



Avaya Call Management System
Release 3 Version 11
External Call History Interface

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Notice

Every effort was made to ensure that the information in this document was complete and accurate at the time of printing. However, information is subject to change.

Preventing Toll Fraud

"Toll fraud" is the unauthorized use of your telecommunications system by an unauthorized party (for example, a person who is not a corporate employee, agent, subcontractor, or working on your company's behalf). Be aware that there may be a risk of toll fraud associated with your system and that, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

Avaya Fraud Intervention

If you *suspect that you are being victimized* by toll fraud and you need technical assistance or support, call Technical Service Center Toll Fraud Intervention Hotline at +1 800 643 2353 for the United States and Canada. For additional support telephone numbers, see the Avaya web site:

<http://www.avaya.com>

Click on **Support**, then click on **Escalation Lists US and International**. This web site includes telephone numbers for escalation within the United States. For escalation telephone numbers outside the United States, click on **Global Escalation List**.

Providing Telecommunications Security

Telecommunications security (of voice, data, and/or video communications) is the prevention of any type of intrusion to (that is, either unauthorized or malicious access to or use of) your company's telecommunications equipment by some party.

Your company's "telecommunications equipment" includes both this Avaya product and any other voice/data/video equipment that could be accessed via this Avaya product (that is, "networked equipment").

An "outside party" is anyone who is not a corporate employee, agent, subcontractor, or working on your company's behalf. Whereas, a "malicious party" is anyone (including someone who may be otherwise authorized) who accesses your telecommunications equipment with either malicious or mischievous intent.

Such intrusions may be either to/through synchronous (time-multiplexed and/or circuit-based) or asynchronous (character-, message-, or packet-based) equipment or interfaces for reasons of:

- Utilization (of capabilities special to the accessed equipment)
- Theft (such as, of intellectual property, financial assets, or toll-facility access)
- Eavesdropping (privacy invasions to humans)
- Mischief (troubling, but apparently innocuous, tampering)
- Harm (such as harmful tampering, data loss or alteration, regardless of motive or intent)

Be aware that there may be a risk of unauthorized intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company (including but not limited to, human/data privacy, intellectual property, material assets, financial resources, labor costs, and/or legal costs).

Your Responsibility for Your Company's Telecommunications Security

The final responsibility for securing both this system and its networked equipment rests with you - an Avaya customer's system administrator, your telecommunications peers, and your managers. Base the fulfillment of your responsibility on acquired knowledge and resources from a variety of sources including but not limited to:

- Installation documents
- System administration documents
- Security documents
- Hardware-/software-based security tools
- Shared information between you and your peers
- Telecommunications security experts

To prevent intrusions to your telecommunications equipment, you and your peers should carefully program and configure:

- your Avaya-provided telecommunications systems and their interfaces
- your Avaya-provided software applications, as well as their underlying hardware/software platforms and interfaces
- any other equipment networked to your Avaya products.

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Attention: Avaya Account Manager

E-mail:totalware@gwsmail.com

Order: Document No. 585-215-952, Issue 1.0
March 2002

You can be placed on a Standing Order list for this and other documents you may need. Standing Order will enable you to automatically receive updated versions of individual documents or document sets, billed to account information that you provide. For more information on Standing Orders, or to be put on a list to receive future issues of this document, please contact the Avaya Publications Center.

Avaya Support

Avaya provides a telephone number for you to use to report problems or to ask questions about your contact center. The support telephone number is 1-800-242-2121 in the United States and Canada. For additional support telephone numbers, see the Avaya web site:

<http://www.avaya.com>

Click on **Support**, then click on **Escalation Lists US and International**.

This web site includes telephone numbers for escalation within the United States. For escalation telephone numbers outside the United States, click on **Global Escalation List**.

Acknowledgment

This document was written by the CRM Development group.

**Avaya Call Management System (CMS)
Release 3 Version 11
External Call History Interface**

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Understanding External Call History Interface

About this document

This document is written for customers who have purchased the The External Call History Interface (ECHI) feature package.

ECHI is an optional Avaya Call Management System (CMS) feature that allows you to transfer the CMS Release 3 Version 11(R3V11) call record data to another computer for processing.

This feature is especially useful for call centers with a high volume of calls. A CMS system with ECHI can store a greater volume of call record data than a CMS system alone.

This document describes the format of the external call history data files, and how to transfer these files to another computer. ECHI customers are responsible for the storage, formatting, printing, and any additional processing of the data transferred to the computer.

Contents

Avaya Call Management System R3V11 External Call History Interface contains the following information:

- [Related documents](#) on page 6
- [Space allocation on page 11](#)
- [Call record processing](#) on page 11
- [Multiple Call Work Codes per Call Record feature](#) on page 11
- [Call record file format on page 12](#)
- [Setting up the ECHI package](#) on page 33
- [Data collection with ECHI](#) on page 39

Related documents

Related Documents lists sources for related information about contact center products and features. Not all documents are supported for all CMS releases or equipment.

To order Avaya documentation, call the Avaya Publications Center at 1-800-457-1235 or +1-410-568-3680.

CMS software documents

Document title	Document number
Installing software on a CMS computer	
<i>Avaya Call Management System Release 3 Version 11 Software Installation, Maintenance, and Troubleshooting</i>	585-215-115
<i>CentreVu Call Management System Release 3 Version 9 Software Installation, Maintenance, and Troubleshooting</i>	585-215-956
<i>CentreVu Call Management System Release 3 Version 8 Software Installation, Maintenance, and Troubleshooting</i>	585-210-941
Setting up a disk-mirrored system	
<i>Avaya Call Management System Release 3 Version 11 Software Installation, Maintenance, and Troubleshooting</i>	585-215-115
<i>CentreVu Call Management System Release 3 Version 9 Software Installation, Maintenance, and Troubleshooting</i>	585-215-956
<i>CentreVu Call Management System Release 3 Version 8 Disk-Mirrored Systems</i>	585-210-940

Upgrade documents

There are several upgrade paths supported with CMS. For each of these upgrades, there is a document designed to support that upgrade. Note that none of the following upgrade documents are available from the publications center, but are available from the [Avaya CMS documentation](#) Web site.

- Base load upgrades

A base load upgrade is used when upgrading CMS to the latest load of the same version (for example, R3V9 ak.g to R3V9 al.k). A specific set of instructions is written for the upgrade and is shipped to the customer site with the CMS software CD as part of a Quality Protection Plan Change Notice (QPPCN).

Document title
<i>Avaya Call Management System Release 3 Version 11 Base Load Upgrade Procedures</i>
<i>CentreVu Call Management System Release 3 Version 9 Base Load Upgrade Procedures</i>

- Platform upgrades and data migration

A platform upgrade is used when upgrading to a new hardware platform (for example, upgrading from a SPARCserver 5 to an Enterprise 3500). The new hardware platform is shipped from the Avaya factory with the latest CMS load. Therefore, as part of the upgrade you will have the latest CMS load (for example, R3V9 to R3V11, or the latest load of the same CMS version). For R3V11, a specific set of instructions are written for the upgrade and are shipped to the customer site with the new hardware.

Document title
<i>Avaya Call Management System Release 3 Version 11 Platform Upgrade and Data Migration Instructions</i>
<i>CentreVu Call Management System Release 3 Version 9 Platform Upgrade and Data Migration Instructions</i>

- Avaya Call Management System Upgrade Express (CUE)

CUE is used in the following conditions:

- CMS is being upgraded from an earlier version (for example, R3V5u or R3V6) to the latest version (for example, R3V9 or R3V11).
- The hardware platform is not changing.

A specific set of upgrade instructions is written for the upgrade and is shipped to the customer site with the CUE kit.

Document title
<i>Avaya Call Management System Release 3 Version 11 Sun Blade 100 Computer CUE Instructions</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Blade 100 Computer Mirrored System CUE Instructions</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Ultra 5 Computer CUE Instructions</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Enterprise 3000 Computer CUE Instructions</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Enterprise 3000 Computer Mirrored System CUE Instructions</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Enterprise 3500 Computer CUE Instructions</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Enterprise 3500 Computer Mirrored System CUE Instructions</i>
<i>Avaya Call Management System Release 3 Version 9 Sun Ultra 5 Computer CUE Instructions</i>
<i>Avaya Call Management System Release 3 Version 9 Sun Enterprise 3000 Computer CUE Instructions</i>
<i>Avaya Call Management System Release 3 Version 9 Sun Enterprise 3000 Computer Mirrored System CUE Instructions</i>
<i>Avaya Call Management System Release 3 Version 9 Sun Enterprise 3500 Computer CUE Instructions</i>
<i>Avaya Call Management System Release 3 Version 9 Sun Enterprise 3500 Computer Mirrored System CUE Instructions</i>

Hardware documents

Document title	Document number
<i>Avaya Call Management System Sun Blade 100 Computer Hardware Installation, Maintenance, and Troubleshooting</i>	585-310-783
<i>Avaya Call Management System Sun Blade 100 Computer Connectivity Diagram</i>	585-310-782
<i>Avaya Call Management System Sun Enterprise 3500 Computer Hardware Installation, Maintenance, and Troubleshooting</i>	585-215-873
<i>Avaya Call Management System Sun Enterprise 3500 Computer Connectivity Diagram</i>	585-215-877
<i>Avaya Call Management System Sun Ultra 5 Computer Hardware Installation, Maintenance, and Troubleshooting</i>	585-215-871
<i>Avaya Call Management System Sun Ultra 5 Computer Connectivity Diagram</i>	585-215-872
<i>Avaya Call Management System Sun Enterprise 3000 and SPARCserver Computers Hardware Maintenance and Troubleshooting</i>	585-214-016
<i>Avaya Call Management System Terminals, Printers, and Modems</i>	585-215-874

Switch documents

Document title	Document number
<i>CMS Switch Connections, Administration, and Troubleshooting</i>	585-215-876

Administration documents

Document title	Document number
<i>Avaya Call Management System Release 3 Version 11 Administration</i>	585-215-515
<i>CentreVu Call Management System Release 3 Version 9 Administration</i>	585-214-015
<i>CentreVu Call Management System Release 3 Version 8 Administration</i>	585-210-910

Other documents

Document title	Document number
<i>Avaya Call Management System Open Database Connectivity</i>	585-780-701
<i>Avaya Call Management System Release 3 Version 11 LAN Backup User Guide</i>	585-215-715
<i>Avaya CMS Release 3 Version 11 External Call History Interface</i>	585-780-700
<i>CentreVu CMS Release 3 Version 9 External Call History Interface</i>	585-215-952
<i>Avaya CMS Custom Reports</i>	585-215-822
<i>Avaya CMS Forecast</i>	585-215-825
<i>Avaya Visual Vectors Version 9 Installation and Getting Started</i>	585-210-947
<i>Avaya Visual Vectors Version 9 User Guide</i>	585-210-944
<i>Avaya Visual Vectors Release 11 Installation and Getting Started</i>	585-210-706
<i>Avaya Visual Vectors Release 11 User Guide</i>	585-210-709

Documentation Web sites

For product documentation for all Avaya products and related documentation, go to <http://www.avayadocs.com>.



Important:

Additional information about new software or hardware updates will be contained in future issues of this book. New issues of this book will be placed on the web site when available.

Use the following web sites to view related support documentation:

- Sun hardware documentation
<http://docs.sun.com>
- Okidata printer documentation
<http://www.okidata.com>
- Informix documentation
<http://www.informix.com>
- Tivoli Storage Manager documentation
http://tivoli.com/support/documents/public_manuals.html

Space allocation

You will need to allocate space on CMS for call records to be buffered (in System Setup: Data Storage Allocation, up to 99,999 segments in a buffer over all ACD's).

Call record processing

As calls are processed, call records will be recorded in a file (one record per call segment) until either the file size reaches 20 MB or the end of an interval is reached. Then the file of call record segments will be transferred to another computer via uucp or other designated software. If the computers are in close proximity, the data is transferred at speeds of up to 38,400 bps. A new file and its first record will be created as the first segment of the next call is processed.

Multiple Call Work Codes per Call Record feature

The Multiple Call Work Codes per Call Record feature is included in the CMS R3V11 installation software CD. This feature is activated automatically when External Call History is turned on.

The CMS Multiple Call Work Codes per Call Record feature stores the first five Call Work Codes (CWC1 through CWC5) entered by an agent for a call segment in a record.

The last Call Work Code entered by an agent for a call segment will continue to be stored in the LASTCWC column.

Call record file format

Call record file format describes the CMS call record files that are transferred by the External Call History Interface (ECHI).

Call record file format contains the following information:

- [Data characteristics](#) on page 12
- [File name format](#) on page 12
- [File header](#) on page 12
- [Record field format](#) on page 13
- [Sample call scenario and corresponding call records](#) on page 22

Data characteristics

Integers are stored with the least significant byte first and the most significant byte last.

Data items of type char are ASCII character strings of the length specified in the Length column of the [Call record field description table](#) on page 13. If a string is shorter than the specified amount, the unused characters are zeros. (At least one zero always follows the data in a character string.)

Note:

The following paragraphs explain how CMS sends integers to the receiving computer. The receiving computer may have different descriptions for integers. Once your software has parsed and stored the data on the receiving computer, it may be transformed to a different representation.

File name format

The call history files are named *chrxxxx* (*chr* followed by a 4-digit number) on the CMS computer. The transfer process adds an extension of up to three digits so that the file name on the receiving computer is *chrxxxx.x*, *chrxxxx.xx* or *chrxxxx.xxx*.

File header

Each call record file has the following header:

VERSION (4-byte Integer)	SEQUENCE_NUMBER (4-byte Integer)
--------------------------	----------------------------------

The **VERSION** field will contain a 11 for every header.

The **SEQUENCE_NUMBER** field identifies a particular call record file so that duplicates can be recognized when retransmission has occurred. These files are sequential. The **SEQUENCE_NUMBER** restarts at zero when its 4-byte integer reaches its limit (when all bits are high [ones] in its binary equivalent).

When using the NICE Analyzer with CMS R3V11, you need to inform the NICE Analyzer of the expanded call record format for Multiple Call Work Codes through the version field in the External Call History file header and the External Call History Call Record header.

Example:

The following table is an example of the information contained in a call record header. The least significant bytes are stored first and most significant bytes are stored last.

	VERSION	SEQUENCE_NUMBER
Decimal	11	1
Binary	00000101 00000000 00000000 00000000	00000001 00000000 00000000 00000000

Record field format

The file header is followed by a file containing a variable number of fixed-length records whose fields appear in the Field column of the [Call record field description table](#) on page 13. These items are represented by their CMS database equivalents, because ECHI does not use CMS database items. This table also explains the type (integer, bit, or ASCII characters) and length of each field and the meaning of the data contained in that field. The call record fields will be populated as “null” or “0” unless the field is measured.

Call record field description table

Field (CMS database equivalent)	Type	Length	Description
ACD	integer	1 byte	The ACD number for which data was collected.
ACWTIME	integer	4 bytes	The time spent, in seconds, in After Call Work (ACW) associated with this call by the answering agent in this segment.
AGT_RELEASED	bit	1 bit	The agent released or dropped the split/skill or direct agent ACD call. This is always true for ACD calls the agent transferred or conferenced. (0=NO, 1=YES). Available on Generic 3 and newer switches.

Field (CMS database equivalent)	Type	Length	Description
ANS_LOCID	integer	2 bytes	<p>The location ID of the answering agent. This ID number is not assigned to an agent, but rather to the agent terminal and is associated with the DEFINITY port network ID. An agent may be associated with a location ID only upon logging into the ACD. Valid values are 0 through 44.</p> <p> Important: CMS R3V11 only supports location IDs from 1 to 44. MultiVantage R11.1 software supports location IDs from 1 to 64. When running CMS reports that include location IDs (LOC_ID), those IDs defined on the MultiVantage system that are greater than 44 will return a default location ID of 0 to CMS. Support for location IDs above 44 is expected in a future release of CMS.</p>
ANSHOLDTIME	integer	4 bytes	<p>The total time, in seconds, the call was put on hold by the answering agent in this call segment. In agent-to-agent calls, ANSHOLDTIME is accrued for the answering agent if the agent puts the call on hold, but not for the other agent (who continues to accrue talk time).</p> <p>For Generic 2.1 switches, hold time is accrued only for Automatic Call Distribution (ACD) calls.</p> <p>For Generic 2.2 and Generic 3 switches, and DEFINITY Enterprise Communications Server (ECS) Release 5 and later, hold time is accrued for any type of call.</p>
ANSLOGIN	char	10 bytes	The login ID of the agent who answered the call in this segment. This field is blank for unmeasured extensions when EAS is not active.
ANSREASON	integer	1 byte	The reason code (0 through 9) associated with the answering agent's mode, if the agent is in the AUX mode. For agents in AUX on switches with releases earlier than the ECS or for switches that do not have EAS and reason codes active, ANSREASON is always 0.
ASSIST	bit	1 bit	Whether the answering agent in this segment requested supervisor assistance on this call. Valid values are 0=NO, 1=YES.

Field (CMS database equivalent)	Type	Length	Description
AUDIO	bit	1 bit	Whether an agent in this segment reported an audio difficulty problem. Valid values are 0=NO, 1=YES.
CALLID	integer	4 bytes	A unique number assigned to this call and all its call segments. For conferenced/transferred calls, two (or more) calls are tied together. When the entire call is recorded, one call ID is used to tie together all call segments. In “meet-me” conferences, this may result in a “later” segment of the call starting earlier than the first segment. Call IDs are not necessarily strictly sequential, but will be unique for calls over a day. See <i>DEFINITY Enterprise Communications Server Administrator’s Guide</i> for additional information on “meet-me” conferences.
CALLING_II	char	3 bytes	The Information Indicator (II) digits associated with the call. These digits are a two-digit string provided by ISDN Primary Rate Interface (PRI) to indicate the type of originating line of the caller. These digits supply information about the originator location, for example, pay phone, hospital, or prison. The column is blank if the call does not contain II digits. Available on ECS and newer switches.
CALLING_PTY	char	13 bytes	The calling party identification, (which is the Automatic Number Identification (ANI)/Station Identification (SID) for Generic 2.2 or Generic 3 Version 4 switches or the ECS with Integrated Services Digital Network (ISDN) ANI delivery), extension or trunk equipment location identifying the originator of the call. This field is blank if the trunk is not measured, or for internal calls if the originating extension is not measured. (Up to 12 digits in this field.)
CONFERENCE	bit	1 bit	Whether the answering agent initiated a conference on this segment. Valid values are 0=NO, 1=YES. Available only on the ECS, Generic 2.2 and Generic 3 switches.

Field (CMS database equivalent)	Type	Length	Description
CONSULTTIME	integer	4 bytes	The time an agent talked on any outbound call while in AUX work, ACW, or in OTHER with a call on hold. This includes the time the originating agent spent talking to the destination party while establishing a conference or transferring a call. (This is the time between presses of the transfer or conference button.) It includes wait time if the agent is calling a Vector Directory Number (VDN) or split/skill extension, but the wait time can be obtained by subtracting the DISPTIME item from CONSULTTIME .
CWC1	char	17 bytes	The first Call Work Code entered by an agent for the Call Segment.
CWC2	char	17 bytes	The second Call Work Code entered by an agent for the Call Segment.
CWC3	char	17 bytes	The third Call Work Code entered by an agent for the Call Segment.
CWC4	char	17 bytes	The fourth Call Work Code entered by an agent for the Call Segment.
CWC5	char	17 bytes	The fifth Call Work Code entered by an agent for the Call Segment.
DA_QUEUED	bit	1 bit	Whether the call was queued as a direct agent call Valid values are 0=NO, 1=YES. DA_QUEUED applies only to the ECS and Generic 3 switches.
DIALED_NUM	char	25 bytes	The number the caller dialed (up to 24 digits). This will be the VDN for inbound vectoring calls, blank for inbound calls without vectoring, and dialed digits for outbound calls.

Field (CMS database equivalent)	Type	Length	Description
DISPOSITION	integer	1 byte	<p>This field represents the call disposition and indicates whether the call in the segment was:</p> <p>1=connected (CONN, non-ACD call to a measured agent)</p> <p>A connected call is a non-ACD call to a measured agent for which CMS receives an indication that the call was connected.</p> <p>2=answered (ANS, split/skill or direct agent call answered by an agent)</p> <p>An answered call is any split/skill or direct agent ACD call for which CMS receives an indication that the call was answered by an agent and was not a phantom abandon.</p> <p>3=abandoned (ABAN)</p> <p>An abandoned call is any ACD call in which a caller hangs up before receiving an answer from an agent and for which CMS receives notification that the caller abandoned. Phantom abandons (PHANTOMABNS) are included as abandoned calls.</p> <p>4=interflowed (IFLOW)</p> <p>Interflowed calls are calls that are interflowed to an off-switch destination.</p> <p>5=forced busy (FBUSY)</p> <p>Forced busy calls are calls that CMS records as BUSYCALLS for the trunk group that carried them. These calls can be VDN calls that received a forced busy from the vector command or, on the ECS and G3 switches, a split/skill call for a nonvector-controlled split that received a busy indication from the switch because the split queue was full.</p> <p>6=forced disconnect (FDISC)</p> <p>Forced disconnect calls are VDN calls (for Generic 2.2, Generic 3 Version 2 and newer Generic 3 switches, and the DEFINITY ECS) that are disconnected by the switch due to the execution of a disconnect vector command.</p> <p>7=other (OTHER)</p>

Field (CMS database equivalent)	Type	Length	Description
DISPOSITION (contd)	integer	1 byte	Forced disconnect calls (for the ECS, and Generic 3 Version 2 and later Generic 3 switches) also include calls disconnected because of the vector disconnect timer or because they reached the end of vector processing without being queued. For Generic 3 Version 1 switches, forced disconnect calls are calls that were given a forced disconnect announcement and then were disconnected by the switch after the announcement. Other calls include any other calls that do not fall into categories such as answered or abandoned. See definitions for individual tables for OTHERCALLS .
DISPIVECTOR	integer	2 bytes	The number of the first vector associated with the disposition VDN (DISPVDN).
DISPPRIORITY	integer	1 byte	The priority the call had at its disposition in this segment. Priorities can be 1=NO or 2=YES (without vectoring), or 3=LOW, 4=MED, 5=HIGH, or 6=TOP (with vectoring). If the call never gets queued to a split/skill, the priority will not be set. For the ECS, and Generic 3 switches with vectoring, calls directed to split/skills using "route to" or "messaging split/skill" commands and calls directly routed to splits/skills without going through a vector will have MED (no priority) or HIGH (priority) priority, depending on the class of restriction of the originator of the call (agent, extension, trunk group, or VDN).
DISPSKLEVEL	integer	1 byte	The skill level (1 through 16) associated with the skill for which the agent answered the call or for calls that abandoned from ringing or from a direct agent queue with the agent from whom the call abandoned.
DISPSPLIT	integer	2 bytes	The number of the split/skill associated with the call at its disposition in this call segment. Calls that were not queued to a split or skill at the time of disposition will have DISPSPLIT set to null. Calls that were queued to an unmeasured split/skill at the time of disposition will have DISPSPLIT set to zero.
DISPTIME	integer	4 bytes	The wait time (in the vector, in queue, and ringing) until the disposition is recorded in DISPOSITION for the segment. For extension calls made directly to agents (not through a VDN), this will always be zero.

Field (CMS database equivalent)	Type	Length	Description
DISPVDN	char	8 bytes	The number of the VDN associated with the call at its disposition for this call segment. DISPVDN will be blank for calls that are not associated with a VDN at their disposition.
DURATION	integer	4 bytes	The total time the trunk was in use. An alternate description would be the length of time the trunk has been in the TK state. This is the overall trunk holding time from the beginning of the call segment until the caller is disconnected. For the first segment of a call, this will be the trunk holding time for the caller for the entire call (from seized until idle). With a transfer, the original trunk remains associated with both call segments until the call ends.
EQ_LOCID	integer	2 bytes	The location ID of the trunk. This ID number is not assigned directly to a trunk, but rather to the DEFINITY port network. Therefore, each trunk on the network will have the same location ID number. Valid values are ID numbers 0 through 44.
EQLOC	char	10 bytes	The physical equipment location (trunk number) for which data was collected or for which the exception occurred. This will be blank if the trunk is not measured. The value for this field is eight characters followed by two null characters.
EVENT1-9	integer	1 byte each	The number of times each event (stroke count) button (buttons 1 to 9) was entered for this call segment. Available with the ECS, Generic 2, and Generic 3 switches.
FIRSTVDN	char	8 bytes	The number of the first VDN associated with the call segment. This will be blank for calls not associated with a VDN.
FIRSTVECTOR	integer	2 bytes	The number of the first vector associated with the first VDN for the call segment. This will be blank if no vector is involved.
HELD	integer	1 byte	The total number of times this call was placed on hold by the answering agent in this call segment. With agent-to-agent calls, this count is incremented for the agent who puts the call on hold, but not for the calling agent. (For the ECS, Generic 2.2, and Generic 3 switches, this applies to all calls the agent put on hold.)

Field (CMS database equivalent)	Type	Length	Description
HOLDABN	bit	1 bit	Whether this call abandoned from hold in this call segment. Valid values are 0=NO, 1=YES. With the ECS, Generic 2.2, and Generic 3 switches, this applies to all calls the agent put on hold.
LASTCWC	char	17 bytes	The last call work code (up to 16 digits) entered by the answering agent in this segment. This database item applies only to Generic 2.2 and Generic 3 switches and to the ECS.
LASTDIGITS	char	17 bytes	The last set of collected digits sent to the CMS by the switch for this call. These are digits the switch sends to CMS when it executes a “collect” vector command. The digits may be digits the caller was prompted to enter, either through the prompting feature on the switch or through network-prompted digits [caller-entered digits CED], customer database-provided digits (CDPD from the network), or digits collected through a “converse” vector command. Available on ECS switches.
LASTOBSERVER	char	10 bytes	The login ID of the last agent who service-observed or bridged on to this call.
MALICIOUS	bit	1 bit	Whether a malicious call trace was activated for this call segment. Valid values are 0=NO, 1=YES. MALICIOUS applies to the ECS, Generic 2, and Generic 3 switches (except Generic 3i Version 1).
NETINTIME	integer	4 bytes	The time the call spent in a VDN processing at another switch located elsewhere in the network.
OBS_LOCID	integer	2 bytes	The location ID of the observing agent. This ID number is not assigned to an agent, but rather to the agent terminal and is associated with the DEFINITY port network ID. An agent may be associated with a location ID only upon login to the ACD. Valid values are ID numbers from 0 through 44.
OBSERVINGCALL	bit	1 bit	Whether this call represents an agent observing or bridging on to an existing call. Valid values for OBSERVINGCALL are 0=NO, 1=YES. Some reports will display only a 1 (YES).

Field (CMS database equivalent)	Type	Length	Description
ORIG_LOCID	integer	2 bytes	The location ID of the calling agent. This ID number is not assigned to an agent, but rather to the agent terminal and it is associated with the DEFINITY port network ID. An agent may be associated with a location ID only upon logging into the ACD. Valid values are ID numbers from 0 through 44.
ORIGHOLDTIME	integer	4 bytes	The total time the call was put on hold by the originating agent.
ORIGLOGIN	char	10 bytes	The login ID of the agent originating the call. This is used for calls an agent originates to another agent, to an on-switch extension, or to an external destination.
ORIGREASON	integer	1 byte	The reason code (0 through 9) associated with the originating agent's mode, if the agent is in the AUX mode. For agents in AUX on switches with releases earlier than the ECS or switches that do not have EAS and reason codes active, ORIGREASON is always 0.
SEGMENT	integer	1 byte	The number identifying the call segment. Segment numbers are from 1 up to the number of segments in the call.
SEGSTART	integer	4 bytes	<i>The</i> UNIX [®] time and date when the call segment started. (UNIX time and date is the number of seconds since midnight, 01/01/70.) Call segments start when CMS receives the first message for the call, since each call segment represents a call. (When an agent transfers or conferences a call, the agent makes another call to bring about the transfer/conference.)
SEGSTOP	integer	4 bytes	<i>The</i> UNIX time and date when the call segment ended. (UNIX time and date is the number of seconds since midnight, 01/01/70.) A call segment ends when all trunks and agents associated with the call segment have dropped off the call. This means that after call work time for the agent(s) is included when calculating the call segment stop time.
SPLIT1	integer	2 bytes	The first split/skill the call queued to in the first VDN with which it was associated in the call segment.

Field (CMS database equivalent)	Type	Length	Description
SPLIT2	integer	2 bytes	The second split/skill the call was also queued to in the first VDN with which it was associated in the call segment. Applies to Generic 2.2 with Expert Agent Selection (EAS), the ECS, and Generic 3 switches with vectoring only.
SPLIT3	integer	2 bytes	The third split/skill the call was also queued to in the first VDN with which it was associated in the call segment. Applies to Generic 2.2 with EAS, the ECS, and Generic 3 switches with vectoring only.
TALKTIME	integer	4 bytes	The total talk time for the answering agent in this segment.
TKGRP	integer	2 bytes	The trunk group number for which data was collected (or for which an exception occurred). This will be null if the trunk group carrying the call is not measured.
TRANSFERRED	bit	1 bit	Whether an answering agent initiated a transfer for this call segment. Valid values are 0=NO, 1=YES. For the ECS, Generic 2.2, and Generic 3 switches, TRANSFERRED includes all calls that are transferred.
UCID	char	21 bytes	The Universal Call Identifier—a unique number assigned to this call segment within the customer network.

Sample call scenario and corresponding call records

Scenario: An inbound vectored call is answered by an ACD agent and is then transferred to a VDN. After the transfer, two call records are generated (one call record is generated for every *call segment*). The first call segment is shown below. The [First call segment record table](#) on page 23 explains the call record for this segment.

First call segment

1. A call comes into ACD 1 on TG 32 (carried on the trunk located at 0101A0102) to VDN 43211 which points to Vector 33 at 07:37:10 on 04/16/02.
2. The call queues to Split 1 at medium priority via a “queue to” command, and then queues to backup Split 2 at low priority via a “backup” command.
3. The call waits 10 seconds, then rings for 5 seconds, and then is answered by agent 5018 in Split 1.

4. The caller and agent talk for 44 seconds. The agent transfers the call to VDN 43712 which points to Vector 37. (The call is held for 4 seconds while transferring.)
5. The agent has 42 seconds of after call work during which the agent enters call work code 12345.

First call segment record table

The first column in the *First call segment record* table shows whether the field is part of the header or a record field. See [Record field format](#) on page 13 of this document for the field type (integer, smallint or character), field length and field description. The Call Report Entry column shows data that would appear on a standard CMS call report for this call segment. The Call record entry column shows the binary equivalent of the Call Report Entry data. This binary data appears in an actual call record file in the order shown in the following table. Spaces are shown between bytes for clarity in the Call Record Entry column.

First Call Segment Record

Field	Call report entry	Call record entry
VERSION (header)	11	00001011 00000000 00000000 00000000
SEQUENCE_NUM (header)	1	00000001 00000000 00000000 00000000
CALLID	212	11010100 00000000 00000000 00000000
ACWTIME	00:42	00101010 00000000 00000000 00000000
ANSHOLDTIME	00:04	00000100 00000000 00000000 00000000
CONSULTTIME	00:00	00000000 00000000 00000000 00000000
DISPTIME	00:15	00001111 00000000 00000000 00000000
DURATION	04:25	00001001 00000001 00000000 00000000
SEGSTART	07:37:10 04/16/02	10110110 10111110 01010110 00100110
SEGSTOP	07:42:35 04/16/02	10110110 10111110 01011010 11101011
TALKTIME	00:44	00101100 00000000 00000000 00000000
NETINTIME	98	01100010 00000000 00000000 00000000
ORIGHOLDTIME	55	00110111 00000000 00000000 00000000

First Call Segment Record (Continued)

Field	Call report entry	Call record entry
DISPIVECTOR	33	00100001 00000000
DISPSPLIT	1	00000001 00000000
FIRSTVECTOR	33	00100001 00000000
SPLIT1	1	00000001 00000000
SPLIT2	2	00000010 00000000
SPLIT3	0	00000000 00000000
TKGRP	32	00100000 00000000
EQ_LOCID	33	00100001 00000000
ORIG_LOCID	13	00001101 00000000
ANS_LOCID	23	00010111 00000000
OBS_LOCID	42	00101010 00000000
ASSIST	N	0
AUDIO	N	0
CONFERENCE	N	0
DA_QUEUED	N	0
HOLDABN	N	0
MALICIOUS	N	0
OBSERVINGCALL	N	0
TRANSFERRED	Y	1
AGT_RELEASED	Y	1
ACD	1	00000001
DISPOSITION	Ans	00000010

First Call Segment Record (Continued)

Field	Call report entry	Call record entry
DISPPRIORITY	4 (MED)	00000100
HELD	1	00000001
SEGMENT	1	00000001
ANSREASON	0	00000000
ORIGREASON	0	00000000
DISPSKLEVEL	0	00000000
EVENT1-9	0	00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
UCID	0006300089088 5813486	00000000 00000000 00000000 00000110 00000011 00000000 00000000 00000000 00001000 00001001 00000000 00001000 00001000 00000101 00001000 00000001 00000011 00000100 00001000 00000110 00000000
DISPVDN	4321100	00110100 00110011 00110010 00110001 00110001 00110000 00110000 00000000
EQLOC	0101A01	00110000 00110001 00110000 00110001 01000001 00110000 00110001 00110000 00000000 00000000
FIRSTVDN	4321100	00110100 00110011 00110010 00110001 00110001 00110000 00110000 00000000
ORIGLOGIN	0	00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
ANSLOGIN	5018	00110101 00110000 00110001 00111000 00000000 00000000 00000000 00000000 00000000 00000000
LASTOBSERVER	0	00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

First Call Segment Record (Continued)

Field	Call report entry	Call record entry
DIALED_NUM	43211	00110100 00110011 00110010 00110001 00110001 00000000 00000000 00000000 00000000
CALLING_PTY	0101A0102 (eqloc for Generic 3 V3 and earlier) ANI for Generic 2.2, Generlc 3 V4, and the ECS	00110000 00110001 00110000 00110001 01000001 00110000 00110001 00110000 00110010 00000000 00000000 00000000 00000000
LASTDIGITS	1	00000001 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
LASTCWC	12345	00110001 00110010 00110011 00110100 00110101 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
CALLING_II	0	00000000 00000000 00000000
CWC1	12345	00110001 00110010 00110011 00110100 00110101 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
CWC2	12345	00110001 00110010 00110011 00110100 00110101 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

First Call Segment Record (Continued)

Field	Call report entry	Call record entry
CWC3	12345	00110001 00110010 00110011 00110100 00110101 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
CWC4	12345	00110001 00110010 00110011 00110100 00110101 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
CWC5	12345	00110001 00110010 00110011 00110100 00110101 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

Second call segment

The scenario continues with the second call segment of the inbound vectored call being transferred to a VDN. The call was transferred by agent 5018 to a VDN. The [Second call segment record table](#) on page 28 explains the call record for the second call segment. This record has no header information because it follows the first call segment record in the same file.

1. The caller is transferred to VDN 43712 which points to Vector 37.
2. The call is queued to Splits 4 and 5 at high priority using a “queue to” step to queue to Split 4, and a “check” step to queue to Split 5.
3. The call waits 1 second and then rings for 2 seconds before being answered by agent 2139 in Split 5.
4. The caller and agent talk for 3 minutes, 19 seconds, and then the agent releases the call.
5. The agent has 1 minute of after call work during which the agent enters call work code 67890. Stop time is 7:42:35 (includes the ACW time that extends beyond the time at which the caller dropped).

Second call segment record table

The first column in the *Second call segment record* table shows that all fields in this record are record fields. See [Record field format](#) on page 13 of this document for the field type (integer, smallint or character), length, and description. The Call report entry column shows data that would appear on a standard CMS call report for this call segment. The shaded Call Record Entry column shows the binary equivalent of the Call Report Entry data. This binary data appears in an actual call record file *in the order shown in the following table*. Spaces are shown between bytes for clarity in the Call record entry column.

Second call segment record

Field	Call report entry	Call record entry
CALLID	212	11010100 00000000 00000000 00000000
ACWTIME	01:00	00111100 00000000 00000000 00000000
ANSHOLDTIME	00:00	00000000 00000000 00000000 00000000
CONSULTTIME	00:00	00000000 00000000 00000000 00000000
DISPTIME	00:03	00000011 00000000 00000000 00000000
DURATION	03:22	11001010 00000000 00000000 00000000
SEGSTART	07:38:13 04/16/94	10110110 10111110 01010111 00100101
SEGSTOP	07:42:35 04/16/94	10110110 10111110 01011010 11101011
TALKTIME	03:19	11000111 00000000 00000000 00000000
NETINTIME	98	01100010 00000000 00000000 00000000
ORIGHOLDTIME	55	00110111 00000000 00000000 00000000
DISPIVECTOR	37	00100101 00000000
DISPSPLIT	5	00000101 00000000
FIRSTIVECTOR	37	00100101 00000000
SPLIT1	4	00000100 00000000
SPLIT2	5	00000101 00000000

Second call segment record (Continued)

Field	Call report entry	Call record entry
SPLIT3	0	00000000 00000000
TKGRP	32	00100000 00000000
EQ_LOCID	33	00100001 00000000
ORIG_LOCID	23	00010111 00000000
ANS_LOCID	23	00010111 00000000
OBS_LOCID	42	00101010 00000000
ASSIST	N	0
AUDIO	N	0
CONFERENCE	N	0
DA_QUEUED	N	0
HOLDABN	N	0
MALICIOUS	N	0
OBSERVINGCALL	N	0
TRANSFERRED	N	0
AGT_RELEASED	Y	1
ACD	1	00000001
DISPOSITION	Ans	00000010
DISPPRIORITY	5 (HIGH)	00000101
HELD	0	00000000
SEGMENT	2	00000010
ANSREASON	1	00000001
ORIGREASON	9	00001001

Second call segment record (Continued)

Field	Call report entry	Call record entry
DISPSKLEVEL	0	00000000
EVENT1-9	0	00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
UCID	00063000890 885813486	00000000 00000000 00000000 00000110 00000011 00000000 00000000 00000000 00001000 00001001 00000000 00001000 00001000 00000101 00001000 00000001 00000011 00000100 00001000 00000110 00000000
DISPVDN	4371200	00110100 00110011 00110111 00110001 00110010 00110000 00110000 00000000
EQLOC	0101A01	00110000 00110001 00110000 00110001 01000001 00110000 00110001 00110000 00000000 00000000
FIRSTVDN	4371200	00110100 00110011 00110111 00110001 00110010 00110000 00110000 00000000
ORIGLOGIN	5018	00110101 00110000 00110001 00111000 00000000 00000000 00000000 00000000 00000000 00000000
ANSLOGIN	2139	00110010 00110001 00110011 00111001 00000000 00000000 00000000 00000000 00000000 00000000
LASTOBSERVER	0	00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
DIALED_NUM	43712	00110100 00110011 00110111 00110001 00110010 00000000 00000000 00000000 00000000

Second call segment record (Continued)

Field	Call report entry	Call record entry
CALLING_PTY	0101A0102 (eqloc for Generic 3 V3 and earlier) ANI for Generic 2.2, Generic 3 V4, and the ECS	00110000 00110001 00110000 00110001 01000001 00110000 00110001 00110000 00110010 00000000 00000000 00000000 00000000
LASTDIGITS	0	00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
LASTCWC	67890	00110110 00110111 00111000 00111001 00110000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
CALLING_II	0	00000000 00000000 00000000
CWC1	67890	00110110 00110111 00111000 00111001 00110000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
CWC2	67890	00110110 00110111 00111000 00111001 00110000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
CWC3	67890	00110110 00110111 00111000 00111001 00110000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

Second call segment record (Continued)

Field	Call report entry	Call record entry
CWC4	67890	00110110 00110111 00111000 00111001 00110000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
CWC5	67890	00110110 00110111 00111000 00111001 00110000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

Setting up the ECHI package

Setting up the ECHI package describes how to install the External Call History Interface software, connect the CMS computer to the receiving computer, and select and set up the receiving computer.

Note:

If you are upgrading to CMS R3V11, any applications associated with the ECHI may have to be rewritten because of changes to call record database items in CMS. Make sure the version field (which identifies the CMS version) is correct.

Customer responsibilities

You must perform the following steps to be able to transfer call history data:

- Purchase the External Call History Interface package.
- Contact the Technical Service Center (TSC) to authorize the feature. If you are an international customer, contact your Avaya representative.
- Install the feature on CMS.
- Set up the connection between the CMS computer and the computer that will be receiving the data.
- Provide the receiving computer applications that will:
 - Allow the receiving computer to receive data via uucp or another file-transfer utility of your choosing.
 - Parse the files of data being transferred.
 - Store the data in some usable fashion (such as in a database on the receiving computer).
 - Convert the data to a usable format.

Prerequisites

Before installation, be sure you have obtained authorization for the External Call History Interface feature package.

Contents

Setting up the ECHI package contains the following procedures:

- [Installing the External Call History Interface feature](#) on page 34
- [Data collection with ECHI](#) on page 39
- [Assigning ports on the Sun computer](#) on page 42
- [Connecting the CMS to the receiving computer](#) on page 45
- [Requirements for the receiving computer](#) on page 46
- [Setting up uucp software](#) on page 47

Installing the External Call History Interface feature

The following procedure describes how to install and set up the External Call History Interface on a Sun[®] system.

Note:

Once the External Call History Interface feature is installed, you will no longer be able to access any call record data from CMS nor will you be able to use the CMS Call Record report. NICE Analyzer™ is an optional package that allows you to view external call history data. Contact your Avaya representative for more information.

Ports

At installation, the ECHI feature will automatically select the port it will use if your CMS computer is a Sun system.

For further information on setting up ports, see [Assigning ports on the Sun computer](#) on page 42.

Procedure

To install and set up the External Call History Interface on a Sun[®] system:

1. Log in as **root**. The computer must be in run-level 2, and all file systems must be mounted.
2. To access the Services menu, enter:

```
cms svc
```

The system displays the Services menu.

3. Enter the number associated with the `auth_display` option and verify that the system is authorized to install the External Call History package.

The system displays the following message:

Capability/Capacity	Authorization
-----	-----
Version purchased: R3V11	
disk mirroring	authorized
vectoring	authorized
forecasting	authorized
graphics	authorized
external call history	authorized
expert agent selection	authorized
external application	authorized
More than 20000 VDNs measured	authorized
Avaya Supervisor	authorized
Avaya CMS Report Designer	authorized
Maximum number of split/skill members	10000
Maximum number of ACDs	2
Simultaneous Avaya Supervisor logins	400

Note:

If External Call History is not authorized but needs to be, call the Avaya National Customer Care Center at 1-800-242-2121. International customers should contact their local Avaya distributor or representative.

4. CMS must be turned off before the package can be installed. Enter:

`cmsadm`

The system displays the CMS Administration menu.

5. Enter the number associated with the `run_CMS` option.
6. Enter the number associated with the `Turn off CMS but Leave IDS running` option.

CMS turns off, and the system displays the following message:

```

Notifying users of impending shutdown...
. . . . .
Proceeding with cms shutdown.

*** Turning off CMS, Please wait ***
.
*** Turning off X25, Please wait ***

. . . . .

*** Cleaning up, Please wait ***

*** CMS is now off ***

```

7. To install ECHI, enter:

```
cmsadm
```

The system displays the CMS Administration menu.

8. Enter the number associated with the `pkg_install` option.

The system displays a list of the installed CMS features.

9. Enter the number that corresponds to `External Call History`.

The system displays the following message:

```
Enter the name of the computer to which to send call records (up
to 256 characters):
```

10. Enter the name of the receiving computer.

The system displays the following message:

```
Enter the full path of the program to transfer call history files
(default: /cms/dc/chr/uucp_copy):
```

Note:

Currently, CMS uses `uucp` to transfer External Call History files to a designated remote machine and `uustat` to check that the files were transferred successfully.

You may optionally change these default programs to be customer-specified file transfer and check programs such as:

- Transmission Control Protocol/Internet Protocol (TCP/IP)
- UNIX commands `remote copy (rcp)` or `copy (cp)` using a remote file system (RFS)

To use either communications program enter a different full file path instead of the default `uucp/uustat` interface path.

11. Enter the full path of the default file transfer utility.

For example, `/cms/dc/chr/uucp_copy` or optionally enter the full path of your specific file-transfer program.

The system displays the following message:

```
Enter the full path of the program to check the external call
history file transmission (default: /cms/dc/chr/uucp_check):
```

12. Enter the full path of the default file transmission check program.

For example, `/cms/dc/chr/uucp_check` or optionally enter the full path of your specific transmission-checking program.

Note:

If you have chosen to enter your own file transfer and transmission checking programs, continue with Step [16](#), entering the number of call records in the buffer.

If you have chosen the CMS defaults, continue with Step [13](#).

The system displays the following message:

```
Enter password for nuucp login on xxxxxxxx (up to 8
characters):
```

13. Enter the nuucp password for the receiving computer.

The system displays the following message:

```
Enter CMS port for connection to xxxxxxxx (s-pdxxxx):
```

14. Enter the port on the CMS computer to be used by the receiving computer. (For a Sun system, `s_pdevxxxx` will be displayed instead.)

The system displays the following message:

```
Select a speed for this connection
1) 19200
2) 38400
```

15. Enter the number associated with the speed for the connection between the CMS and the receiving computer.

The system displays the following message:

```
Number of call segments to buffer for ACD xxxxxxx (0-99999):
```

16. Enter the number of call records to be held in the buffer if the receiving machine cannot accept the data (minimum: 20 MB). This reserves disk space; therefore, sufficient disk space must be available.

Note:

The range (0-99999) specified in the prompt represents the total allowed over all ACDs. If you expend the entire allotment on ACD 1, you will have no more space available to other ACDs.

⚠ CAUTION:

You will lose external call record data if all the buffers on the CMS computer fill up. (Standard CMS call data is not affected.)

The buffers could become filled due to a link failure if the storage capacity of the receiving machine is exceeded or if the receiving machine goes down.

If you want to change the buffer size, you need to change the Number of call records field in the System Setup: Data Storage Allocation window. (See Data Storage Allocation in Chapter 8, "System Setup," in the *Avaya CMS Administration* book, 585-215-515 for more information).

Collection of external call records resumes when uucp finishes copying the files from the CMS buffers to the receiving computer.

Note:

Repeat Step [16](#) for each administered ACD.

The system displays the following message:

```
Start ECH in the on or off state: (default off)
```

17. Select whether ECH will start in the on or off state (default is off).

The system displays the following message:

```
Computing space requirements and file system
  space availability.

External Call History package installed
```

18. To verify that the installation completed successfully, enter:

```
tail /cms/install/logdir/admin.log
```

If the External Call History package is installed successfully, the system displays the following message:

```
.
.
.
External Call History package installed <date/time>
```

19. To turn CMS back on, enter: **cmsadm**

The system displays the CMS Administration menu.

20. Enter the number associated with the run_CMS option.

21. Enter the number associated with the Turn on CMS option.

The system responds:

```
Please wait for initialization
. .
```

When CMS is operational, the following message appears:

```
*** CMS is now up ***
```

Data collection with ECHI

Overview

When ECHI is off, records are still being collected in files, but the files are not sent to the receiving computer. The receiving computer can only receive files from one machine at a time.

Contents

Data collection with ECHI contains the following procedures:

- [Turning ECHI on or off](#) on page 40
- [CMS is not running and ECHI if off](#) on page 40

Turning ECHI on or off

1. To access the CMS Administration menu, enter:

```
cmsadm
```

The system displays the CMS Administration menu.

2. Enter the number associated with the `run_pkg` option.

The system displays a list of the installed CMS features.

3. Enter the number associated with the `external call history` option.

The system displays the package status (on or off) and asks if you would like to turn it on or off:

```
ECHI is off. Do you wish to turn it on?
```

4. Enter **yes** or **no**, depending on what you want to do with the package. If you turn ECHI on, the system displays:

```
Do you wish to send the full call record buffer?
```

5. Enter **yes** or **no**, depending on what you want to do with the buffer.

CMS is not running and ECHI if off

If CMS is not running and if ECHI is off, the system displays the following message:

```
External Call History is off.  
Do you wish to turn it on? (default: yes)
```

1. To turn ECHI on press **Enter**.

The system displays the following message:

```
External Call History package turned on successfully
```

CMS is running and ECHI is off

If CMS is running and if ECHI is off, the system displays the following message:

```
External Call History is off.  
Do you wish to turn it on? (default: yes)
```

1. To turn ECHI on press **Enter**.

The system displays the following message:

```
Do you wish to transmit the full buffer of call records?:  
(default: yes)
```

2. Press **Enter**.

The system displays the following message:

```
External Call History package turned on successfully
```

CMS is either running or not running and ECHI is on

If CMS is either running or not running and if ECHI is on, the system displays the following message:

```
External Call History is on.  
Do you wish to turn it off? (default: yes)
```

1. To turn ECHI off press **Enter**.

The system displays the following message:

```
External Call History package turned off successfully
```

Assigning ports on the Sun computer

Overview

If your CMS computer is a Sun system, you must install the previously described feature, and then either set the Network Terminal Server (NTS) port connections, or use a Multiport[®] card.

Use the Network Administrator (na) program to address and configure the NTS ports.

Note:

If you are using NICE Analyzer™, you can skip this section because connectivity will be provided by the LAN/WAN.

Procedure

To assign ports on the Sun computer:

1. Log in as **root** at the console terminal.
2. At the system prompt, enter: **na**

The system displays the following message:

```
command:
```

3. To associate all subsequent administration with a specific NTS, enter:

annex name_of_your_NTS

where, *name_of_your_NTS* becomes the default NTS until another NTS is selected using the **annex** command. The default setting for the NTS ports is 9600 bps, 8 bits, no parity, and 1 stop bit.

The system displays the following message:

```
<name of your NTS>: Annex-3-UXR7, 64 ports  
command:
```

4. Perform one of the following steps, depending upon whether you have a direct connection or a modem connection.
- For a direct connection, enter the following set port string command. You must include all the parameters you want to change.

```
set port=x-y mode slave speed <value> type hardwired location
<value> user_name <value> output_flow_control none
```

- For a modem connection, enter the following set port string command:

```
set port=x-y mode slave dedicated_address
<Sunaddress> control_lines modem_control speed <value>
type dial_in term_var dial_up broadcast_direction
network location <value> user_name <value>
output_flow_control none
```

You must include all the parameters you want to change. The set port string command sets the parameters for the serial line ports. The “x” value is the port number on the NTS. You can specify a range of ports. The speed value must be either 19200 or 38400 bps and must match the speed of the receiving computer. You can choose your own values for `location` and `user_name` attributes, but they should be port-specific. See the following table for other values.

Note:

Be sure to set the *location* and *user_name* (and keep them populated) so that any problems can be traced to the correct port.

Parameter	Recommended setting
mode	slave
dedicated_address	Set to the ip address of the <i>Sun</i> host. You can find this by searching (use “grep”) the file <i>/etc/host</i> .
control_lines	Set to <code>modem_control</code> .
speed	Set to match the speed of the receiving computer (19200 or 38400 bps).
type	dial_in
term_var	dial_up
broadcast_direction	network
location	<your location>
user_name	<your user name>

5. When you are finished, reset the ports. Enter:

```
reset [port number]
```

The system displays the following message:

```
resetting serial port number of annex your NTS number
```

6. To quit *na*, enter:

```
quit
```

 **CAUTION:**

The following procedure requires the CMS computer to be rebooted. CMS will be down while the system is rebooting, and you will lose CMS data.

7. To create a character special device, perform the following steps:

a. At the console terminal, enter:

```
cd /etc/rc2.d
```

b. Enter:

```
ls -l
```

c. Enter:

```
vi Speripherals
```

d. Add the following system command to the file. You must add one line per each modem or direct connection. (If the *Speripherals* file already exists, add the following line to the file.)

```
rtelnet -fmrt name_of_your_NTS xx /dev/s_pdevnxx
```

Where *n* is the NTS number and *xx* is the number of the port on the NTS.

Note:

You can choose your own names, but the device name should reflect the terminal server and port names.

e. To write and quit the file, press **Esc**, and enter:

```
:wq!
```

f. Enter:

```
chmod 755 Speripherals
```

8. Reboot the CMS computer.

Connecting the CMS to the receiving computer

Overview

The port on the CMS computer is set up for outgoing data only during feature installation. The port on the receiving computer must be set up for only incoming data.

The receiving computer must be connected to the CMS computer by an RS-232 connection. This connection uses hardware flow control and runs at 19200 bps or 38400 bps.

Note:

If you are using NICE Analyzer™, you can skip this section because connectivity will be provided by the LAN/WAN.

Contents

Connecting the CMS to the receiving computer contains the following information:

- [Cabling](#) on page 45
- [Requirements for the receiving computer](#) on page 46
- [Transferred file names](#) on page 47
- [Call record transfer](#) on page 47

Cabling

Computers – The computers can be connected to a maximum distance of 50 feet with RS-232 cabling and connectors. If the two computers cannot be located within 50 feet of each other, limited-distance modems can be used. Contact your account representative for information about modems.

NTS – If you are using a small NTS (8 or 16 ports), you need either a 10-pin or 8-pin straight-through connector cable. One end of the cable goes to a port on the small NTS, and the other end of the cable goes to the connector. The connector must then attach to a null modem.

Requirements for the receiving computer

Consider the following points before purchasing or connecting the receiving computer:

- Processor speed should be as high as is practically possible.
- The computer must have file transfer capabilities (the default is uucp, but you may choose another file transfer utility).

Note:

If your receiving computer is a UNIX system, refer to your UNIX documentation to set up uucp. If the receiving computer is a Windows® based system, see [Setting up uucp software](#) on page 47.

If you are also using NICE Analyzer™, you must use uucp as the file transfer utility. Select the default settings when installing ECHI.

- The computer must be loaded with software in order to accept, store, and convert the transferred data.
- Transfer speed must be set to the same speed you chose to use on the CMS computer (19200 or 38400 bps).
- Certain files (such as System and Devices) and permissions must be set up on the receiving computer. See the documentation supplied by the computer or software manufacturer for more information.
- Storage capacity should be large enough to meet your needs based on expected call traffic and the length of time you want to store the data. A minimum of 20 MB of available space is required.

 **CAUTION:**

If the disk on the receiving computer fills up, a message is sent to the CMS computer and file transfer halts. This condition could cause files to back up in the CMS computer buffers. If files back up, the call record data that has already been collected up to that moment will eventually be transferred to the receiving computer, but no new data will be collected. The standard CMS data is not affected.

The capacity needed to store one record in the database is 322 bytes per record. One call record is generated for each call segment.

Multiply 322 by the number of records you want to store (based on estimated call traffic and the length of time you want to store the data) to calculate approximately how much storage capacity you need.

Transferred file names

The transfer process adds an extension of up to three digits to the call history data file name. Therefore, the file name on the receiving computer is *chrxxx.x*, *chrxxx.xx*, or *chrxxx.xxx*.

Call record transfer

The transferred call history files are placed in the *~/* directory. (The *~/* directory is the default ucp directory that you can administer on the receiving computer.)

The call history files are sent from CMS at the end of each interval or when a file reaches 20 MB in size. You must set up your receiving application to continuously check the *~/* directory for files of the *chrxxx* format, and then copy these files to your database. The original files in *~/* should then be deleted. If files are not deleted from the *~/* directory after being copied to your database, they will eventually be overwritten.

CAUTION:

If the disk on the receiving computer fills up, a message is sent to the CMS computer, and file transfer halts. This condition could cause files to back up in the CMS computer buffers. If files back up, the call record data that has already been collected will eventually be transferred to the receiving computer, but no new data will be collected. (Standard CMS data is not affected.)

The purpose of the sequence numbers is to enable the detection of duplicate files. If you receive two files with the same sequence number, those files are duplicates. If duplicated files are received, refer to the sequence number as previously described in [File header](#) on page 12.

Setting up ucp software

Overview

You must provide the ucp software for the receiving computer. During setup, the site names (which may be identified by other terms such as node names or host names) must match for configuration on both machines. For assistance, call the Avaya National Customer Care Center at 1-800-242-2121. International customers may contact their local Avaya distributor or representative.

Note:

If you are using NICE Analyzer™, you can skip this section because connectivity will be provided by the LAN/WAN.

Contents

Setting up the uucp software contains the following procedures:

- [Setting up uucp software on a Windows based computer](#) on page 48
- [Testing the connection and configuration](#) on page 49
- [Reading mail on a UNIX system](#) on page 49

Setting up uucp software on a Windows based computer

The following steps describe a typical method for setting up uucp software on a Windows based computer. Specific details will vary from machine to machine. See your uucp software documentation for more information.

1. Install and configure the uucp software on the receiving computer according to the instructions provided by the manufacturer.
2. Reboot the computer to verify that no configuration or startup procedures conflict.
3. Define the site name for the receiving computer. This must match the name that was entered on the CMS computer for the call history receiving machine during installation of the feature.
4. Define the Spool directory as `C:\uucp`
5. Define the *Public* directory as `C:\uucp\public`
6. Define the *UUXQT* path as `C:\bin`
7. Define the default drive as `C:\`
8. Define the receiving port as `COM1`
9. Define the name of the CMS computer that will be sending data. This needs to be the same as the node name of the CMS computer.

Enter `uname -n`, and press Enter on the CMS at the UNIX prompt and run the name.

Note:

For the following step, the login ID is `nuucp`. The password is the password that you created during the feature installation.

10. Define the `nuucp` password that will be used by CMS to log in to the receiving computer to send data. This password must match the `nuucp` password assigned during the External Call History Interface feature installation.

Testing the connection and configuration

Test the connection and configuration by performing the following procedure.

1. Send e-mail from the receiving computer to the CMS computer.
 - a. Enter:
mail *cms_computer_name*:cms
 - b. Create a test message and press **Enter**.
 - c. Enter:
. (*a period*)
2. Send e-mail from the CMS computer to the receiving computer.
 - a. Enter:
mail *receiving_computer_name*:user1
 - b. Create a test message and press **Enter**.
 - c. Enter:
. (*a period*)

If both machines receive the mail, the connection is configured and operating properly.

Note:

The UNIX command *uutry machine_name* will test the machine and provide a log of actions for tracing problems.

Reading mail on a UNIX system

To read mail on a UNIX based system, perform the following steps.

1. To display the message, enter: **mail**
2. To delete the message, enter: **?d**
3. To quit reading mail, enter: **?q**

—

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