Lucent Technologies
Bell Labs Innovations

CentreVu™ Call Management System

Release 3 Version 5

External Call History Interface

585-215-824
Comcode 107876211
Issue 1
December 1996

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

Trademarks
ANIXTER is a registered trademark of ANIXTER Brothers, Inc.
CentreVu is a trademark of Lucent Technologies.
DEFINITY is a registered trademark of Lucent Technologies.
Multiport is a trademark of Aurora Technologies, Inc.
Microsoft, MS, and MS-DOS are registered trademarks of Microsoft Corp.
SPARC trademarks, including the SCD Compliant Logo, are trademarks or registered trademarks of SPARC International, Inc. SPARCstation, SPARCserver, SPARCserver, SPARCengine, SPARCworks, and SPARCompiler are licensed exclusively to Sun Microsystems, Inc. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc.
StarServer is a trademark of NCR Corporation.
Sun and Sun Microsystems are trademarks or registered trademarks of Sun Microsystems, Inc.
UNIX is a registered trademark of Novell, Inc. in the United States and other countries, licensed exclusively through X/Open Company Limited.
Windows is a registered trademark of Microsoft Corp.
All other product names mentioned herein are the trademarks of their respective owners.

Ordering Information
Call: Lucent Technologies Publications Center
Voice 1 800 457-1235 International Voice 317 361-5353
Fax 1 800 457-1764 International Fax 317 361-5355
Write: Lucent Technologies Publications Center
P.O. Box 4100
Crawfordsville, IN 47933
Order: Document No. 585-215-820
Issue 1, December 1996
For additional documents, refer to the section entitled, “Related Documents” in “About This Book.”

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 Lucent Technologies Publications Center.

Lucent Technologies National Customer Care Center

Lucent Technologies provides a telephone number for you to use to report problems or to ask questions about your call center. The support telephone number is 1-800-242-2121. For technical support, customers outside the United States should call their Lucent Technologies Representative or Distributor.

European Union Declaration of Conformity
Lucent Technologies Business Communications Systems declares that the equipment specified in this document conforms to the referenced European Union (EU) Directives and Harmonized Standards listed below:

EMC Directive	89/336/EEC
Low Voltage Directive	73/23/EEC
	The “CE” mark affixed to the equipment means that it conforms to the above Directives.

Heritage Statement
Lucent Technologies - formed as a result of AT&T’s planned restructuring—designs, builds, and delivers a wide range of public and private networks, communication systems and software, consumer and business telephone systems, and microelectronics components. The world-renowned Bell Laboratories is the research and development arm for the company.

Comments
To comment on this document, return the comment card at the front of the document.

Acknowledgment
This document was prepared by the Customer Training and Information Products group, Lucent Technologies, Denver, CO.

Developed by the Lucent Technologies Customer Training and Information Products Organization

CentreVu Call Management System
Release 3 Version 5

External Call History Interface

Table of Contents

List of Tables

Introduction

The External Call History Interface is an optional *CentreVu™* Call Management System (CMS) feature which allows you to transfer the *CentreVu* CMS Release 3 Version 5 (R3V5) call record files (call history data files) to another computer for processing.

This feature is especially useful for call centers with a high volume of calls. It allows a much higher volume of call record data to be processed and stored than can be processed and stored on the CMS computer.

Note

If you are upgrading to *CentreVu* CMS R3V5, any applications associated with the External Call History Interface (ECHI) may have to be rewritten because additional call record database items were added with R3V5 CMS. You need to make sure that the version field (which identifies the CMS version) is correct.

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

As calls are processed, call records are recorded in a file (one record per call segment) until the file size reaches 20 Mbytes *or* the end of an interval is reached, whichever comes first. When this happens, the file of call record segments is transferred to another computer via uucp (at speeds of up to 38,400 bps if the computers are close).

A new file (and its first record) is then created as the first segment of the next call is processed.

This document describes the format of the external call history data files and what you must do to transfer these files to your computer.

Note

You are responsible for the storage of and subsequent formatting, printing, etc., of the data transferred to your computer.

Call Record File Format

This section describes the format of the *CentreVu* CMS call record files that are transferred by the External Call History Interface.

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 Table 1. 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.)

The following paragraphs explain how *CentreVu* 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 have been transformed to a different representation**.**

File Name Format

These files are named *chrxxxx* (*chr* followed by a 4-digit number) on the *CentreVu* CMS computer. The transfer process adds an extension of up to three digits so 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 identifies the R3 CMS Version and the format of the call record file. Any data, as described in this document, is correct only for R3V5 software. Therefore, the **VERSION** field will contain a 3 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).

An example of the information contained in a call record header follows.

	VERSION	SEQUENCE_NUMBER
Decimal	2	1
Binary	00000010 00000000 00000000 00000000	00000001 00000000 00000000 00000000

The least significant bytes are stored first and the most significant bytes last.

Record Field Format

The file header is followed by a variable number of fixed-length records whose fields appear ***in the order shown*** in the *Field* column of Table 1. (These fields are the database items for CMS call records.) 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.

Table 1: Record Field Format

Field (Database Item)	Type	Length	Description
CALLID	integer	4 bytes	A unique number assigned to this call and all its segments. Note that in the case of a conference or transfer, when the data for the conference/transfer is recorded, the same call ID will be recorded for all call segments of the conference/transfer. Note that in the case of "meet-me" conferences, this may result in higher-numbered segments of the call starting before the first segment on the call. Call IDs are not necessarily strictly sequential, but will be unique for calls over a day.
ACWTIME	integer	4 bytes	The time spent, in seconds, in After Call Work (ACW) related to this call by the answering agent in this segment.
ANSHOLDTIME	integer	4 bytes	The total time the call was put on hold by the answering agent, in seconds, in this call segment. Note that 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). For Generic 2.1 switches, **ANSHOLDTIME** includes split ACD calls held. For Generic 2.2 and Generic 3 switches, and *DEFINITY*® Enterprise Communications Server (ECS) Release 5, **ANSHOLDTIME** includes all calls held.
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 subtracted out by subtracting the **DISPTIME** item from **CONSULTTIME**.
DISPTIME	integer	4 bytes	The amount of time for the call segment disposition (in the vector, in queue, ringing) to be recorded in **DISPOSITION**. For extension calls made directly to agents (not through a VDN), this will always be zero.
DURATION	integer	4 bytes	The total time the trunk was held. 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.

Table 1: Record Field Format (Contd)

Field (Database Item)	Type	Length	Description
SEGSTART	integer	4 bytes	The time the call segment started. A new segment starts 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	The time when the call and any associated after call work ended. The call 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.
TALKTIME	integer	4 bytes	The time an agent spends talking on a call. This does not include the time the caller is on hold.
DISPIVECTOR	integer	2 bytes	The number of the first vector associated with the disposition VDN (DISPVDN).
DISPSPLIT	integer	2 bytes	The number of the split or 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 or skill at the time of disposition will have **DISPSPLIT** set to zero.
FIRSTIVECTOR	integer	2 bytes	The number of the first vector associated with the first VDN for the call segment.
SPLIT1	integer	2 bytes	The first split/skill to which the call was queued in the first VDN that it was associated with in the call segment.
SPLIT2	integer	2 bytes	The second split/skill to which the call was also queued in the first VDN that it was associated with in the call segment. This only applies to Generic 2.2 with Expert Agent Selection (EAS), the ECS, and Generic 3 switches with vectoring.
SPLIT3	integer	2 bytes	The third split/skill to which the call was also queued in the first VDN that it was associated with in the call segment. This applies only to Generic 2.2 with EAS, the ECS, and Generic 3 switches with vectoring.
TKGRP	integer	2 bytes	The number of the trunk group that carried the call. This will be zero if the trunk group carrying the call is not measured.
ASSIST	bit	1 bit	This indicates if the answering agent in this segment requested supervisor assistance on this call (0=NO, 1=YES).
AUDIO	bit	1 bit	This indicates whether or not an agent in this segment reported an audio problem (0=NO, 1=YES).
CONFERENCE	bit	1 bit	This indicates whether or not this call segment represents part of a conference (0=NO, 1=YES). Available on the ECS, Generic 2.2 and Generic 3 switches.

Table 1: Record Field Format (Contd)

Field (Database Item)	Type	Length	Description
DA_QUEUED	bit	1 bit	This indicates whether or not the call was queued as a direct agent call (0=NO, 1=YES). This database item applies to the ECS and Generic 3 switches only.
HOLDABN	bit	1 bit	This indicates whether or not this call abandoned from hold (0=NO, 1=YES) in this call segment. With Generic 2.1 switches, this is only for split ACD calls. With the ECS, Generic 2.2, and Generic 3 switches, this includes all calls the agent put on hold.
MALICIOUS	bit	1 bit	This indicates whether or not a malicious call trace was activated for this call segment. Valid values for **MALICIOUS** are 0=NO, 1=YES. Applies to the ECS, Generic 2, and Generic 3 (except Generic 3i Version 1) switches.
OBSERVINGCALL	bit	1 bit	This indicates whether or not this call represents an agent observing or bridging on to an existing call. Valid values for **OBSERVINGCALL** are 0=NO, 1=YES.
TRANSFERRED	bit	1 bit	This indicates whether or not the answering agent initiated a transfer on this call segment. Valid values for **TRANSFERRED** are 0=NO, 1=YES. For the ECS, Generic 2.2, and Generic 3 switches, **TRANSFERRED** is set for any call transferred. For Generic 2.1 switches, **TRANSFERRED** is set for transfers to a measured VDN or split.
AGT_RELEASED	bit	1 bit	This indicates if an ACD or DACD call is released first by the agent or by the caller (0=NO, 1=YES). This item applies only to Generic 3 switch releases.
ACD	integer	1 byte	The number of the ACD that handled this call.
DISPOSITION	integer	1 byte	This indicates what happened to the call in the call segment. The possibilities are: 1=connected, 2=answered, 3=abandoned, 4=interflowed, 5=forced busy, 6=forced disconnect, and 7=other. A connected call is a non-ACD call to a measured agent for which CMS receives an indication that the call was connected. 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.

Table 1: Record Field Format (Contd)

Field (Database Item)	Type	Length	Description
DISPOSITION (Contd)	integer	1 byte	An abandoned call is any call for which CMS receives notification that the caller abandoned. This includes calls with talk times shorter than the phantom abandoned call timer. An interflowed call is a call that was redirected to an off-switch destination. Forced busy calls are calls that CMS records as **BUSYCALLS** for the trunk group that carried them. For switches with vectoring, these are VDN calls that received a forced busy from the "busy" vector command. For the ECS and G3 switches, calls that receive a busy indication because the split queue was full (or there was no queue) are recorded here. Forced disconnect calls are VDN calls that are disconnected by the switch due to the execution of a disconnect vector command (Generic 2.2, Generic 3 Version 2, later Generic 3 switches, and the *DEFINITY*® ECS). For Generic 2.1, and 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 listening to the entire announcement. For the ECS, and Generic 3 Version 2 and later Generic 3 releases, forced disconnect calls also include calls disconnected because of the disconnect vector timer or because they reached the end of vector processing without being queued. Other calls are any other calls that are not previously defined.
DISPPRIORITY	integer	1 byte	This indicates the priority the call had at its disposition in this segment. Priorities can be 1=NO, 2=YES (without vectoring), or 3= LOW, 4=MED, 5=HIGH, or 6=TOP (with vectoring). 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). If the call never queued to a split/skill, the priority will not be set.

Table 1: Record Field Format (Contd)

Field (Database Item)	Type	Length	Description
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, regardless of whether that agent answered or originated the call, but it is not incremented for the other agent who is continuing to accrue talk time. (For Generic 2.1 switches, this includes only split ACD calls held. With the ECS, Generic 2.2, and Generic 3 switches, this includes all calls the agent put on hold.)
SEGMENT	integer	1 byte	The number of the call segment. Segment numbers are from 1 up to the number of segments in the call.
ANSREASON	integer	1 byte	The reason code for AUX state in which answering agent answered call.
ORIGREASON	integer	1 byte	The reason code for the AUX state in which the agent originated this call.
DISPSKLEVEL	integer	1 byte	The skill level associated with the skill for which the agent answered this call or from which the caller abandoned.
EVENT1-9	integer	9 bytes	The number of times each event (stroke count) button was pressed for this call segment. Available on the ECS, Generic 2, and Generic 3 switches.
DISPVDN	char	6 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.
EQLOC	char	10 bytes	The physical equipment location of the trunk that carried the call. This will be blank if the trunk is not measured.
FIRSTVDN	char	6 bytes	The number of the first VDN associated with the call segment.
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.
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.
LASTOBSERVER	char	10 bytes	The login ID of the last agent who service-observed or bridged on to this call.
DIALED_NUM	char	25 bytes	The number the caller dialed (up to 24 digits). This will be the VDN for inbound vectoring calls and dialed digits for outbound calls. This will be blank for inbound calls without vectoring.

Table 1: Record Field Format (Contd)

Field (Database Item)	Type	Length	Description
CALLING_PTY	char	13 bytes	The Automatic Number Identification (ANI)/Station Identification (SID) (Generic 2.2 or Generic 3 Version 4 switches or the ECS with 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.)
LASTDIGITS	char	17 bytes	The last set of collected digits sent to CMS for this call.
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 to Generic 2.2 and Generic 3 switches and the ECS only.
CALLING_II	char	17 bytes	Information Indication digits (II digits) are a two-digit string provided by ISDN PRI to indicate the type of originating line of the caller. For example, a pay phone, a hospital, or a prison. The column is blank if the call does not contain II digits.

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. Since the call is transferred, two call records are generated (one call record is generated for every *call segment*). The first call segment is shown below. Table 2 explains the call record for the first segment.

First Call Segment and Call Record

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 04/16/94.
2. The call queues to Split 1 at medium priority via a “queue to main” command, and then queues to backup Split 2 at low priority via a “check 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.

Note

The first column in Table 2 shows whether the field is part of the header or a record field. See Table 1 for the field type (integer, bit or character), field length and field description. The *Call Report Entry* column shows data that would appear on a standard *CentreVu* 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 Table 2. Spaces are shown between bytes for clarity in the *Call Record Entry* column.

Table 2: Call Record Breakdown for Segment 1

	Field	Call Report Entry	Call Record Entry
File Header	**VERSION**	2	00000010 00000000 00000000 00000000
.	**SEQUENCE_NUM**	1	00000001 00000000 00000000 00000000
Record Fields	**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 04/16/94	10110110 10111110 01010110 00100110
.	**SEGSTOP**	07:42:35 04/16/94	10110110 10111110 01011010 11101011
.	**TALKTIME**	00:44	00101100 00000000 00000000 00000000
.	**DISPIVECTOR**	33	00100001 00000000
.	**DISPSPLIT**	1	00000001 00000000
.	**FIRSTIVECTOR**	33	00100001 00000000
.	**SPLIT1**	1	00000001 00000000
.	**SPLIT2**	2	00000010 00000000
.	**SPLIT3**	0	00000000 00000000
.	**TKGRP**	32	00100000 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

Table 2: Call Record Breakdown for Segment 1 (Contd)

	Field	Call Report Entry	Call Record Entry
Record Fields	**DISPOSITION**	Ans	00000010
.	**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
.	**DISPVDN**	43211	00110100 00110011 00110010 00110001 00110001 00000000
.	**EQLOC**	0101A0102	00110000 00110001 00110000 00110001 01000001 00110000 00110001 00110000 00110010 00000000
.	**FIRSTVDN**	43211	00110100 00110011 00110010 00110001 00110001 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
.	**DIALED_NUM**	43211	00110100 00110011 00110010 00110001 00110001 00000000

Table 2: Call Record Breakdown for Segment 1 (Contd)

	Field	Call Report Entry	Call Record Entry
Record Fields	**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
.	**LASTCWC**	12345	00110001 00110010 00110011 00110100 00110101 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
.	**CALLING_II**	0	00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

Second Call Segment and Call Record

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. Table 3 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 main” step to queue to Split 4, and a “check backup” 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).

Note

The first column in Table 3 shows that all of the fields in this record are record fields. See Table 1 for the field type (integer, bit or character), field length, and field description. The *Call Report Entry* column shows data that would appear on a standard *CentreVu* 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 Table 3. Spaces are shown between bytes for clarity in the *Call Record Entry* column.

Table 3: Call Record Breakdown for Segment 2

	Field	Call Report Entry	Call Record Entry
Record Fields	**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
.	**DISPIVECTOR**	37	00100101 00000000
.	**DISPSPLIT**	5	00000101 00000000
.	**FIRSTIVECTOR**	37	00100101 00000000
.	**SPLIT1**	4	00000100 00000000
.	**SPLIT2**	5	00000101 00000000
.	**SPLIT3**	0	00000000 00000000
.	**TKGRP**	32	00100000 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

Table 3: Call Record Breakdown for Segment 2 (Contd)

	Field	Call Report Entry	Call Record Entry
Record Fields	**ACD**	1	00000001
.	**DISPOSITION**	Ans	00000010
.	**DISPPRIORITY**	5 (HIGH)	00000101
.	**HELD**	0	00000000
.	**SEGMENT**	2	00000010
.	**ANSREASON**	1	00000001
.	**ORIGREASON**	9	00001001
.	**DISPSKLEVEL**	0	00000000
.	**EVENT1-9**	0	00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
.	**DISPVDN**	43712	00110100 00110011 00110111 00110001 00110010 00000000
.	**EQLOC**	0101A0102	00110000 00110001 00110000 00110001 01000001 00110000 00110001 00110000 00110010 00000000
.	**FIRSTVDN**	43712	00110100 00110011 00110111 00110001 00110010 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

Table 3: Call Record Breakdown for Segment 2 (Contd)

	Field	Call Report Entry	Call Record Entry
Record Fields	**DIALED_NUM**	43712	00110100 00110011 00110111 00110001 00110010 00000000
.	**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
.	**LASTCWC**	67890	00110110 00110111 00111000 00111001 00110000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
.	**CALLING_II**	0	00000000 00000000

Setup Information

This section describes External Call History Interface installation, connecting the *CentreVu* CMS computer to the receiving computer, and selecting and setting up the receiving computer.

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 to authorize the feature. (If you are an international customer, contact the Lucent Technologies International Technical Assistance Center at 1-303-538-4666.)
- Install the feature on *CentreVu* CMS.
- Set up the connection between the *CentreVu* CMS computer and the computer which will be receiving the data.
- Provide the receiving computer applications that will:
  - — Allow the receiving computer to receive data via uucp.
  - — 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.

Installing the External Call History Interface Feature

The following procedure describes installing and setting up the External Call History Interface on a *Sun*[*] *SPARCserver*[†], 3332, *Star Server S*[‡] , WGS 33, or WGS 25 computer.

You must install the External Call History Interface feature after it has been purchased and authorized.

Note

Once the External Call History Interface feature is installed, you will no longer be able to access any call record data from *CentreVu* CMS nor will you be able to use the *CentreVu* CMS Call Record report.

Installing the feature automatically sets up the appropriate ports if your *CentreVu* CMS computer is a 3332, a *Star Server S*, or a WGS machine.

The ports are *not* set up by installing the feature if your *CentreVu* CMS computer is a *Sun SPARCserver* 5, 10, or 20. After installing the External Call History feature package, continue with the “Assigning Ports on the *Sun SPARCserver* Computer” section for the setup procedures.

*Sun is a registered trademark of Sun Microsystems, Inc.
†SPARCserver is a registered trademark of SPARC Interlational, Inc.,and is licensed exclusively to Sun Microsystems, Inc.
‡StarServer is a registered trademark of NCR Corporation.

To install the External Call History feature package, perform the following procedure.

1. Log in as *root*. The computer must be in run-level 2, and all file systems must be mounted.
2. Access the Services menu by entering **cmssvc.**

   The Services menu appears as shown below.

```
 Commands for Services Personnel

Select a command from the list below.
  1) auth_display Display feature authorizations
  2) auth_set     Authorize CMS capabilities/capacities
  3) backup       Single-tape filesystem backup (in background)
  4) run_cms      Turn CMS on or off
  5) setup        Set up the initial CMS configuration
  6) swinfo       Display switch information
  7) swsetup      Change switch information
  8) upd_install  Install update from disk files
  9) upd_remove   Back out the currently installed update
 10) upd_save     Save update on disk for later installation
Enter choice (1-10) or q to quit:
```

3. Enter **1** to select auth_display, and verify that the system is authorized to install the External Call History package.

   System response:

```
                              Capability/Capacity     Authorization
                              -------------------     -------------
                                        vectoring     authorized
                                      forecasting     authorized
                                         graphics     not authorized
                               external call history     authorized
                              expert agent selection     authorized
                                external application     authorized
    Lucent Technologies CentreVu (TM) Supervisor s     authorized
Lucent Technologies CentreVu (TM) Report Designer s     authorized
                            Maximum number of agents     1000
                              Maximum number of ACDs     4
    Simultaneous CentreVu (TM) Supervisor logins s     50
```

Note

If External Call History is not authorized but should be, call the Lucent Technologies National Customer Care Center at 1-800-242-2121. International customers please contact your local Lucent distributor or representative.

4. *CentreVu* CMS must be turned off before the package can be installed. To turn off *CentreVu* CMS, first access the *CentreVu* CMS Administration menu by entering **`cmsadm.`**

   The *CentreVu* CMS Administration menu appears as shown below.

```
  CentreVu(TM) Call Management System Administration Menu
Select a command from the list below.
   1) acd_create  Define a new ACD
   2) acd_remove  Remove all administration and data for an ACD
   3) backup      Filesystem backup
   4) diskmap     Estimate disk requirements
   5) memory      Estimate memory requirements
   6) realtime    Estimate real-time report refresh rate
   7) pkg_install Install a feature package
   8) pkg_remove  Remove a feature package
   9) run_cms     Turn CentreVu (TM) CMS on or off
Enter choice (1-9) or q to quit:
```

5. Enter **9**.

   System response:

```
Select one of the following
  1) Turn on CentreVu CMS
  2) Turn off CentreVu CMS
Enter choice (1-2)
```

6. Enter **2** to turn off *CentreVu* CMS.

   System response:

```
*** Turning off CMS, Please wait ***
```

   CentreVu CMS turns off and the following appears:

```
*** CMS is now off ***
```

7. Access the *CentreVu* CMS Administration menu by entering **cmsadm**.

   The *CentreVu* CMS Administration menu appears.

```
  CentreVu(TM) Call Management System Administration Menu
Select a command from the list below.
   1) acd_create  Define a new ACD
   2) acd_remove  Remove all administration and data for an ACD
   3) backup      Filesystem backup
   4) diskmap     Estimate disk requirements
   5) memory      Estimate memory requirements
   6) realtime    Estimate real-time report refresh rate
   7) pkg_install Install a feature package
   8) pkg_remove  Remove a feature package
   9) run_cms     Turn CMS on or off
Enter choice (1-9) or q to quit:
```

8. Enter **7** to select the pkg_install option.

   System response:

```
The CMS Features that can be installed are
  1) forecasting
  2) external call history
Enter choice (1-2) or q to quit:
```

Note The system displays only feature packages that are authorized and not yet installed. If the External Call History package is already installed, it will not be shown.

9. Enter the number that corresponds to External Call History. (The number depends upon what has been installed.)

   System response:

```
Enter the name of the Call History Receiving machine (up to 8
  characters):
```

10. Enter the name of the receiving computer.

    System response:

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

11. Enter the *nuucp* password for the receiving computer.

    System response (for a *Sun SPARCserver* computer, *s_pdevxxx*) will display:

```
Enter CMS port for connection to xxxxxxxx (ttyihxxx):
```

12. Enter the port on the *CentreVu* CMS computer to be used by the receiving computer.

    Note
    For the 3332, *Star Server S*, or WGS computers, ports tty00 and tty01 cannot be used for connections to external machines, because these ports connect to the remote console.

    System response:

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

13. Enter the speed that the connection between the *CentreVu* CMS and the receiving computer will be using.

    System response:

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

14. Enter the number of call records to be held in the buffer if the receiving machine cannot accept the data (this should equate to a minimum of 20 Mbytes). This step reserves disk space; therefore, sufficient disk space must be available.

    Caution **You will lose external call record data if all the buffers on the *CentreVu* CMS computer fill up**. (Standard *CentreVu* 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 Datga Storage Allocation in Chapter 10, “SystemSetup,” for more information.

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

    Note Repeat Step 13 for each administered ACD.

    System response:

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

External Call History package installed
```

15. Verify that the installation completed successfully by entering the following:

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

    The External Call History package installed successfully when you see the following message.

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

16. You can now turn *CentreVu* CMS back on. Enter **cmsadm.**

    The CMS Administration menu will appear.

```
  Call Management System Administration Menu
Select a command from the list below.
   1) acd_create  Define a new ACD
   2) acd_remove  Remove all administration and data for an ACD
   3) backup      Filesystem backup
   4) diskmap     Estimate disk requirements
   5) memory      Estimate memory requirements
   6) realtime    Estimate real-time report refresh rate
   7) pkg_install Install a feature package
   8) pkg_remove  Remove a feature package
   9) run_cms     Turn CMS on or off
Enter choice (1-9) or q to quit:
```

17. Enter **9.**

    System response:

```
 Select one of the following
   1) Turn on CMS
   2) Turn off CMS
 Enter choice (1-2)
```

18. Enter **1** to turn *CentreVu* CMS on.

    System response:

```
Please wait for initialization
```

When *CentreVu* CMS comes up, the following appears:

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

Assigning Ports on the *Sun SPARCserver* Computer

If your *CentreVu* CMS computer is a *Sun SPARCserver* 5, 10, or 20, 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.

To set the NTS port connections, perform the following procedure.

Note

You must log in as *root* at the console terminal.

1. At the system prompt, enter **na** to access the NTS administration software:

```
# na
```

System response:

```
command:
```

2. To associate all subsequent administration with a specific NTS, enter **annex** <name of your NTS> at the command prompt.

```
command: annex <name of your NTS>
```

Note

When you enter annex <name of your NTS>, it 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.

*Multiport is a registered trademark of Aurora Technologies, Inc.

System response:

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

command:
```

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

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

   b. For a **modem connection**, enter the following *set port* string command. You must include all the parameters you want to change.

```
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
```

Note You can break down either of these commands to make the entry easier. For example, for the direct connection, you could perfrom the following steps.

1. Type **`set port=x mode slave speed`** <value>.
2. Press RETURN.
3. Type **`set port=x type hardwired location`** <value>.
4. Press RETURN.
5. Continue until the entire command is entered.

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 Table 4 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.

Table 4: Guidelines for Configuring Port Parameters for Modems

Parameter	Recommended Setting
mode	**`slave`**
dedicated_address	Set to the ip address of the *Sun* host. You can find this by searching (use “grep”) the file */etc/host.*
control_lines	Set to **`modem_control`**.
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>

4. When you are finished, use the following command to reset the ports:

```
command: reset [port number]
```

System response:

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

5. To quit na, enter the following command:

```
command: quit
```

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

6. Next you must create a character special device. Do so in the following manner:
   a. At the console terminal, go to the */etc/rc2.d* directory.
   b. Look for a *Speripherals* file. If this file does not exist, create a *Speripherals* file by using an editor such as vi.

```
# vi Speripherals
```

c. 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, just add the command to it.)

```
rtelnet -fmrt <name of your NTS> 20 /dev/s_pdev220
```

Note

The 220 in the device name indicates the second NTS and port 20 (as does the parameter 20). You can choose your own names, but the device name should reflect the terminal server and port names.

d. If you used vi to do the above editing, you can exit vi by typing **ZZ** (upper case).

7. Reboot the *CentreVu* CMS computer.

Connecting the *CentreVu* CMS Computer to the Receiving Computer

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

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

The computers can be connected up to a 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.

Note

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. The connector is an *ANIXTER*[a] RJ45-DB25 adapter (PEC 69771, Comcode 407361823).

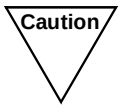
a. ANIXTER is a registered trademark of ANIXTER Brothers, Inc.

Selecting and Setting Up the Receiving Computer

This section contains the receiving computer requirements. This section also explains how call records are transferred.

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

- Processor speed should be as high as practically possible.
- The computer must have uucp capabilities. If your receiving computer is a *UNIX** machine, refer to your *UNIX* documentation to set up uucp. If your receiving computer is an *MS-DOS*† computer, see the section "Setting Up uucp Software on an *MS-DOS* Computer."
- 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 choose to use on the *CentreVu* 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 that came with the computer for this 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 Mbytes of available space** is required.

  If the disk on the receiving computer fills up, a message is sent to the *CentreVu* CMS computer and file transfer halts. This condition could cause files to back up in the *CentreVu* 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. (Standard *CentreVu* CMS data is not affected.)

  The capacity needed to store one record in the database is 210 bytes per record. One call record is generated for each *call segment.*

  Multiply 210 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.

*UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company Limited.
†MS-DOS is a registered trademark of Microsoft, Inc.

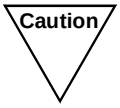
Transferred File Names

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 *chrxxxx.x, chrxxxx.xx,* or *chrxxxx.xxx.*

Call Record Transfer

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

The call history files are sent from *CentreVu* CMS at the end of each interval *or* when a file reaches 20 Mbytes in size. You must set up your receiving application to continously check the ~/ directory for files of the *chrxxxx* 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.



If the disk on the receiving computer fills up, a message is sent to the *CentreVu* CMS computer and file transfer halts. This condition could cause files to back up in the *CentreVu* 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. (Standard *CentreVu* CMS data is not affected.)

The purpose of the sequence numbers is to be able to detect 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 the section “File Header” on page 2.

Setting Up uucp Software on an *MS-DOS* Computer

You must provide the uucp 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 Lucent Technologies National Customer Care Center at 1-800-242-2121. International customers please contact your local Lucent distributor or representative.

Note

The following steps briefly describe a typical method of setting up uucp software on an *MS-DOS* or *Windows*[a] computer. Specific details will vary from machine to machine. Refer to your uucp software documentation for more information. If the receiving computer is a *UNIX* machine, refer to your *UNIX* documentation.

a. Windows is a registered trademark of Microsoft, Inc.

1. Install the uucp software on the receiving computer by following the installation instructions for the software.
2. Configure the uucp software by following the configuration instructions for the software.
3. Reboot the computer to ensure that no configuration or startup procedures conflict.
4. Define the site name for the receiving computer. This must match the name that was entered on the *CentreVu* CMS computer for the call history receiving machine during installation of the feature.
5. Define the *Spool* directory as **`C:\uucp`**.
6. Define the *Public* directory as **`C:\uucp\public`**.
7. Define the *UUXQT* path as **`C:\bin.`**
8. Define the default drive as **`C:\.`**
9. Define the receiving port as **`COM1`**.
10. Define the name of the *CentreVu* CMS computer that will be sending data. This needs to be the same as the node name of the *CentreVu* CMS computer. Type `uname -n,` and press Return on the *CentreVu* CMS at the *UNIX* prompt and run the name.

Note

For the following step, the login ID is **nuucp**. The password is that which was created during the feature installation.

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

The software is now set up. Proceed to the following section to test the setup.

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 *CentreVu* CMS computer.
   a. Type `mail [cms computer name]!cms,` and press Return.
   b. Type any text. For example, `This is a test from call history receiver to cms,` and press Return.
   c. Type a period `(.),` and press Return.
2. Send E-mail from the *CentreVu* CMS computer to the receiving computer.
   a. Type `mail [receiving computer name]!user1,` and press Return.
   b. Type any text. For example, `This is a test from CMS to call history receiver,` and press Return.
   c. Type a period `(.),` and press Return.

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

Reading Mail on *UNIX* Computers

To read mail on UNIX computers, perform the following steps.

1. Type `mail` and press Return. to display the message.
2. Type `?d` and press Return. to delete the message.
3. Type `?q` and press Return. to quit reading mail.