-Ingress-Realm = "h323"
        Acme-FlowID_FS1_F = "localhost: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 = "localhost: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-Session-Disposition = 3
        Acme-Disconnect-Initiator = 1
        Acme-Disconnect-Cause = 0
        Acme-SIP-Status = 0
        Acme-Egress-Final-Routing-Number =
        "sip:4445556060@192.168.70.27:5060"
        Acme-CDR-Sequence-Number = 78
        Client-IP-Address = 172.30.20.120
        Acct-Unique-Session-Id = "8ce0c0bed743f835"
        Timestamp = 1181167970
```

Sample CDR for Transcoding

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

```
Acct-Status-Type = Start
        NAS-IP-Address = 192.168.1.84
        NAS-Port = 5060
        Acme-Session-Ingress-CallId = "1-2995@192.168.1.211"
        Acme-Session-Egress-CallId = "1-2995@192.168.1.211"
        Acme-Session-Protocol-Type = "SIP"
        Acct-Session-Id = "118F31000002"
        Calling-Station-Id = "<sip:user@192.168.1.211:5060>"
        Called-Station-Id = "<sip:service@192.168.1.84:5060>"
        h323-setup-time = "18:34:12.102 MAY 05 2009"
        h323-connect-time = "18:34:12.105 MAY 05 2009"
        Acme-Egress-Network-Interface-Id = "public"
        Acme-Egress-Vlan-Tag-Value = 0
        Acme-Ingress-Network-Interface-Id = "private"
        Acme-Ingress-Vlan-Tag-Value = 0
        Acme-Session-Egress-Realm = "net200"
        Acme-Session-Ingress-Realm = "net1"
        Acme-Session-Media-Process = "transparent"
        Acme-FlowID_FS1_F = "localhost:65539"
        Acme-FlowType_FS1_F = "G722"
        Acme-FlowMediaType_FS1_F = "audio"
        Acme-Flow-In-Realm_FS1_F = "net1"
        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 = 192.168.1.84
        Acme-Flow-In-Dst-Port_FS1_F = 10002
        Acme-Flow-Out-Realm_FS1_F = "net200"
        Acme-Flow-Out-Src-Addr_FS1_F = 192.168.200.84
        Acme-Flow-Out-Src-Port_FS1_F = 10002
        Acme-Flow-Out-Dst-Addr_FS1_F = 0.0.0.0
        Acme-Flow-Out-Dst-Port_FS1_F = 0
        Acme-Flow-PTime_FS1_F = 0
```

```
        Acme-FlowID_FS1_R = "localhost: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 =
"sip: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
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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 (52) section in this guide's Configuring Accounting (35) 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

CSV Placement	Attribute Name	VSA ID Number
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-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

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

CSV Placement	Attribute Name	VSA ID Number
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