Lucent Technologies
Bell Labs Innovations

CentreVu® Call Management System
Release 3 Version 6
Software Installation and Maintenance

585-215-866
Comcode 108145301
Issue 1
May 1998

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For additional documents, refer to the section entitled "Related Documents" in the Preface.

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CentreVu ®
Call Management System
Software Installation and Maintenance

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Preface

Overview

This document is written for technicians and Lucent Technologies call center customers who install and maintain the *CentreVu*® Call Management System (CMS) Release 3 Version 6 (R3V6) using the *Solaris** 2.5.1 operating system.

This document assumes a minimum level of technical sophistication on the part of its readers. It assumes, for example, that a reader knows how to load a CD into a CD-ROM drive, but does not assume the reader knows the *UNIX*† commands required to use the CD once it is loaded.

Organization

This document is organized as follows:

- **Chapter 1 — Introduction**
  Provides an overview of the supported *CentreVu* CMS software, supported hardware platforms, required software, and supported switch releases. It also includes support contact information.
- **Chapter 2 — Setting Up *CentreVu* CMS and Installing Feature Packages**
  Explains how to set up the *CentreVu* CMS application and install additional *CentreVu* CMS feature packages.
- **Chapter 3 — Turning the System Over to the Customer**
  Provides the procedures that a technician performs before system cutover and a worksheet that the technician fills out for the customer.
- **Chapter 4 — Troubleshooting**
  Discusses how to fix various software installation problems.
- **Chapter 5 — Maintenance**
  Discusses file system backups and other maintenance procedures.
- **Appendix A — CMSADM and CMSSVC Menus**
  Provides an overview of the CMS Administration commands (`cmsadm`) and the CMS Services commands (`cmssvc`).
- **Appendix B — Factory Software Installation**
  Outlines the factory software installation procedures. A technician can use these procedures at a customer site if problems occur that require a complete software reinstall.

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- **Glossary**

  Lists and defines technical terms, acronyms and abbreviations used in this and related *CentreVu* CMS documents.

- **Index**

  Lists topics discussed in this document and provides specific page references.

Conventions

The following conventions are used in this document:

- Unless specified otherwise, all information in this document applies to both the *Sun*[*] *SPARCserver*[†] computers and the *Sun Enterprise*[‡] 3000 computer.
- Commands that you enter from the console are shown in `courier` font.
- Screens are shown to represent responses from the system. Because of display constraints in this document, some screen representations are not 100 percent identical to the screens on your system.
- *`Italic`* text in screen displays represent variable information.

Related Documents

When using the Software Installation and Maintenance document, it is recommended that you have the following documents available for reference:

- *CentreVu Call Management System Release 3 Version 6 Administration* (Volumes 1 and 2) (585-215-850)
- *CentreVu Call Management System Release 3 Version 6 Open Database Connectivity* (585-215-852)
- *CentreVu Call Management System Release 3 Version 6 Upgrades and Migrations* (585-215-856)
- *CentreVu Call Management System Release 3 Version 6 Sun SPARCserver Computers Hardware Installation* (585-215-857)

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- *CentreVu Call Management System Release 3 Version 6 Sun SPARCserver Computers Connectivity Diagram* (585-215-858)
- *CentreVu Call Management System Release 3 Version 6 Hardware Maintenance and Troubleshooting* (585-215-861)
- *CentreVu Call Management System Release 3 Version 6 Sun Enterprise 3000 Computer Connectivity Diagram* (585-215-865)
- *CentreVu Call Management System Release 3 Version 6, Sun Enterprise 3000 Computer Hardware Installation* (585-215-867)

The following documents are also available to support the *CentreVu* CMS R3V6 product:

- *CentreVu Call Management System Release 3 Version 5 Custom Reports* (585-215-822)
- *CentreVu Call Management System Release 3 Version 5 Forecast* (585-215-825)
- *CentreVu Call Management System Release 3 Version 6 Administration* (Volumes 1 and 2) (585-215-850)
- *CentreVu Call Management System Release 3 Version 6 Open Database Connectivity* (585-215-852)
- *Lucent Call Center Change Description* (585-215-853)
- *CentreVu Call Management System Release 3 Version 6 External Call History Interface* (585-215-854)
- *CentreVu Call Management System Release 3 Version 6 Upgrades and Migrations* (585-215-856)
- *CentreVu Call Management System Release 3 Version 6 Sun SPARCserver Computers Hardware Installation* (585-215-857)
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- *CentreVu Call Management System Release 3 Version 6 Hardware Maintenance and Troubleshooting* (585-215-861)
- *CentreVu Call Management System Release 3 Version 6 Sun Enterprise 3000 Computer Connectivity Diagram* (585-215-865)
- *CentreVu Call Management System Release 3 Version 6 Sun Enterprise 3000 Computer Hardware Installation* (585-215-867)
- *CentreVu Call Management System Release 3 Version 6 Planning, Configuration, and Implementation* (585-215-879)
- *Lucent Call Center Documentation CD-ROM* (585-215-892).

The following documents are available for other *CentreVu* products:

- *CentreVu Explorer Installation and Getting Started* (585-215-835)
- *CentreVu Explorer User Guide* (585-215-840)
- *CentreVu Supervisor Version 6 Reports* (585-215-851)
- *CentreVu Advocate User Guide* (585-215-855)
- *CentreVu Report Designer Version 6 User Guide* (585-215-859)
- *CentreVu Supervisor Version 6 Installation and Getting Started* (585-215-860).

To order any of these documents, call the BCS Publications Center at 1-800-457-1235 or +1-317-361-5353.

Introduction

Overview

CentreVu® Call Management System Release 3 Version 6 (*CentreVu* CMS R3V6) is a software application offered in association with the Automatic Call Distribution (ACD) feature of Lucent Technologies switches. The *CentreVu* CMS application provides monitoring and recording of ACD calls, agents handling these calls, and the use of Vector Directory Numbers (VDNs) for these calls to measure system and agent performance.

CentreVu CMS software supports the following features, which Lucent Technologies can enable at installation:

- Expert Agent Selection (EAS) (switch feature)
- Call Vectoring (switch feature and *CentreVu* CMS feature package)
- Forecasting Feature Package (*CentreVu* CMS)
- Graphics Package (*CentreVu* CMS)
- External Call History Package (*CentreVu* CMS)
- Report Designer (*CentreVu* CMS)
- Multiple ACDs (*CentreVu* CMS; up to eight in R3V6)
- Report Designer.

Supported Hardware Platforms

CentreVu CMS R3V6 is certified to run on the following platforms:

- *Sun** *Enterprise*† 3000 computer
- *Sun SPARCserver*‡ 5 computer
- *Sun SPARCserver* 10 computer
- *Sun SPARCserver* 20 computer.

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Software

To operate properly, *CentreVu* CMS R3V6 uses the following software packages (optional packages are noted as such):

- *Sun Solaris*[*] 2.5.1 operating system (Hardware: 11/97 version)
- Common Desktop Environment (CDE) 1.0.2
- *Sun* Validation Test Suite (VTS) 2.1.1
- *SunLink*[†] HSI/S Version 2.0 (optional; for systems having multiple ACD splits)
- Bay Networks Annex R10.0-R4.2 *Network Terminal Server*[‡] (NTS) drivers (optional)
- *Solstice*[§] for Server Connect X.25 Version 9.1 drivers
- *INFORMIX*[¶]
  - — Structured Query Language (SQL) Version 7.20 (optional)
  - — Standard Engine (SE) Version 7.22
  - — International Language Supplement (ILS) Version 9.13
- *Solstice DiskSuite*[**] 4.1
- *Sun Solaris* patches
- *CentreVu* CMS
- CMS patches
- CMS Supplemental Services
- Aurora Ports Card drivers (optional)
- Open Database Connectivity (ODBC) (optional).

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Supported Switch Releases

The *CentreVu* CMS R3V6 is certified to run with the following Lucent Technologies switches:

- *DEFINITY*® Communications System Generic 2.1 Release 3.3 (Quality Protection Plan Change Notice [QPPCN] 629DR) and later.
- *DEFINITY* Communications System Generic 2.2 Release 3.0 and later (QPPCN 696DR)
- *DEFINITY* Communications System Generic 3i Release 13.3 and later (QPPCN 576)
- *DEFINITY* Communications System Generic 3r Release 8.5 and later
- *DEFINITY* Communications System Generic 3s Release 14.2 and later
- *DEFINITY* Communications System Generic 3 Version 1
- *DEFINITY* Communications System Generic 3 Version 2 Load 82 and later
- *DEFINITY* Communications System Generic 3 Version 3
- *DEFINITY* Communications System Generic 3 Version 4
- *DEFINITY* Enterprise Communications Server (ECS) Release 5
- *DEFINITY* ECS Release 6.

Roles and Responsibilities

This document was written for:

- Lucent Technologies on-site technicians
- Lucent Technologies Technical Service Center (TSC) personnel
- *CentreVu* CMS customer administrators.

The installation of the prerequisite hardware and software should have been completed by the factory before the computer was shipped. The factory software installation procedures are in Appendix B.

The following table lists the major software installation tasks, who is responsible for performing each task, and the chapter where the task is described.

Chapter	Task	Technician	TSC	Customer
2	Set authorizations		X	
2	Set up data storage parameters		X	
2	Set up the *CentreVu* CMS application		X	
2	Install the Forecasting feature package			X
2	Install the External Call History package			X
3	Verify the system date and time	X		X
3	Test the connection to the TSC		X	
3	Assign passwords		X	
3	Test the ACD link	X		
3	Test the *CentreVu* CMS R3V6 software	X		
3	Turn the system over to the customer	X		
4	Solve installation-related problems	X	X	
4	Check error logs	X	X	
5	Perform backups	X		X
5	Perform restores			X
5	Check installed software packages	X	X	
5	Back out a *Solaris* patch	X	X	
5	Add *INFORMIX* SQL	X	X	

CentreVu CMS Helplines

If an installation problem arises that requires assistance, Lucent Technologies technicians or the customer may call the following numbers:

Customer Number

1-800-242-2121

By calling this number, the customer reports the problem and generates a trouble ticket so that the problem can be escalated through the services organization.

The customer will be prompted to identify the type of problem (ACD, hardware, or R3V6 *CentreVu* CMS) and will be connected to the appropriate service organization.

Technician Number

1-800-248-1234

The technician should provide the TSC personnel with the customer's name, the password for the *root* login ID on the *Sun* system, the phone number of the dial-in port, and a description of the problem.

If TSC personnel cannot solve the problem, they will escalate it to the Customer Support Organization of Lucent Technologies.

International Support

For international support contact your Lucent Technologies representative or distributor for more information.

Setting Up *CentreVu*® CMS and Installing Feature Packages

Overview

Once the on-site technicians have finished the hardware installation, Technical Service Center (TSC) personnel set up the *CentreVu*® Call Management System Release 3 Version 6 (CMS R3V6) application to work with the customer's configuration. If the customer has ordered additional *CentreVu* CMS feature packages, these need to be installed as well.

This chapter describes how to do the following:

- Set authorizations
- Set up data storage parameters
- Set up the *CentreVu* CMS application
- Install the External Call History and Forecasting feature packages.

TSC personnel verify authorizations, set up data storage parameters, and set up the *CentreVu* CMS application remotely. On-site technicians should call the TSC to coordinate this process. Customers can install any additional *CentreVu* CMS feature packages that have been authorized.

Prerequisites

The TSC should check that the on-site technicians have completed the following tasks:

- Connected the console to the *Sun** computer
- Connected the *Sun* computer to the TSC's Remote Maintenance Center (remote console)
- Connected additional terminals and printers to the network terminal server (NTS)

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- Connected the link between the *Sun* computer and the switch

  NOTE:

  If the hardware link or the Automatic Call Distribution (ACD) feature and CMS is not properly administered, the *CentreVu* CMS software cannot communicate with the switch. For switch administration procedures, see the switch administration appendixes in *CentreVu* CMS R3V6 *Sun SPARCserver** Computers Hardware Installation (585-215-857) or *CentreVu* CMS R3V6 *Sun Enterprise*† 3000 Computer Hardware Installation (585-215-865) as appropriate.

- Connected the NTS and your CMS platform to the network hub unit. See *CentreVu* CMS R3V6 *Sun SPARCserver* Computers Connectivity Diagram (585-215-858) or *CentreVu* CMS R3V6 *Sun Enterprise* 3000 Computer Connectivity Diagram (585-215-865).

Things to Know Before You Start

Throughout the setup, you will be prompted to enter values specific to the system being installed. For each question, an appropriate range is displayed in the format of (XX-XX). The individual values represented by XX specify the limits of each range.

With some applications, the sequence in which they are installed is important. For example, the *CentreVu* CMS application must be installed before you can install the Forecasting or External Call History feature packages.

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Set Authorizations

Overview

Before setting up *CentreVu* CMS, TSC personnel need to set authorizations for *CentreVu* CMS features purchased by the customer. Authorizations apply to all administered ACDs.

You can use the `auth_set` option in the *CentreVu* CMS Services menu (`cmssvc`) to do the following:

- Set the purchased version of *CentreVu* CMS
- Authorize the following packages and features:
  - Forecasting (if the package is not already installed)
  - Vectoring (if no administered ACDs use vectoring)
  - Graphics
  - External Call History (if the package is not already installed)
  - Expert Agent Selection (EAS) (if no administered ACDs use EAS)
  - External Application
  - More than 2000 Vector Directory Numbers (VDNs)
  - *CentreVu* Supervisor
  - *CentreVu* Report Designer.
- Change the number of agents, ACDs, or Supervisor logins.

Procedure

1. Access the *CentreVu* CMS Services menu by entering the following command:

   `cmssvc`

   The program responds as follows:

```
Lucent Technologies CentreVu(R) Call Management System Services
Menu

Select a command from the list below.
  1) auth_display Display feature authorizations
  2) auth_set     Authorize capabilities/capacities
  3) run_cms      Turn CentreVu CMS on or off
  4) setup        Set up the initial configuration
  5) swinfo       Display switch information
  6) swsetup      Change switch information
  7) patch_inst   Install a single CMS patch from CD
  8) patch_rmv    Backout an installed CMS patch
  9) load_all     Install all CMS patches found on CD
 10) back_all     Backout all installed CMS patches from machine
Enter choice (1-10) or q to quit:
```

2. Enter `2` to select the `auth_set` option. The program responds as follows:

```
Password:
```

3. Enter the appropriate password. This password is available only to authorized personnel.

   NOTE:

   Some of the following questions may not appear if the authorization cannot be changed at this time.

   The program responds as follows:

```
Is this an upgrade? (y/n):
```

   NOTE:

   This question only occurs the first time you run `auth_set` on the machine.

   If this is not an upgrade and you enter `n`, the program responds as follows:

```
Purchased version is R3V6. Is this correct? (y/n):
```

4. Enter `y`.

   NOTE:

   The program uses the above information to populate the "Purchased CMS Release" field of the *System Setup:Switch Setup* screen.

   The program continues with the following questions:

```
Authorize installation of forecasting package? (y/n):(default: n)
```

5. Enter y if the customer purchased Forecasting; otherwise, press Enter. The program responds as follows:

```
Authorize installation of vectoring package? (y/n): (default: n)
```

6. Enter y if the customer purchased vectoring; otherwise, press Enter. The program responds as follows:

```
Authorize use of graphics feature? (y/n): (default: n)
```

7. Enter y if the customer purchased Graphics; otherwise, press Enter. The program responds as follows:

```
Authorize use of external call history feature? (y/n): (default: n)
```

8. Enter y if the customer purchased the External Call History feature; otherwise, press Enter. The program responds as follows (if the vectoring package is authorized):

```
Authorize use of expert agent selection feature? (y/n): (default: n)
```

9. Enter y if the customer purchased the Expert Agent Selection feature; otherwise, press Enter. The program responds as follows:

```
Authorize use of external application feature? (y/n): (default: n)
```

10. Enter y if the customer purchased the External Application feature; otherwise, press Enter. The program responds as follows:

```
Authorize use of more than 2000 VDNs (yes turns off VDN
permission checking)? (y/n): (default: n)
```

11. Enter y if the customer needs to use more than 2000 VDNs; otherwise, press Enter. The program responds as follows:

```
Enter the number of simultaneous Lucent Technologies CentreVu(R)
Supervisor logins the customer has purchased
(2-250): (default: 2)
```

12. Enter the number of simultaneous logins purchased. The program responds as follows:

```
Has the customer purchased Lucent Technologies CentreVu(R)
Report Designer? (y/n): (default: n)
```

13. Enter y if the customer purchased report designer; otherwise, press Enter. The program responds as follows:

```
Enter the maximum number of split/skill members that can be
administered (1-10000): (default: 1)
```

14. Enter the maximum possible number of split/skill members that the customer might use based on the switch agent size purchased.

    "Split/skill members" are defined as the number of CMS-measured agent-split and agent-skill combinations logged in at the same time. Each split an agent logs into is an agent-split combination. Each skill assigned to an agent while logged in is an agent-skill combination. The recommended numbers for Expert Agent Selection (EAS) and nonEAS systems are shown in the following table.

Switch Agent Size Range Purchased	Number of Split/Skill Members	
	NonEAS	EAS
0-12	100	500
0-25	100	500
0-50	200	1000
0-100	400	2000
0-300	1200	6000
0-600	2400	10000
0-max. agents	10000	10000

    NOTE:

    The minimum size configuration for CMS is 0-25; that is, the reason groups 0-12 and 0-25 have the same provisioning. You should also note that the customer will be able to limit the split/skill RAM memory allocation to the size actually needed for the current configuration of agents and splits/skills. That is accomplished by the "Total split/skill members summed over all splits/skills" field, which is accessed through the `setup` option of the `cmssvc` command.

    The program responds as follows:

```
Enter the maximum number of ACDs that can be installed (1-8):
(default: 1)
```

15. Enter the number of ACDs the customer purchased. All authorizations have been set.
16. Verify that authorizations were set by entering the following:

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

    The `admin.log` file contains information relating to *CentreVu* CMS administration procedures. The file should display the following message:

```
Capabilities/capacities authorized <date/time>
```

    You can also verify the authorizations by using the `auth_display` option of the `cmssvc` command. See Appendix A, “CMSADM and CMSSVC Menus” for more information.

Set Up Data Storage Parameters

Overview

TSC personnel modify specific data storage parameters on the *Sun* computer so the *CentreVu* CMS R3V6 application can operate properly. The `storage.def` file contains these data storage parameters which are default values.

The default values may not correspond to the system you are installing. Use the values determined by the Account Executive, System Consultant, and Design Center based on the customer configuration.

Procedure

1. Change to the CMS installation directory by entering the following:

   ```
   cd /cms/install/cms_install
   ```

   NOTE:

   If you delete or damage the `storage.def` file, you can find a copy of this file (`storage.skl`) in the same directory.

2. Edit the `storage.def` file, and enter the appropriate values for each question. Place the answer to each question on the line below the question.

   The following example shows the defaults for this file. The values you can change are shown in bold.

```
# Information for ACD 1 and any ACDs created using acd_create
# command
# Intrahour interval (15, 30, 60 minutes):
30
# Week start day (Sunday, Monday, Tuesday, Wednesday, Thursday,
  Friday, Saturday):
Sunday
# Week end day (Sunday, Monday, Tuesday, Wednesday, Thursday,
  Friday, Saturday):
Saturday
# Daily start time (regular time):
12:00 AM
# Daily stop time (data will be collected for seconds of last
  minute):
11:59 PM
# Number of agent login/logout records (0-999999):
10000
# Number of agent trace records:
10000
# Number of call records (0-5000 internal or 0-99999 external):
0
# Number of exceptions records (1-2000):
250
# Days of intrahour for splits (1-62):
31
# Days of daily splits (1-1825):
387
# Weeks of weekly splits (1-520):
0
# Months of monthly splits (1-120):
0
# Days of intrahour for agents (1-62):
31
# Days of daily agents (1-1825):
387
# Weeks of weekly agents (1-520):
0
# Months of monthly agents (1-120):
0
# Days of intrahour for trunk groups (1-62):
31
# Days of daily trunk groups (1-1825):
387
# Weeks of weekly trunk groups (1-520):
0
# Months of monthly trunk groups (1-120):
0
# Days of intrahour for trunks (1-62):
31
```

```
# Days of daily trunks (1-1825):
387
# Weeks of weekly trunks (1-520):
0
# Months of monthly trunks (1-120):
0
# Days of intrahour for call work codes (1-62):
0
# Days of daily call work codes (1-1825):
0
# Weeks of weekly call work codes (1-520):
0
# Months of monthly call work codes (1-120):
0
# Days of intrahour for vectors (1-62):
31
# Days of daily vectors (1-1825):
387
# Weeks of weekly vectors (1-520):
0
# Months of monthly vectors (1-120):
0
# Days of intrahour for VDNs (1-62):
31
# Days of daily VDNs (1-1825):
387
# Weeks of weekly VDNs (1-520):
0
# Months of monthly VDNs (1-120):
0
# Information for ACD 2
   .
   .
   .
   .
```

(The file repeats the previous statements for each ACD.)

3. After entering the appropriate values, write and quit the file.

After the *CentreVu* CMS application is running, the System Administrator can change the data storage parameters using the Data Storage Allocation window and the Storage Intervals window in the CMS System Setup menu. See the CMS System Setup in *CentreVu* CMS R3V6 Administration (585-215-850) for more information.

Set Up the *CentreVu* CMS Application

Overview

Use the procedures in this section to set up the *CentreVu* CMS application.

Prerequisites

- You must be logged in as *root*
- The computer must be in run-level 2 or 3
- *CentreVu* CMS must be turned off
- All file systems must be mounted.

Setup Methods

You can set up the *CentreVu* CMS feature package using one of two methods:

a. **Interactively from a Terminal** — Using the interactive option, the program prompts you for the necessary information to set up the *CentreVu* CMS application (for example, system type, number of agents, trunks, vectors, VDNs, and so on).

   To set up the *CentreVu* CMS application using this option, see “Set Up CentreVu CMS Interactively from a Terminal” in this chapter.

b. ***UNIX*** **System Flat File*** — Using the flat file option, you edit a *UNIX* System flat file containing the necessary information (for example, system type, number of agents, trunks, vectors, VDNs, and so on) to set up the *CentreVu* CMS application. When you execute the program, it runs in the background and uses the *UNIX* System flat file data to set up the *CentreVu* CMS application. To set up the *CentreVu* CMS application using this option, see “Set Up CentreVu CMS Using a UNIX Flat File” in this chapter.

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Set Up *CentreVu* CMS Interactively from a Terminal

Overview

Using the interactive option, the program prompts you for the necessary information.

Procedure

1. Access the *CentreVu* CMS Services menu by entering the following:

   `cmssvc`

   The program responds as follows:

```
Lucent Technologies CentreVu(R) Call Management System Services Menu

Select a command from the list below.
  1) auth_display Display feature authorizations
  2) auth_set     Authorize capabilities/capacities
  3) run_cms      Turn CentreVu CMS on or off
  4) setup        Set up the initial configuration
  5) swinfo       Display switch information
  6) swsetup      Change switch information
  7) patch_inst   Install a single CMS patch from CD
  8) patch_rmv    Backout an installed CMS patch
  9) load_all     Install all CMS patches found on CD
 10) back_all     Backout all installed CMS patches from machine
Enter choice (1-10) or q to quit:
```

2. Enter `4` to select the `setup` option.

   NOTE:

   If system setup has already been done, the program responds as follows:

```
Setup has already been performed. If you proceed, you will
destroy all current CMS data and re-initialize the database.
Do you wish to proceed and re-configure CMS? (y/n): (default: n)
```

3. Enter y to continue with the setup, or enter n to exit setup. If you enter y, the program responds as follows:

```
Select the language for this server:

All languages are ISO Latin except Japanese. Selection of the
server language assumes that existing customer data is
compatible. (Upgrade from any ISO Latin language to any ISO
Latin language or from Japanese to Japanese is supported).

1) English
2) Dutch
3) French
4) German
5) Italian
6) Portuguese
7) Spanish
8) Japanese
Enter choice (1-8): (default: 1)
```

4. Enter the number for the language used on this system. If setup has been done previously, the customer CMS data is now initialized, which can take up to 30 minutes. When finished, the program responds as follows:

```
Enter a name for this UNIX system (up to 256 characters):
(default: XXXXXX)
```

5. Enter the host name of the computer. This name was assigned during the factory installation procedures and is used by the TSC to maintain and identify this specific *CentreVu* CMS. The program responds as follows:

```
Select the type of backup device you are using
   1) SCSI QIC-150 cartridge tape - 150MB tape
   2) 14.0 Gbyte 8mm tape
   3) 5.0 Gbyte 8mm tape
   4) SCSI QIC-2.5 cartridge tape - 2.5GB tape
   5) SCSI 4-8 SLR cartridge tape - 4GB tape (8GB compressed)
Enter choice (1-5):
```

6. Enter the number to specify the type of cartridge tape you are using as the backup device. The program responds as follows (the default device shown will vary):

```
Enter the default backup device path:
(default: /dev/rmt/0c)
```

7. Press Enter to select the default. The program responds as follows:

```
Enter number of ACDs being administered (1-8):
```

8. Enter the number of ACDs to be administered. This number may be less than the number of ACDs authorized. The program responds as follows:

```
Information for ACD 1

Enter switch name (up to 20 characters):
```

9. Enter the name for the switch associated with ACD 1. The program responds as follows:

```
Select the model of switch for this ACD
  1) Definity-G2.1
  2) Definity-G2.2
  3) Definity-G3i
  4) Definity-G3r
  5) Definity-G3V2
  6) Definity-G3V3
  7) Definity-G3V4
  8) Definity-G3V5
  9) Definity ECS R6

Enter choice (1-9):
```

10. Enter the number that represents the switch model associated with this ACD. If the switch supports vectoring and vectoring is authorized, the following message appears; otherwise, go to Step 13:

```
Is Vectoring enabled on the switch? (y/n):
```

11. Enter y if vectoring is enabled on this switch; otherwise, enter n. The following message appears if vectoring is enabled, the switch supports EAS, and EAS is authorized. If the message does not appear, go to Step 13.

```
Is Expert Agent Selection enabled on the switch? (y/n):
```

12. Enter y if EAS is enabled on this switch; otherwise, enter n. The program responds as follows:

```
Does the Central Office have disconnect supervision?
(y/n): (default: y)
```

13. Enter y if the *CentreVu* CMS is located in the U.S., then go to Step 15. If you answer n, the program responds as follows:

```
ACD calls shorter than the Phantom Abandon Call Timer value
will be counted as abandoned.
Enter the Phantom Abandon Call Timer value in seconds
(1-10): (default:10)
```

14. Enter the Phantom Abandon Call Timer value.

    NOTE:

    The Phantom Abandon Call Timer value can be changed through the `cmssvc` menu using the `swsetup` option.

    The program responds as follows:

```
Enter the local port assigned to switch. (1-64):
```

15. Enter the local port or channel number on the switch. The program responds as follows:

```
Enter the remote port assigned to switch (1-64):
```

16. Enter the remote port or channel number on the switch. The program responds as follows (for example):

```
Select the device used for x.25 connectivity to the switch
 1) Serial Port A
 2) Serial Port B
 3) HSI link 0
 4) HSI link 1
 5) HSI link 2
 6) HSI link 3
 7) HSI link 4
 8) HSI link 5
 9) HSI link 6
10) HSI link 7
11) Software loopback link 0
12) Software loopback link 1
Enter choice (1-12):
```

17. Enter the number that corresponds to the device used for x.25 connectivity.

    NOTE:

    Except for the loopback links, which are for testing only, the choices on the menu correspond to the hardware connections that can be made between the *CentreVu* CMS and the switch.

    If you choose a serial port, but you have a High-Speed Serial Interface/Sbus (HSI/S) card, you receive an error message as follows:

```
Choose one of the HSI links for your x.25 connectivity.
Re-enter your selection.
```

    If you choose an HSI link but do not have an HSI/S card, you receive an error message as follows:

```
Without an HSI card you must use serial port B for your
x.25 connectivity.
Re-enter your selection.
```

    If you choose a loopback link, the program responds as follows:

```
This choice is used for testing only. If you make this
selection, you will not be able to collect data from your
ACD. Is this what you want to do (y/n)?
```

    If you choose y, the selection takes effect. If you choose n, the system redisplays the menu. When you have entered an acceptable choice, the program responds as follows:

```
Number of splits/skills (0-XXX):
```

18. Enter the number of splits/skills in this ACD. The program responds as follows:

```
Total split/skill members, summed over all splits/skills
(0-XXXX):
```

19. Enter the maximum number of split/skill members that will be logged into this ACD simultaneously, considering shift overlap.

    - For nonEAS, sum all agent-split combinations, counting each split an agent will log into (maximum is 4) as a split member.
    - For EAS, sum all agent-skill combinations that will be logged in at the same time, counting the maximum number of skills the supervisors expect to assign to each agent (up to 20) during a shift.

    If it is not possible to sum the number of splits/skills for each agent, you can determine the capacity needed by multiplying the total number of agents times the average number of splits/skills per agent. The program responds as follows:

```
Number of shifts (1-4):
```

20. Enter the number of shifts. The program responds as follows:

```
Enter the start time for shift 1 (hh:mmXM):
```

21. Enter the start time for shift 1; for example, `08:00AM`. The program responds as follows:

```
Enter the stop time for shift 1 (hh:mmXM):
```

22. Enter the stop time for shift 1; for example, `05:00PM`. The program responds as follows:

```
Number of agents logged into all splits/skills during
shift 1 (0-XXX):
```

23. Enter the number of agents logged in during the shift.

    NOTE:

    Steps 21 through 23 repeat for the number of shifts entered in Step 20.

    When all shift have been set up, the program responds as follows:

```
Number of trunk groups (0-XXX):
```

24. Enter the number of trunk groups associated with this ACD. The program responds as follows:

```
Number of trunks (0-XXXX):
```

25. Enter the number of trunks associated with this ACD. The program responds as follows:

```
Number of unmeasured facilities (0-XXXX):
```

26. Enter the number of unmeasured facilities associated with this ACD. If the switch supports call work codes, the program responds as follows:

```
Number of call work codes (0-XXXX):
```

27. Enter the number of call work codes. If vectoring is enabled on the switch (that is, if a y was entered in Step 11), the program responds as follows:

```
Creating database tables
.................
```

After a few minutes, the program responds as follows:

```
Number of vectors (0-XXXX):
```

28. Enter the number of vectors. The program responds as follows:

```
Number of VDNs (0-XXXX):
```

29. Enter the number of VDNs.

The program repeats Steps 9 through 28 for each ACD entered in Step 8. After you define the last ACD, the program continues as follows:

```
Updating database.

Computing space requirements and file system space
availability.

Setup completed successfully.
```

If the setup determines that you do not have enough file space, you will get the following warning message:

```
You do not currently have sufficient file space for your
existing CMS data. At this point you should turn on CMS, go
to the “Data Storage Allocation” screen, and verify/modify
the administration, or go to the “Free Allocation” screen
and verify/modify your existing free space.
```

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

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

    The *CentreVu* CMS software is successfully set up when you see a message similar to the following:

    ```
    File systems/space available:
       /cms      12994480

    File systems/current blocks free:
       /cms      12994480
    /cms: VDN,TKGRP,VECTOR,TRUNK,AGENT_LOG_REC,
    AGENT_TRACE_REC,SPLIT,AGENT,EXCEPTIONS_REC,WORKCODE,
    CALL_REC,
    Number of calls to fill_fs():12
    Setup completed successfully <data/time>
    ```

    You may edit this file and add comments about the packages that were installed or authorized.

If you need to install additional *CentreVu* CMS-related feature packages (Forecasting or External Call History), go to the appropriate section in this chapter and follow the procedures.

If you are not installing any other feature packages, do the following to turn on CMS:

1. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
2. Enter `3` to select the `run_cms` option.
3. Enter `1` to turn on *CentreVu* CMS.

Set Up *CentreVu* CMS Using a *UNIX* Flat File

Overview

Setting up the *CentreVu* CMS feature package using a *UNIX* flat file consists of editing a copy of the `cms.inst.skl` file and starting the install program.

Edit the File

1. Change to the CMS installation directory by entering the following:

   ```
   cd /cms/install/cms_install
   ```

2. Make a copy of the CMS installation file by entering the following:

   ```
   cp cms.inst.skl cms.install
   ```

3. Change permissions on the copied CMS installation file by entering the following:

   ```
   chmod 644 cms.install
   ```

4. Edit the copied CMS installation file by entering the following:

   ```
   vi cms.install
   ```

   The file contains a series of questions and value ranges for the ACD/switch configuration. The following pages show a sample file with example values in bold.

```
# Enter a name for this UNIX system (up to 256 characters):
cms3
# Select the type of backup device you are using
#    1) SCSI QIC-150 cartridge tape - 150MB tape
#    2) 14.0 Gbyte 8mm tape
#    3) 5.0 Gbyte 8mm tape
#    4) SCSI QIC-2.5 cartridge tape - 2.5GB tape
#    5) SCSI 4-8 SLR cartridge tape - 4GB tape (8GB compressed)
# Enter choice (1-5):
4
# Default backup device paths based on device type:
# Device                                  Default backup path
# SCSI QIC-150 cartridge tape - 150MB tape /dev/rmt/0
# SCSI QIC-60 cartridge tape - 60MB tape   /dev/rmt/0
# 14.0 Gbyte 8mm tape                     /dev/rmt/0c
# 5.0 Gbyte 8mm tape                      /dev/rmt/0
# SCSI QIC-2.5 cartridge tape - 2.5GB tape /dev/rmt/0c
# SCSI 4-8 SLR cartridge tape - 4GB tape (8GB compressed) /dev/rmt/0c
# Enter the default backup device path:
/dev/rmt/0c
# Enter number of ACDs being administered (1-8):
1
# The following information is required per ACD:
# Information for ACD 1:
# Enter switch name (up to 20 characters):
# Select the model of switch for this ACD
#    1) Definity-G2.1
#    2) Definity-G2.2
#    3) Definity-G3i
#    4) Definity-G3r
#    5) Definity-G3V2
#    6) Definity-G3V3
#    7) Definity-G3V4
#    8) Definity-G3V5
#    9) Definity ECS R6
# Enter choice (1-9):
9
# Is Vectoring enabled on the switch? (y/n):
y
# Is Expert Agent Selection enabled on the switch? (y/n):
y
# Does the Central Office have disconnect supervision? (y/n):
y
# If the Central Office has disconnect supervision, enter 0. Otherwise,
# ACD calls shorter than the Phantom Abandon Call Timer
# value will be counted as abandoned.
# Enter the Phantom Abandon Call Timer value in seconds (0-10):
0
# Enter the local port assigned to switch (1-64):
1
# Enter the remote port assigned to switch (1-64):
2
```

```
# Select the device used for x.25 connectivity to the switch
#    1) Serial port A
#    2) Serial port B
#    3) HSI link 0
#    4) HSI link 1
#    5) HSI link 2
#    6) HSI link 3
#    7) HSI link 4
#    8) HSI link 5
#    9) HSI link 6
#   10) HSI link 7
#   11) Software loopback link 0
#   12) Software loopback link 1
# Enter choice (1-12):
3
# Skip the next question if you did not enter choices 11 - 12. These
are used for testing only. If you select one of these, you will not be
able to collect data from your ACD.
# Are you sure you want to do this? (y/n):

# Maximum number of splits/skills based on switch type:
# Release(s)                                          Value
# Definity-G2.1/Definity-G2.2                           60
# Definity-G3i/Definity-G3r                             99
# Definity-G3V2/Definity-G3V3/Definity-G3V4            255
# Definity-G3V5/Definity ECS R6/Definity-G2.2(EAS)     600
# Number of splits/skills (0-Maximum):
100
# Maximum number of split/skill members based on switch type:
# Release(s)                                    Value
# Definity-G3i                                    500
# Definity-G2.1/Definity-G2.2/Definity-G3r       1023
# Definity-G2.2(EAS)                             5115
# Definity-G3V2/Definity-G3V3/Definity-G3V4      5200
# Definity-G3V5/Definity ECS R6                 10000
# Total split/skill members, summed over all splits/skills (0-Maximum):
1000
# Number of shifts (1-4):
1
# Enter the start time for shift 1 (hh:mmXM):
08:00AM
# Enter the stop time for shift 1 (hh:mmXM):
05:00PM
# Number of agents logged into all splits/skills during shift 1
 (1-Maximum):
100
# Enter the start time for shift 2 (hh:mmXM):

# Enter the stop time for shift 2 (hh:mmXM):

# Number of agents logged into all splits/skills during shift 2
 (1-Maximum):
# Enter the start time for shift 3 (hh:mmXM):

# Enter the stop time for shift 3 (hh:mmXM):
```

```
# Number of agents logged into all splits/skills during shift 3 (1-Maximum):

# Enter the start time for shift 4 (hh:mmXM):

# Enter the stop time for shift 4 (hh:mmXM):

# Number of agents logged into all splits/skills during shift 4 (1-Maximum):

# Maximum number of trunk groups based on switch type:
# Release(s)                                                                  Value
# Definity-G3i                                                                  99
# Definity-G2.1/Definity-G2.2/Definity-G3r                                     255
# Definity-G3V2/Definity-G3V3/Definity-G3V4/Definity-G3V5/Definity ECS R6      666
# Number of trunk groups (0-Maximum):
20
# Maximum number of trunks based on switch type:
# Release(s)                                                        Value
# Definity-G3i                                                        400
# Definity-G2.1/G2.2/G3r/G3V2/G3V3/G3V4/G3V5/ECS R6                  4000
# Number of trunks (0-Maximum):
100
# Number of unmeasured facilities (0 to (Maximum trunks - Number of trunks)):
10
# Minimum number of call work codes based on switch type:
# Release(s)                                                        Value
# Definity-G2.1                                                         0
# Definity-G2.2/G3i/G3r/G3V2/G3V3/G3V4/G3V5/ECS R6                      1
# Maximum number of call work codes based on switch type:
# Release(s)                                                        Value
# Definity-G2.1                                                         0
# Definity-G2.2/G3i/G3r/G3V2/G3V3/G3V4/G3V5/ECS R6                   1999
# Number of call work codes (Minimum-Maximum):
100
# Maximum number of vectors based on switch type:
# Release(s)                                                        Value
# Definity-G2.1                                                       128
# Definity-G3i                                                        256
# Definity-G2.2                                                       511
# Definity-G3r/G3V2/G3V3/G3V4/G3V5/ECS R6                             512
# Enter number of vectors (0-Maximum):
20
# Maximum number of VDNs based on switch type:
# Release(s)                                                        Value
# Definity-G3i                                                        500
# Definity-G2.1/G2.2/G3r/G3V2/G3V3/G3V4/G3V5                         2000
# Definity ECS R6                                                    8000
# Enter number of VDNs (0-Maximum):
10

# Information for ACD 2:
```

(the file repeats preceding statements for ACD splits 2 through 8)

5. Enter the appropriate values for your configuration. As shown in the previous example, the entries must be added on the blank lines after each question.

   ⚠ CAUTION:

   Use the computer's host name for the *UNIX* system name. The computer's host name should have been assigned during the factory installation.

   After you have entered all the appropriate values, write and quit the file.

Start the Install Program

1. Enter `cd` to change to the root directory.
2. Access the *CentreVu* CMS Services menu by entering the following:

   `cmssvc`

   The program responds as follows:

```
Lucent Technologies CentreVu(R) Call Management System Services
Menu

Select a command from the list below.
  1) auth_display Display feature authorizations
  2) auth_set     Authorize capabilities/capacities
  3) run_cms      Turn CentreVu CMS on or off
  4) setup        Set up the initial configuration
  5) swinfo       Display switch information
  6) swsetup      Change switch information
  7) patch_inst   Install a single CMS patch from CD
  8) patch_rmv    Backout an installed CMS patch
  9) load_all     Install all CMS patches found on CD
 10) back_all     Backout all installed CMS patches from machine
Enter choice (1-10) or q to quit:
```

3. Enter `4` to select the `setup` option. If setup has been done previously, the program responds as follows:

```
Warning!!! Setup has already been performed.
Running this command will remove all CMS data in the
database. Do you wish to proceed and re-configure
CMS? (y/n): (default: n)
```

4. Enter y. The program responds as follows:

```
Select the language for this server:

All languages are ISO Latin except Japanese. Selection of the
server language assumes that existing customer data is
compatible. (Upgrade from any ISO Latin language to any ISO
Latin language or from Japanese to Japanese is supported).

1) English
2) Dutch
3) French
4) German
5) Italian
6) Portuguese
7) Spanish
8) Japanese
Enter choice (1-8): (default: 1)
```

5. Enter the number for the language used on this system. The program responds as follows:

```
The input will be read from
  1) the terminal
  2) a flat file
Enter choice (1-2):
```

6. Enter `2` to select the `flat file` option. The program responds as follows:

```
*** The rest of this command is running in the background ***
```

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

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

   The `-f` option in the `tail` command updates the console as messages are written to the `admin.log` file. The *CentreVu* CMS software is successfully set up when you see a message similar to the following:

```
File systems/space available:
   /cms      12994480

File systems/current blocks free:
   /cms      12994480
/cms: VDN,TKGRP,VECTOR,TRUNK,AGENT_LOG_REC,
AGENT_TRACE_REC,SPLIT,AGENT,EXCEPTIONS_REC,WORKCODE,
CALL_REC,
Number of calls to fill_fs():12
Setup completed successfully <data/time>
```

   You may edit this file and add comments about the packages that were installed or authorized.

8. Press Delete to break out of the `tail -f` command.

If you need to install additional *CentreVu* CMS-related feature packages (Forecasting or External Call History), go to the appropriate section in this chapter and follow the procedures.

If you are not installing any other feature packages, do the following to turn on CMS:

1. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
2. Enter `3` to select the `run_cms` option.
3. Enter `1` to turn on *CentreVu* CMS.

Install the Forecasting Feature Package

Overview

Use the procedure in this section to install the Forecasting feature package.

Prerequisites

- You must be logged in as *root*
- The computer must be in run-level 2 or 3 (check this with the command `who -r`)
- All file systems must be mounted
- *CentreVu* CMS must be turned off.

Procedure

1. Access the *CentreVu* CMS Services menu by entering the following command:

   `cmssvc`

   The program responds as follows:

```
Lucent Technologies CentreVu(R) Call Management System Services
Menu

Select a command from the list below.
  1) auth_display Display feature authorizations
  2) auth_set     Authorize capabilities/capacities
  3) run_cms      Turn CentreVu CMS on or off
  4) setup        Set up the initial configuration
  5) swinfo       Display switch information
  6) swsetup      Change switch information
  7) patch_inst   Install a single CMS patch from CD
  8) patch_rmv    Backout an installed CMS patch
  9) load_all     Install all CMS patches found on CD
 10) back_all     Backout all installed CMS patches from machine
Enter choice (1-10) or q to quit:
```

2. Enter `1` to select the `auth_display` option. The system lists the current authorizations:

```
                              Version purchased:   R3V6

                            Capability/Capacity   Authorization
                            -------------------   -------------
                                      vectoring   authorized
                                    forecasting   authorized
                                       graphics   authorized
                             external call history   authorized
                           expert agent selection   authorized
                             external application   authorized
                    More than 2000 VDNs measured   authorized
     Lucent Technologies CentreVu(R) Supervisor   authorized
Lucent Technologies CentreVu(R) Report Designer   authorized
          Maximum number of split/skill members   10
                          Maximum number of ACDs   8
        Simultaneous CentreVu Supervisor logins   2
```

3. Verify that the system is authorized to install the Forecasting package.

   NOTE:

   If Forecasting is not authorized but should be, go to the "Set Authorizations" section in this chapter and follow those procedures.

4. Access the *CentreVu* CMS Administration menu by entering the following command:

   `cmsadm`

   The program responds as follows:

```
Lucent Technologies CentreVu(R) 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 CMS on or off
Enter choice (1-9) or q to quit:
```

5. Enter `7` to select the `pkg_install` option. The program responds as follows:

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

NOTE:

The program displays only feature packages that are authorized and not yet installed.

6. Enter the number that corresponds to Forecasting (in this example, `1`). The program responds as follows:

```
Creating database tables
.......
```

The dots continue to appear as the program sets up the Forecasting tables. After the Forecasting tables are completed, these messages appear:

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

Forecasting package installed
```

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

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

   The Forecasting package is successfully installed when you see this message:

   ```
   .
   .
   Forecasting package installed <date/time>
   ```

   You may edit this file and add comments about the packages that were installed or authorized.

If you need to install External Call History, go to the appropriate section in this chapter and follow the procedures.

If you are not installing any other feature packages, do the following to turn on CMS:

1. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
2. Enter `3` to select the `run_cms` option.
3. Enter `1` to turn on *CentreVu* CMS.

Install the External Call History Package

Overview

Use the procedure in this section to install the External Call History feature package.

Prerequisites

- The customer must have a separate computer for the storage and reporting of call records
- Both the storage machine and the *CentreVu* CMS machine must be administered in uucp
- If the storage machine is not running the *UNIX* system, use a DOS version of uucp
- You must be logged in as *root*
- The computer must be in run-level 2 or 3
- All file systems must be mounted
- *CentreVu* CMS must be turned off.

NOTE:

Once the External Call History package is installed, you will no longer be able to access any call record data from *CentreVu* CMS. For more information, see *CentreVu* CMS R3V6 External Call History Interface (585-215-854). This document explains how to administer the UUCP link port on an NTS.

Procedure

Do these steps to install the External Call History feature package:

1. Access the *CentreVu* CMS Services menu by entering the following:

   `cmssvc`

   The program responds as follows:

```
Lucent Technologies CentreVu(R) Call Management System Services
Menu

Select a command from the list below.
  1) auth_display Display feature authorizations
  2) auth_set     Authorize capabilities/capacities
  3) run_cms      Turn CentreVu CMS on or off
  4) setup        Set up the initial configuration
  5) swinfo       Display switch information
  6) swsetup      Change switch information
  7) patch_inst   Install a single CMS patch from CD
  8) patch_rmv    Backout an installed CMS patch
  9) load_all     Install all CMS patches found on CD
 10) back_all     Backout all installed CMS patches from machine
Enter choice (1-10) or q to quit:
```

2. Enter `1` to select the `auth_display` option. The program responds by displaying the current authorizations:

```
                          Version purchased:   R3V6

                        Capability/Capacity   Authorization
                        -------------------   -------------
                                  vectoring   authorized
                                forecasting   authorized
                                   graphics   authorized
                        external call history   authorized
                       expert agent selection   authorized
                         external application   authorized
                More than 2000 VDNs measured   authorized
     Lucent Technologies CentreVu(R) Supervisor   authorized
 Lucent Technologies CentreVu(R) Report Designer   authorized
          Maximum number of split/skill members   10
                        Maximum number of ACDs   8
        Simultaneous CentreVu Supervisor logins   2
```

3. Verify that the system is authorized for the External Call History package.

   NOTE:

   If External Call History is not authorized but should be, go to the "Set Authorizations" section in this chapter and follow those procedures.

4. Access the *CentreVu* CMS Administration menu by entering the following:

   `cmsadm`

   The program responds as follows:

```
Lucent Technologies CentreVu(R) 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 CMS on or off
Enter choice (1-9) or q to quit:
```

5. Enter `7` to select the `pkg_install` option. The program responds as follows:

```
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.

6. Enter the number that corresponds to External Call History (in this example, 2). The program responds as follows:

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

7. Press Enter. The program responds as follows:

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

8. Press Enter. The program responds as follows:

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

9. Enter the name of the Call History Reporting machine that was administered in uucp. The program responds as follows:

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

10. Enter the password for `nuucp` of the Call History Reporting machine that was administered in `uucp`. The program responds as follows:

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

11. Enter the *CentreVu* CMS port administered for the Call History Reporting machine. This port can either be on one of the NTS patch panels or on one of the 8- or 16-port NTSs. For more information on administering the ports on the NTS, see “Installing Terminals, Printers, and Modems” in either the *CentreVu* CMS R3V6 *Sun SPARCserver* Computers Hardware Installation (585-215-857) or the *CentreVu* CMS R3V6 *Sun Enterprise* 3000 Computer Hardware Installation (585-215-867). The program responds as follows:

```
Select a speed for this connection
1) 19200
2) 38400
Enter choice (1-2):
```

12. Enter the speed that the connection between the *CentreVu* CMS and Call History Reporting machine will be using. The program responds as follows:

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

13. Enter the number of call records to be held in the buffer if the Call History machine cannot accept the data. (This step reserves disk space; therefore, sufficient disk space must be available.)

    NOTE:

    This step is repeated for each administered ACD.

    The program responds as follows:

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


External Call History package installed.
```

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

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

    The External Call History package is installed successfully when you see this message:

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

    You may edit this file and add comments about the packages that were installed or authorized.

If you need to install Forecasting, go to the appropriate section in this chapter and follow the procedures.

If you are not installing any other feature packages, do the following to turn on CMS:

1. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
2. Enter `3` to select the `run_cms` option.
3. Enter `1` to turn on *CentreVu* CMS.

Turning the System Over to the Customer

Overview

This chapter describes how to test the *CentreVu*® Call Management System Release 3 Version 6 (CMS R3V6) software to ensure that the application is working properly. In addition, a worksheet is provided at the end of this chapter for turning the system over to the customer. You should do these tests after:

- Completing the initial computer installation and *CentreVu* CMS setup
- Completing a *CentreVu* CMS software package upgrade
- Completing a *CentreVu* CMS software package update.

Before you begin the procedures described in this chapter, the switch technicians must complete the following:

- Connect the computer to the switch
- Translate the switch with the *CentreVu* CMS feature enabled
- Connect the switch to an active link.

The procedures in this chapter comprise of the following:

- Verify the system date and time
- Test the connection between the computer and the Technical Service Center (TSC)
- Assign passwords
- Test the link configuration between the computer and the switch
- Test the *CentreVu* CMS software
- Turn the system over to the customer.

If you encounter a problem that you cannot solve, escalate the problem through standard procedures.

Verify the System Date and Time

Overview

This section describes how to verify that the *Solaris** 2.5.1 system time and the current local time are the same.

Check the *Solaris* System Date and Time

Verify that the system time is correct by entering `date`.

If the system time is correct, go to the "Test the Connection to the TSC" section in this chapter. Otherwise, continue with the "Set the System Date and Time" and "Set the System Country and Time Zones" sections in this chapter.

Set the System Date and Time

1. Log in as *root*.
2. Change to an OpenBoot mode by entering the following:

   ```
   /usr/sbin/shutdown -i0 -g0 -y
   ```

   NOTE:

   The `-i0` portion of the `shutdown` command string changes the system to an OpenBoot mode.

3. At the `ok` prompt, enter the following:

   ```
   boot -s
   ```

   The system responds as follows:

```
     .
     .
Resetting.....
Type Ctrl-d to proceed with normal startup
(or give root password for system maintenance):
```

**Solaris* is a registered trademark of Sun Microsystems, Inc.

4. Enter the *root* password. The system responds:

```
Entering System Maintenance Mode
Enter Terminal Type: (default is 615):
```

5. At the prompt, enter the type of terminal, and press Enter.
6. As *root*, enter the command `date mmddHHMM[[cc]yy]` to set the time and date. For example:
   - **mm (month):** Enter the month (numeric). Range: 01-12 (01=January, 02=February, and so on).
   - **dd (day):** Enter the day of the month. Range: 01-31.
   - **HH (Hour):** Enter the current hour of the day, military time. Range: 00-23.
   - **MM (minute):** Enter the minute of the hour. Range: 00-59.
   - **cc (century):** Enter the century minus 1 (for example, 19 for the 20th century).
   - **yy (year):** Enter the last two digits of the current year (for example, 98 for 1998).
7. Continue with the “Set the System Country and Time Zones” section.

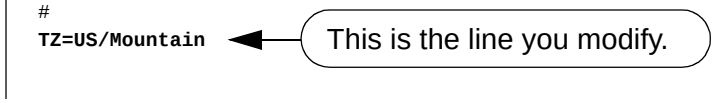
Set the System Country and Time Zones

1. Edit the `/etc/default/init` file and set the `TZ` variable to equal the appropriate value in the `/usr/share/lib/zoneinfo` directory. For example:

```
# vi /etc/default/init

<contents of the file is displayed>

# @(#)init.dfl 1.2 92/11/26
#
# This file is /etc/default/init. /etc/TIMEZONE is a symlink to this file.
# This file looks like a shell script, but it is not. To maintain
# compatibility with old versions of /etc/TIMEZONE, some shell constructs
# (i.e., export commands) are allowed in this file, but are ignored.
#
# Lines of this file should be of the form VAR=value, where VAR is one of
# TZ, LANG, or any of the LC_* environment variables.
#
TZ=US/Mountain
```



   As an example for Mountain Standard Time, the `TZ` variable can be set to `MST` or `US/Mountain`. The entry in the `init` file is essentially a relative path name from the `/usr/share/lib/zoneinfo` directory. `MST` is a file in `/usr/share/lib/zoneinfo`, and `Mountain` is a file in `/usr/share/lib/zoneinfo/US`.

2. Write the read-only file using the `:w!` command.
3. Quit the file using the `:q` command.
4. Reboot the machine by entering `init 6`.

Test the Connection to the TSC

Overview

The information in this section is used to verify that the TSC is properly connected to the computer. This connection allows the TSC to do remote maintenance.

Test the Remote Access Port

Use the information in this section to verify that the TSC can dial in remotely and perform routine maintenance procedures on the computer.

This section describes how to redirect port A on the computer (the remote console port) using the *Solaris* software package. Redirecting the console allows the TSC to dial in and do remote maintenance.

Test port A on the back of the *Sun** computer by redirecting the console from the local console to the remote console, and then redirecting the console from the remote console back to the local console.

Redirect the Console to the Remote Console

1. Dial in from the remote console to the remote console modem (for example, access port A on the computer), and log in as *root*.
2. Remove the port monitor by entering the following:

   ```
   /cms/install/bin/abcadm -r ttya
   ```

   The program responds as follows:

   ```
   ttya is currently set to be incoming

   Are you sure you want to change it? [y,n,?]
   ```

3. Enter y. The program responds as follows:

   ```
   ttya administration removed
   ```

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4. To check the speed of the modem, enter the following:

   ```
   /cms/install/bin/abcadm -k
   ```

   NOTE:

   All remote access ports have a default speed of 9600 bps.

5. Redirect the console to the A port (remote console) by entering the following:

   ```
   /cms/install/bin/abcadm -c -b 9600 ttya
   ```

   The program responds as follows:

   ```
   This change requires a reboot to take affect

   Are you ready to reboot? [y,n,?]
   ```

6. Enter `y`. The program responds as follows:

   ```
   Starting port monitor.
   Setting console parameters.
   Proceeding to reboot.
   ```

   The system automatically reboots. As the system reboots, shutting down, reset, and rebooting messages will appear on the local console. When the system starts to come back up, the local console should go blank, and the system boot diagnostics should appear on the remote console. After the system reboots, a `console login:` prompt should appear on the remote console.

7. Log in to the remote console as *root*.

   NOTE:

   At this time, an XDM login window for the *OpenWindows* interface appears on the local console.

Redirect the Console Back to the Local Console

1. Redirect the console back to the local console by entering the following:

   `/cms/install/bin/abcadm -c local`

   The program responds as follows:

```
Console set to local

This change requires a reboot to take affect

Are you ready to reboot? [y,n,?]
```

2. Enter y. The system automatically reboots and the A port comes up as the console. As the system reboots, “shutting down” messages appear on the remote console. When the system starts to come back up, the system boot diagnostics should appear on the local console. After the system reboots, a `console login:` prompt should appear on the local console. A `login:` prompt should appear on the remote console.
3. Log in to the local console as *root*.
4. Log in to the remote console as *root*.

   The console has been redirected from the remote console back to the local console.

Assign Passwords

Overview

This section describes how to assign passwords to each login on the *Sun* computer. Prior to testing the *CentreVu* CMS R3V6 software, you must assign passwords to each of the following logins:

- root
- cms
- any other administration logins you normally add for a customer.

NOTE:

Record the passwords for each login on the provided “System Acceptance Worksheet” at the end of this chapter.

Procedure

1. Log in as *root*.
2. At the system prompt, enter the following:

   `passwd <login>`

   where `<login>` is root, cms, and so on. The system responds as follows:

```
New password:
```

3. Enter the new password. The system responds as follows:

```
Re-enter new password:
```

4. Enter the password again.

Test the ACD Link

Overview

The following procedure should be completed by the on-site technician after the *CentreVu* CMS R3V6 software has been installed or upgraded to verify the link to the from the CMS to the ACD.

Prerequisites

- The Common Desktop Environment (CDE) must be active.
- *CentreVu* CMS must be turned on.

Procedure

1. In one of the windows at a console, log into the system by using a *CentreVu* CMS administrator's login ID (`su - cms`). Supply the correct password if prompted.
2. Access the *CentreVu* CMS R3V6 main menu by typing `cms` and entering the correct terminal type.

   The *CentreVu* CMS Main Menu has indicators that show if the link to the ACD is active. The link indicator consists of the "carets" ("∧" and "∨") at the right side of the banner line. There should be one caret for each ACD, and all should be **up** (^). If you have four ACDs, for example, the link indicator should look like this: ∧∧∧∧. That means that all four ACDs are up and running.
3. To further test the ACD link, select Maintenance from the *CentreVu* CMS Main Menu.
4. Select Connection Status from the Maintenance menu. The Connection Status should display the following:
   - The name of the ACD
   - The application is in data transfer
   - The session is in data transfer
   - The connection is operational
   - The date, time, and any errors are displayed.
5. Return to the *CentreVu* CMS Main Menu by pressing the Exit SLK once.
6. Continue with the next section, "Test the *CentreVu* CMS R3V6 Software."

Test the *CentreVu* CMS R3V6 Software

Overview

The following procedure should be completed by the on-site technician after the *CentreVu* CMS R3V6 software has been installed or upgraded to verify the sanity of *CentreVu* CMS R3V6 software.

NOTE:

If any of the steps in this test fail, see Chapter 4, "Troubleshooting," and try to solve the problem associated with the step that failed. If you encounter a problem that you cannot solve, escalate the problem through normal procedures.

Prerequisites

- The Common Desktop Environment (CDE) must be active
- *CentreVu* CMS must be turned on.

Procedure

1. Test the Real-Time Reports subsystem by doing the following from the *CentreVu* CMS Main Menu:
   a. Select the `Reports` option.
   b. Select the `Real-time` option.
   c. Select the `Split/Skill` option.
   d. Select the `Split Status` or `Skill Status` option.
   e. Verify that the Split/Skill Status Report Input window appears.
   f. Enter a valid split number in the `Split:` or `Skill:` field.
   g. Select the `Run` action list item, and run the report.
   h. Verify that the Split or Skill Status Report window appears.

      If the switch link is down, the report fields will be blank and the status line reads "Switch link down."

   i. Press the **Commands** Screen Label Key (SLK).
   j. Select the `Print window` option to send the report to the printer.
   k. Look at the message line near the bottom of the window, and verify that there is a confirmation message about sending the report to the printer.

l. Verify that the report printed by checking the printer for the report.

m. Return to the *CentreVu* CMS Main Menu screen by pressing the Exit SLK twice.

2. Test the Historical Reports subsystem by doing the following from the *CentreVu* CMS Main Menu:

   a. Select the `Reports` option.

   b. Select the `Historical` option.

   c. Select the `Split/Skill` option.

   d. Select the `Status` option.

   e. Verify that the Split/Skill Status Report Input window appears.

   f. Enter a valid split number in the `Split/Skill:` field.

   g. Enter `-1` in the `Date:` field.

   h. Select the `Run` action list item, and run the report.

   i. Verify that the report window appears and information is displayed in the appropriate fields.

      NOTE:

      If no historical data exists, the fields in the report window should be blank.

   j. Return to the *CentreVu* CMS Main Menu by pressing the Exit SLK twice.

3. Test the Dictionary subsystem by doing the following from the *CentreVu* CMS Main Menu:

   a. Select the `Dictionary` option.

   b. Select the `Login Identifications` option.

   c. Enter an * in the `Login ID:` field.

   d. Select the `List all` action list item to list all the login IDs.

   e. Verify that the logins are displayed (on a new system, the fields will be blank).

   f. Return to the *CentreVu* CMS Main Menu by pressing the Exit SLK twice.

4. Test the Exceptions subsystem by doing the following from the *CentreVu* CMS Main Menu:
   a. Select the `Exceptions` option.
   b. Select the `Real-time Exception Log` option.
   c. Verify that the window is accessible.

      NOTE:

      For a new installation, this window may be blank.

   d. Return to the *CentreVu* CMS Main Menu by pressing the **Exit** SLK once.
5. Test the Call Center Administration subsystem by doing the following from the *CentreVu* CMS Main Menu:
   a. Select the `Call Center Administration` option.
   b. Select the `Call Work Codes` option.
   c. Press Enter.
   d. Select the `List all` action list item, and list all the call work codes currently defined.
   e. Verify that the displayed information is correct (on a new system, the fields will be blank).
   f. Return to the *CentreVu* CMS Main Menu by pressing the **Exit** SLK twice.
6. Test the Custom Reports subsystem by doing the following from the *CentreVu* CMS Main Menu:
   a. Select the `Custom Reports` option.
   b. Select the `Real-time` option, and verify that the names of existing custom reports are listed. If there are no reports, you receive a message saying the submenu is empty.
   c. Return to the *CentreVu* CMS Main Menu by pressing the **Exit** SLK once.
7. Test the User Permissions subsystem by doing the following from the *CentreVu* CMS Main Menu:
   a. Select the `User Permissions` option.
   b. Select the `User Data` option.
   c. Verify that the User Data Input window appears.
   d. Return to the *CentreVu* CMS Main Menu by pressing the **Exit** SLK once.

8. Test the System Setup subsystem by doing the following from the *CentreVu* CMS Main Menu:
   a. Select the `System Setup` option.
   b. Select the `CMS state` option.
   c. Verify that *CentreVu* CMS is operating in the `Multi-user mode`.
   d. Return to the *CentreVu* CMS Main Menu by pressing the **Exit** SLK once.
9. Test the Maintenance subsystem by doing the following from the *CentreVu* CMS Main Menu:
   a. Select the `Maintenance` option.
   b. Select the `Printer Administration` option.
   c. Enter a valid printer name in the `CMS printer name:` field.
   d. Select the `List all` action list item, and list the printer parameters.
   e. Verify that the printer has been administered correctly.
   f. Return to the *CentreVu* CMS Main Menu by pressing the **Exit** SLK twice.
10. If the Graphics feature package has been enabled, test the Graphics subsystem by doing this from the *CentreVu* CMS Main Menu:
    a. Select the `Graphics` option.
    b. Verify that a Real-time Graphics screen can be accessed.
    c. Return to the *CentreVu* CMS Main Menu by pressing the **Exit** SLK once.
11. At each *CentreVu* CMS terminal, log in as `cms` and choose the correct terminal type to verify that the terminals are working properly. To log off, select the `Logout` option from the *CentreVu* CMS Main Menu.

Turn the System Over to the Customer

Overview

This section contains the final procedures done before turning the system over to the customer.

Procedure

1. If you have not already done so, back up the file systems by following the procedures outlined in the “Perform a CMSADM File System Backup” section in Chapter 5, “Maintenance.”
2. If you have not already done so, back up the customer’s historical data by doing a full maintenance backup from the Maintenance subsystem in *CentreVu* CMS. See the “Backup Strategy” section of *CentreVu* CMS R3V6 Administration (585-215-850).
3. Copy and complete the System Acceptance Worksheet from the following page, attach the indicated printouts and screen dumps, and give the resulting package to the customer’s *CentreVu* CMS administrator.

   NOTE:

   For system security, the *CentreVu* CMS administrator must store written passwords, *INFORMIX** serial numbers and key license information, and X.25 license information in a secure place.

**INFORMIX* is a registered trademark of Informix Software, Inc.

System Acceptance Worksheet

❒ **Passwords for system login IDs:**

Login ID: **root** Password: _____

Login ID: _____ Password: _____

Login ID: _____ Password: _____

Login ID: _____ Password: _____

❒ ***CentreVu* CMS administrator login IDs and passwords:**

Login ID: **cms** Password: _____

Login ID: _____ Password: _____

Login ID: _____ Password: _____

Login ID: _____ Password: _____

❒ **`df -t` results** (attach screen dump showing `df -t` command results, or record results here):

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

❒ **Printer administration:**
Print out the CMS `Maintenance - Printer Administration - List all` window

❒ **Free Space Allocation:**
Print out the CMS `System Setup - Free Space Allocation` window

❒ **Data Storage Allocation parameters:**
Print out the CMS `System Setup - Data Storage Allocation` window for each ACD

❒ **Storage Intervals parameters:**
Print out the CMS `System Setup - Storage Intervals` window for each ACD

Troubleshooting

Overview

This chapter contains troubleshooting information about the *CentreVu*® Call Management System Release 3 Version 6 (CMS R3V6) application. You should use the information to clear problems that may arise during and after the *CentreVu* CMS software installation.

The troubleshooting sections in this chapter are:

- Solve Installation-Related Problems
- Respond to a Small Computer System Interface (SCSI) Probe “Hang” Warning
- *Sun** Validation Test Suite
- Check Error Logs.

See *CentreVu* CMS R3V6 Administration (585-215-850) for information about restoring data, using backup strategies, accessing error logs, and using error messages.

NOTE:

When executing commands remotely that may take a long time to complete (such as `cpio` and `/olds` commands), use the `nohup` command to ensure that the command will complete without interruption in case the data line disconnects. The following is an example using the `nohup` command:

```
nohup  cpio  -icmudf  -C  10240 -I /dev/rmt/0c “/cms” | tee
```

**Sun* is a registered trademark of Sun Microsystems, Inc.*

Solve Installation-Related Problems

Overview

This section provides some suggestions for solving problems that could arise during an installation. The following installation-related problems are described:

- Troubleshoot a *Solstice DiskSuite* Software Installation
- Fix a *Solaris** Patch Installation
- List Pkgchk Errors
- Solve X.25 License Installation Problems
- Check Installed *Solaris* Patches.

Troubleshoot a *Solstice DiskSuite* Software Installation

The *Solstice DiskSuite*† software package allows multiple disk partitions to be logically combined to create a single large partition. Using the *Solstice DiskSuite* package allows CMS databases to span multiple disks, and therefore grow quite large.

In order to troubleshoot problems with the *Solstice DiskSuite* software or the `/cms` file system, you must understand two basic concepts of *Solstice DiskSuite* operation: **state databases** and **metadevices.**

A state database contains the *Solstice DiskSuite* configuration information for the system, and is stored on a raw disk partition created for that purpose. At boot time, the operating system accesses the state database to configure the system. Typically, a system contains multiple copies of the state database.

A metadevice is a logical device that consists of a set of physical disk partitions. A system controlled by *Solstice DiskSuite* software can contain any number of metadevices; the state database contains a record of which disk partitions belong to which metadevices. Once a metadevice has been set up, the underlying disk partitions can be accessed only through the metadevice.

For a complete description of *Solstice DiskSuite* software and its basic technical concepts, see *Solstice DiskSuite 4.1 Administration Guide,* published by Sun Microsystems, Inc.

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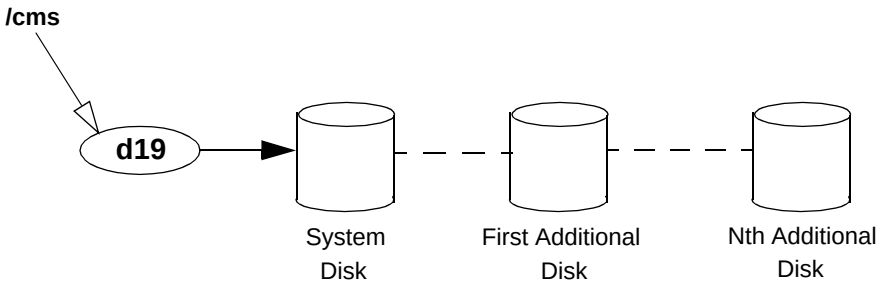
†*Solstice DiskSuite* is a registered trademark of Sun Microsystems Inc.

CMS uses the *Solstice DiskSuite* software to set up three state databases, and to create a single metadevice containing all the disk partitions used to store CMS data. See the following illustration.



Identify Problems

Use the procedures and hints in this section to help identify and resolve problems with the CMS scripts that administer *Solstice DiskSuite* software, with the physical disks, with the state databases, with the metadevice, or with the `/cms` file system.

Problems with CMS Administration Scripts

Use the `pkginfo -l SUNWmd` command to verify that the *Solstice DiskSuite* software is installed.

If it has not been installed, you may have to reinstall the operating system and repartition your disks. Once the software has been installed, you must use the `olds` script to set up the environment so CMS can access the disks. See Appendix B “Factory Software Installation” for a step-by-step description of installing *Solstice DiskSuite* software and using the `olds` script. If you receive an error message from the `olds` script, see “Common Error Messages” in this chapter.

Disk I/O Problems

Check the system console and the `/var/adm/messages` log for messages that indicate problems with a specific hard disk. If a disk is generating errors, it may need to be replaced. For procedures related to recovering from disk crashes and replacing hard disk drives, see *CentreVu* CMS R3V6 Hardware Maintenance and Troubleshooting (585-215-861).

State Database Problems

Check the system console and the `/var/adm/messages` log for messages that indicate problems with a state database. Be aware that on a multiple-disk system, there should always be two copies of the state database on the first internal disk drive, and a third copy on the second internal disk drive. On a single-disk system, there should be three copies of the state database on the single disk.

Use the `/usr/opt/SUNWmd/sbin/metadb -i` command to check the status of the state database.

If the response indicates a state database problem, you must remove and re-create the state database that is causing the problem. Follow these steps:

1. Check to see if the error is caused by an underlying disk problem. If it is, recover or replace the disk. See *CentreVu* CMS R3V6 Hardware Maintenance and Troubleshooting (585-215-861).
2. If you find no disk problem, or if the state database problem persists after the disk has been repaired, use the `metadb` command to remove and re-create the state database causing the problem. For example, use the following commands:

   ```
   /usr/opt/SUNWmd/sbin/metadb  -d  mddb01
   /usr/opt/SUNWmd/sbin/metadb  -a  mddb01
   ```

Metadevice Problems

Use the `/usr/opt/SUNWmd/sbin/metastat` command to verify that the metadevice is set up correctly. The program responds as follows:

```
d19: Concat/Stripe
    Size: 1819440 blocks
    Stripe 0:
        Device              Start Block  Dbase
        c0t3d0s3                  0     No
```

To verify the metadevice setup, you must examine the response to the command. You are looking for two things:

a. All your disk drives must be accounted for.

   You can verify that simply by checking the Size figure (it should roughly equal the total capacity of all your disks) and counting the number of devices listed (there should be a “Stripe” section for every drive). If some of your drives seem to be missing, verify that all your drives are plugged in and turned on, and that each external drive has a unique target number. In the example above, there is a single 2.1 GB disk drive.

b. The device names must reflect the appropriate slice numbers.

   The slice numbers are represented by the final two characters of the device name. A properly set up `/cms` file system begins with slice 3 of the first internal disk, and slice 1 of each of the remaining disk drives. Consequently, the device name of the first internal disk drive must end with s3 (for example, c0t0d0s3); all other device names must end in s1 (for example, c2t1d0s1).

If there is any discrepancy between reality and the output of the `metastat` command, you will have to set up your disk drives again.

Problems with the /cms File System

Use the following steps to check the `/cms` file system for errors:

1. Log in as *root*.
2. Enter the following:

   `vi /etc/vfstab`

   The file will look similar to the following:

```
#device          device         mount         FS      fsck   mount   mount
#to mount        to fsck        point         type    pass   at boot options
#
#/dev/dsk/c1d0s2 /dev/rdsk/c1d0s2 /usr        ufs     1      yes    -
fd      -       /dev/fd fd      -       no    -
/proc   -       /proc   proc    -       no    -
/dev/dsk/c0t3d0s4       -       -       swap  -       no     -
/dev/dsk/c0t3d0s0      /dev/rdsk/c0t3d0s0     /       ufs    1      no        -
#swap   -       /tmp    tmpfs   -       yes   -
/dev/md/dsk/d19       /dev/md/rdsk/d19        /cms    ufs    2      yes       -
```

3. Add a pound sign (#) at the beginning of the `/dev/md/dsk/d19` line. This “comments out” that line.
4. Write and quit the file.
5. Reboot the system by entering `init 6`.
6. When the system is back up, log in as *root*.
7. Check the `/cms` file system by entering the following:

   `fsck -y /dev/md/rdsk/d19`

   The file will look similar to the following:

```
** /dev/md/rdsk/d19
** Last Mounted on /cms
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
1952 files, 156146 used, 698956 free (516 frags, 87305 blocks,  0.0%
fragmentation)
```

8. Enter the following:

   ```
   vi /etc/vfstab
   ```

   The file will look similar to the following:

```
#device          device         mount         FS      fsck   mount   mount
#to mount        to fsck        point         type    pass   at boot options
#
#/dev/dsk/c1d0s2 /dev/rdsk/c1d0s2 /usr        ufs     1      yes    -
fd      -       /dev/fd fd      -       no    -
/proc   -       /proc   proc    -       no    -
/dev/dsk/c0t3d0s4       -       -       swap  -       no     -
/dev/dsk/c0t3d0s0      /dev/rdsk/c0t3d0s0     /       ufs    1      no        -
#swap   -       /tmp   tmpfs    -       yes   -
#/dev/md/dsk/d19       /dev/md/rdsk/d19        /cms    ufs    2      yes       -
```

9. Delete the pound sign (#) at the beginning of the `/dev/md/dsk/d19` line. This “uncomments” that line.
10. Write and quit the file.
11. Mount the CMS file system by entering the following:

    ```
    mount /cms
    ```

If the check fails, examine the system for problems with the metadevice, state databases, or disks. If you find no other problems, you may need to recover `/cms`.

If you have trouble mounting `/cms`:

- Verify that the `/cms` directory exists by entering the following:

  ```
  ls -ld /cms
  ```

- If `/cms` does not exist, use the following to create it:

  ```
  mkdir /cms
  ```

- Use the `metastat` command to determine the metadevice being used. Then verify that the entry for `/cms` in the `/etc/vfstab` file is correct. If you find any errors, correct them.

Common Error Messages

This section presents, in alphabetical order, the messages commonly associated with installing and setting up the *Solstice DiskSuite* software to work with a CMS system. Each message is accompanied by its probable cause and the likely corrective procedure.

/cms: Deadlock situation detected/avoided

Both CMS and the operating system are trying to access the swap file, leading to a deadlock. Turn off CMS, deactivate all the swap files residing on `/cms` (`swap -d /cms/swap`), and reenter the command. Remember to reactivate the swap files back when the `growfs` command completes (`swap -a /cms/swap`).

device: c0t6d0 will not be used

Warning that c0t6d0 will not be set up for *Solstice DiskSuite*. Since c0t6d0 is the CD-ROM drive, that is not a problem.

device: *devicename* **cannot be setup, or does not exist...**

The disk you are trying to attach is turned off, does not exist, or was removed from the system. Power-up the disk drive, or verify the correct name for the disk (see “Respond to a SCSI Probe Hang Warning” in this chapter), or attach the disk to the system and reboot with a `boot -r` command from the open boot prompt.

Disk *devicename* **already attached, exiting...**

You are trying to attach a disk that is already attached. Verify the name of the disk (see “Respond to a SCSI Probe Hang Warning” in this chapter). Look at the target number on the back of the disk drive if possible, or consult the device documentation.

disk: *devicename* **partition 1 is not partitioned correctly**

You need to repartition disk *devicename.* Use the `format` command. See CentreVu CMS R3V6 Hardware Maintenance and Troubleshooting (585-215-861).

DiskSuite must be installed

You must install the *Solstice DiskSuite* software package. See Appendix B, “Factory Software Installation.”

In order to attach disk, /cms must already be mounted, exiting...

The `/cms` file system was not mounted. Execute a `mount /cms` command and rerun the command that failed.

metadb: *systemname***:** *devicename***: has a metadevice database replica**

There are already state database replicas existing on the indicated system and device. No further action is required.

metainit: *systemname***: /etc/opt/SUNWmd/md.tab line 12: d19: unit already set up**

An initial setup of the file system has already been performed.

If you are trying to attach a new disk, execute an `olds -setup` command for that device. To attach device c0t2d0, for example, you would enter `/olds/olds -setup c0t2d0`. If you need to do an initial setup, use these commands:

```
/olds/olds  -cleanup
```

<reboot when command completes>

```
/olds/olds -check_disks
/olds/olds -mk_files
/olds/olds -metadbs
/olds/olds -setup
```

Then restore all your swap files and their `/etc/vfstab` entries.

metainit: syntax error

This is the `olds` general failure message. The most likely cause is that the `/etc/opt/SUNWmd.tab` file disagrees with your configuration. (The file, for example, says you have seven disks in a given metadevice, but your configuration only has six.) Verify that `/etc/opt/SUNWmd.tab` is accurate. As a last resort, use an old `md.tab` file or do an initial `olds` setup.

newfs of cms metadevice failed

There is an internal problem with one of your disks. Enter a `/usr/opt/SUNWmd/sbin/metaclear d19` command, and then rerun the `olds -setup` script. If the same error recurs after doing this, repartition your disks or call Lucent Technologies National Customer Care Center at 1-800-242-2121.

prtvtoc: /dev/rdsk/c0t6d0: Device busy

This message usually implies that the device probed by the script is not to be used as a disk because it is a read-only disk (that is, a CD-ROM drive). This is not a problem.

Warning: Current Disk has mounted partitions

Ignore this message. The format command is warning you that it is probing a mounted disk. A probe, however, is a nondestructive task that poses no danger to your data.

You must be root in order to run this command

Superuser privileges are necessary to run this script because most of the commands are related to system administration.

You need to have at least one disk set up, before attaching one, exiting...

You tried to use olds to attach a disk, but the metadevice has not yet been set up. To set it up, run the `olds -setup` command without arguments.

Fix a *Solaris* Patch Installation

When a *Solaris* patch installation fails (for example, during `/tmp/patches/install_patches`), you can attempt to fix the source of the error and rerun `/tmp/patches/install_patches`. As a last resort, you can comment out the lines relating to the bad patch and rerun the script. You must resolve the problem and install the patch before returning the system to service.

A *Solaris* patch installation may fail with a message about bad permissions on `/kernel` and `/kernel/drv`. Do this to resolve the problem:

1. Enter the following two commands:

   ```
   /usr/sbin/installf  SUNWcar  /kernel
   /usr/sbin/installf  SUNWcar  /kernel/drv
   ```

2. Restart the patch installation.

List Pkgchk Errors

The `pkgchk -n cms` command lists some common error messages that do not signal a problem. The error messages in the following table can be ignored.

Location	Error Message	Occurs
/cms/install/logdir/admin.log	group name <root> expected <cms> actual.	After the installation and before setup.
/usr/lib/cms/pbxtrcflags	path name does not exist.	After the installation and before setup.
/cms/env/cms_mon/State_tbl	group name <bin> expected <other>actual.	After the setup and before running cms.
/cms/install/logdir/admin.log	group name <root> expected <cms>actual.	After the setup and before running cms.
/usr/lib/cms/pbxtrcflags	path name does not exist.	After the setup and before running cms.
/cms/env/cms_mon/State_tbl	group name <bin> expected <cms> actual.	After running cms.
/cms/install/logdir/admin.log	group name <root> expected <cms> actual.	After running cms.
/usr/lib/cms/pbxtrcflags	group name <bin> expected <cms> actual.	After running cms.

Solve X.25 License Installation Problems

Error messages are generated by the license system if you have problems during the installation. The error messages are divided into three categories: informational, configuration, and daemon software errors. For example:

- Informational Error Message:

  `DEMO mode supports only one SERVER host!`

  An attempt was made to configure a demonstration version of the software for more than one server.

- Configuration Error Message:

  `hostname: Wrong hostid, exiting`

  The hostid is wrong for the host name.

- Daemon Software Error Message:

  `hostname: Can't allocate server table space`

  A malloc error. Check swap space.

Check Installed *Solaris* Patches

To verify that the correct *Solaris* patches are installed, do the following:

1. Enter the following:

   `showrev -p`

   The system responds as follows:

```
Patch: 105084-02  Obsoletes:   Packages: SUNWx25a.2 9.1,PATCH=02,
SUNWx25b.2 9.1,PATCH=02
Patch: 105256-01  Obsoletes:   Packages: SUNWcsu
Patch: 103582-14  Obsoletes:   Packages: SUNWcsu, SUNWcsr
Patch: 103594-10  Obsoletes:   Packages: SUNWcsu
   .
   .
   .
```

2. Check the list to verify that all the *Solaris* patches you need are installed. More information about *Solaris* patches is in Chapter 5, "Maintenance" and Appendix B, "Factory Software Installation."

Respond to a SCSI Probe Hang Warning

When you are attempting to probe SCSI devices at the boot prom level using either `probe-scsi` or `probe-scsi-all`, you may receive a message similar to the following:

```
This command may hang the system if a Stop-A or halt command has
been executed. Please type reset-all to reset the system before
executing this command. Do you wish to continue?
```

Respond with the following steps:

1. Enter `N` (to prevent the probe from continuing).
2. Enter the following:

   ```
   setenv auto-boot? false
   ```

   This keeps the system from rebooting when you do a reset.
3. On an *Enterprise** 3000 computer, enter the following:

   ```
   reset all
   ```

   On a *SPARCserver*† computer, enter the following:

   ```
   reset
   ```

   These commands may take a minute to complete.
4. You may now do the `probe-scsi` or `probe-scsi-all` and perform any other boot prom level diagnostics.
5. **IMPORTANT:** Before you reboot again, enter the following:

   ```
   setenv auto-boot? true
   ```

   Failure to do so will cause the reboot to stop at the boot prompt instead of proceeding through the normal boot-up.

**Enterprise* is a trademark of Sun Microsystems, Inc.
†*SPARCserver* is a trademark of SPARC International, Inc.

Sun Online Validation Test Suite (VTS)

Overview

The *Sun* Online VTS supports diagnostics in the following areas:

- Connection test — Minimal access of device to verify its accessibility and availability.
- Functional test (default) — Detailed tests to thoroughly test the device or system when offline (CMS must be turned off). A stress mode in system/test option can be set only within offline mode. The stress mode is an extension of offline.
- Functional test (from system monitor) — Safe tests that can be executed on the device or system when it is online (CMS can be on, but testing is safer when turned off).

There are many ways you can run VTS. It is recommended that you use one of the following two methods:

- Local access using the Common Desktop Environment (CDE) interface
- Remote access using a TTY mode (ASCII interface).

Prerequisites

CMS must be turned off.

Procedure

1. Enter the following:

   ```
   cd /opt/SUNWvts/bin
   ```

2. To access the CDE interface, enter `sunvts`. To access the TTY mode (ASCII interface), enter `sunvts -t`.
3. For more information about using VTS, see the following files:

   ```
   /opt/SUNWvts/README
   ```

   ```
   /opt/SUNWvts/bin/vtstty.help
   ```

Check Error Logs

Overview

This section describes some common log characteristics and covers information about each of the logs provided.

The following problems will generate an entry into the error log:

- Data conversion problems
- Start-up and shut-down problems
- Installation problems
- Set-up problems
- Critical or warning messages.

Wrapping Techniques

Many of the log files use a common, general purpose file wrapping technique to keep a controlled amount of historical log information. It keeps the current log in a file always named the name of the log. For example, the error log is named `elog`, and there may be three older logs kept called `elog.01, elog.02,` and `elog.03`.

When the current active log file becomes full, it rolls over and a new log file is started. At the time that the log rolls over, the oldest log is deleted, each of the other logs moves to its new name, and a new log file is started.

The size of the logs is controlled by the file size. If a specific number of hours of log information is needed, some monitoring will be needed to see how much time is covered by a log.

Each log file concludes with a message that the file size limit has been reached and that a new log will be started. This is particularly useful if using the command `tail -f` to monitor ongoing activity in the log. When the message is displayed, a new `tail` command will need to be started. After you finish reviewing log activity, press Delete to exit.

Administer Options

You can administer the following options:

- Location of the log files
- Number of historical log files
- Size of the Files.

CAUTION:

Only qualified TSC personnel should administer these log files. Do not delete or change any information in these log files without first contacting the TSC.

Run Logs

The logs run under a variety of circumstances:

- Always running when *CentreVu* CMS and/or *Solaris* are running and cannot be stopped
- Must be manually started and stopped
- Are also automatically stopped after a reboot and/or restarting *CentreVu* CMS.

Contact the TSC for more information.

Contents of Error Logs

Each error log contains specific information about itself, including defaults, administration information, a description of the contents, and general information about how to interpret the contents of the logs:

- Default Location — the file name of the primary file where log information can be found if no administrative changes have been made.
- Default Maximum File Size — the approximate size of each of the log files (primary and historical) that will be saved if no administrative changes have been made.
- Default Number of Older Files Retained — the number of historical files that are kept, in addition to the primary file, if no administrative changes have been made.
- Administration File — if the log is controlled by the general purpose file wrapping technique, the location of the file where administrative changes can be made affecting the location of the log file, the size of the logs, and/or the number of historical log files.

- Starting/Stopping — describes the conditions for the log to be running, including any appropriate commands.
- Writing Process — indicates all processes that write into the log.
- Intended Audience — usually customer (for log information that is useful to the customer, easy to read, and documented) or services (for log information that is intended to aid troubleshooting).
- First Implemented in Load — indicates the first load when the log is available — an internal load numbering (such as 3.1z) is used.

Summary of Error Logs

Refer to the following table to identify which error log to use to resolve a problem.

Type of Log	Name of Error Log	Default Location
General Error Logs	elog	/usr/elog/elog
	elog_elog	/usr/elog/elog
	elog_if	/usr/elog/elog_if
	customer elog	*INFORMIX** database table customer_log
Link-Related Logs	spi.err	/cms/pbx/acd1/spi.err
	spi.lnk	/cms/pbx/acd1/sim.lnk
	spi.log	/cms/pbx/acd1/spi.log
	ag.log	/cms/pbx/acd1/ag.log
	sim.err	/cms/pbx/acd1/sim.err
	sim.lnk	/cms/pbx/acd1/sim.lnk
	xln.log	/cms/pbx/acd1/xln.log
Process-Related Logs	proc_log	/cms/env/cms_mon/proc_log
	mq_clean	/cms/env/cms_mon/mq_clean
	gem_log	/cms/env/gem/gem_log
	rt_gem	/cms/env/gem/rt_gem
Solaris Logs	messages	/var/adm/messages

Type of Log	Name of Error Log	Default Location
Special Task Logs	harch.log	/cms/db/LogAdmin/hachiver
	arch.log	/cms/dc/archive/arch.log
	ttlog	/cms/db/journal/timetable/ttlog
	cow_paste.log	/usr/elog/cow_paste.log
	r3mig.log	/cms/migrate/r3mig.log
	back.log	/cms/maint/backup/back.log
	rest.log	/cms/maint/restore/rest.log
	migrate.log	/cms/migrate/migrate.log
	mig.log	/cms/maint/r3mig/mig.log
Installation/cmsadm Logs	install.log	/cms/install/logdir/install.log
	backup.log	/cms/install/logdir/backup.log (see also admin.log)
	admin.log	/cms/install/logdir/admin.log
CentreVu Supervisor Specific Logs	.win.log	$HOME/.win.log
	cman.log	/cms/env/cman/cman.log
Miscellaneous Logs	bp.uid	/cms/tmp/bp.uid

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Maintenance

Overview

This chapter explains how to maintain the *CentreVu*® Call Management System Release 3 Version 6 (CMS R3V6) software. Refer to *CentreVu* CMS R3V6 Hardware Maintenance and Troubleshooting (585-215-861) for hardware maintenance information.

This chapter discusses the following maintenance procedures:

- Perform backups and restores
- Change the date and time
- Check installed software packages
- Back out a *Solaris** patch
- Add *INFORMIX*† Structured Query Language (SQL)

Personnel at the Technical Service Center (TSC) will need assistance from an on-site technician or the customer's *CentreVu* CMS administrator to do most of the procedures in this chapter.

NOTE:

When executing commands remotely that may take a long time to complete (such as `cpio` and `/olds` commands), use the `nohup` command to ensure that the command will complete without interruption in case the data line disconnects. The following is an example using the `nohup` command:

```
nohup  cpio  -icmudf  -C  10240 -I /dev/rmt/0c "/cms" | tee
```

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†_INFORMIX_ is a registered trademark of Informix Software, Inc.

Perform Backups and Restores

Overview

A backup copies the data stored on the *CentreVu* CMS R3V6 hard disk to a removable tape. Regular backups provide a way to recover data that would otherwise be lost. *CentreVu* CMS provides two different types of backups:

- CMS Administration (CMSADM) File System Backup
- *CentreVu* CMS Maintenance Backup — Full and Incremental.

From backup tape(s) you can restore your system and data. For more information about backups and restores, see *CentreVu* CMS R3V6 Administration (585-215-850).

Perform a CMSADM File System Backup

The CMSADM file system backup saves all the file systems on the machine onto a tape.

Overview

The CMSADM file system backup includes the following:

- *Solaris* 2.5.1 system files and programs
- *CentreVu* CMS programs and data
- Non-*CentreVu* CMS customer data placed on the computer (in addition to the *CentreVu* CMS data).

The CMSADM file system backup should be done as follows:

- After the *CentreVu* CMS is provisioned

  This backup contains the *Solaris* system files and programs and *CentreVu* CMS configuration data placed on the computer by TSC provisioning personnel.

  In addition, field technicians should perform a *CentreVu* CMS full maintenance backup before they turn a new system over to the customer. See *CentreVu* CMS R3V6 Administration (585-215-850).
- Before and after the *CentreVu* CMS software is upgraded or updated
- Monthly.

The number of cartridge tapes required to complete a CMSADM file system backup depends on the amount of data on the system and the capacity of the backup tape. The program estimates the number of tapes required and informs the user.

Prerequisites

- Before starting the backup procedures in this section, log in as *root,* and enter `lp /etc/vfstab`. The output from the printer is necessary when doing a system restore. Bundle the printout of the `/etc/vfstab` file with the system backup tape(s) for future reference.
- Verify that the computer is in a *Solaris* multi-user state (2 or 3). To check if you are in the multi-user state, enter `who -r`.

Procedure

1. Enter `cmsadm` to access the *CentreVu* CMS Administration menu. The *CentreVu* CMS Administration menu appears as follows:

```
Lucent Technologies CentreVu(R) 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 CMS on or off
Enter choice (1-9) or q to quit:
```

2. Enter `3` to select the `backup` option.

   The program responds as follows:

```
   Select tape drive to use:
      1) 150MB cartridge tape
      2) 14.0 Gbyte 8mm tape
      3) 5.0 Gbyte 8mm tape
      4) 2.5 Gbyte cartridge tape
      5) 4.0 - 8.0 Gbyte cartridge tape

   Enter choice (1-5):
```

3. Enter the number for the tape drive installed on your system.

   The system begins calculating the approximate number of tapes required. You are not prompted.

   If the number of tapes required is 1, the system responds as follows:

```
The backup will need approximately 1 tape.

Please insert the first cartridge tape into </dev/rmt/x>.

Press ENTER when ready:
```

   If the number of tapes required is more than one, the system responds as follows:

```
The backup will need approximately <X> tapes.

Be sure to number the cartridge tapes consecutively in the
order they will be inserted.

Please insert the first cartridge tape into </dev/rmt/x>.

Press ENTER when ready:
```

4. To begin the backup, insert the cartridge tape, wait for the tape to rewind and reposition, and then press Enter.

   If *CentreVu* CMS is turned on, the system responds as follows:

```
The backup is about to begin, CMS is currently on. CMS
will be turned off automatically during that portion of
the backup which needs CMS off.
Press ENTER to proceed or Del to quit.
```

5. To continue the backup, press Enter.

   If you are using one tape, the system responds as follows:

```
Backing up files...
.................
...(dots continue to display as the system is backed up)
XXXXXX Blocks
Tape verification
XXXXXX Blocks

Please label the backup tape(s) with the date and the
current CMS version (r3v6xx.x).
```

   If you are using more than one tape, the system responds as follows:

```
Backing up files ...
.................
.................
.................
Please remove the current tape, number it, insert
tape number X, and press ENTER.
```

6. Insert the next tape and press Enter to continue. When you insert another tape, allow it to rewind and reposition before you press Enter.

   After the system completes the backup, the system responds as follows:

```
Tape Verification
Insert the first tape

Press return to proceed:(there is a delay as tape is
verified)
```

7. Insert the first tape and press Enter to continue. If you are using more than one tape, the system responds as follows:

```
Tape Verification
Insert the first tape

Press return to proceed:(there is a delay as tape is
verified)

Please insert tape number X and press return: (there is a
delay as tape is verified)
```

   After the tape verification, the system responds as follows:

```
Please label the backup tape(s) with the date and the
current CMS version (<version>).
```

8. Label the CMSADM backup tapes with the date and *CentreVu* CMS version. The CMSADM file system backup is complete.

Check the Contents of the CMSADM Backup Tape

1. Insert the first backup tape.
2. To list the files on the tape, enter the following commands (enter the second command on a single line):

   ```
   ulimit unlimited
   ```

   ```
   nohup cpio -ivct -C 10240 -I /dev/rmt/0c -M
   “Please remove the current tape, insert tape
   number %d, and press ENTER” | tee
   ```

   The system displays a list of files. Please note that this can a long time to display the file names on the backup tape.
3. After you have seen the files you are looking for, or have confirmed that data on the tape is accurate, press Delete to stop the display.

Restoring from a CMSADM File System Backup

If backups are available, the complete file systems can be restored if an accidental loss of data occurs.

CAUTION:

Use this procedure only if you have a CMSADM backup available.

Procedure

1. Obtain the cartridge tape(s) that contain the system backups.
2. Obtain the printout of the `/etc/vfstab` file that was stored with the backup tapes.
3. Load the backup tape.
4. Enter the following command on a single line:

   ```
   cpio -icmudf -C 10240 -I /dev/rmt/0c -M "Please remove the current tape, insert tape number %d and then press ENTER" "/cms" "/cms/*"
   ```

   The device name in this example is `/dev/rmt/0c`. This will be the usual case. However, the device name used depends upon the drive's SCSI ID and whether the drive supports data compression (indicated by the `c` suffix). The device name must be one of the following:

   - `/dev/rmt/0` Indicates the internal noncompressing tape drive (14-GB, 8-mm drive) with the lowest target address.
   - `/dev/rmt/1` Indicates the external noncompressing tape drive (QIC-150 or 5-GB, 8-mm drive) with the second lowest target address.
   - `/dev/rmt/0c` Indicates the internal compressed-mode tape drive (usually a 14-GB tape drive) with the lowest target address.
   - `/dev/rmt/1c` Indicates the external compressed-mode tape drive (either a 2.5-GB QIC, 4-8 GB SLR, or a 14-GB tape drive) with the second lowest target address.

   NOTE:

   You may get four error messages concerning the `/home` directory. These errors display when the directory is already present, so you can ignore them.

5. If you have *CentreVu* CMS maintenance backups dated after the latest CDMADM backup, also restore the latest maintenance backups. See *CentreVu* CMS R3V6 Administration (585-215-850) for more information.

Perform a *CentreVu* CMS Maintenance Backup

CentreVu CMS maintenance backups save only *CentreVu* CMS data (administration and historical). The *CentreVu* CMS data for each Automatic Call Distribution (ACD) split should be backed up as follows:

- After the *CentreVu* CMS is provisioned
- After the *CentreVu* CMS software is upgraded or updated
- Daily or Weekly.

You run these backups from the “Maintenance: Back Up Data” window. See the chapter on maintenance in *CentreVu* CMS R3V6 Administration (585-215-850).

Perform a *CentreVu* CMS Maintenance Restore

The *CentreVu* CMS R3V6 software application allows you to restore *CentreVu* CMS data lost due to system failure, disk crashes, and so on. You can restore all *CentreVu* CMS data that you previously backed up during a *CentreVu* CMS maintenance backup.

If a disk crash does occur, you may have to reinstall the *Solaris* operating system, the supporting *Sun* applications, and *CentreVu* CMS before you can perform a CentreVu CMS maintenance restore. See *CentreVu* CMS R3V6 Hardware Maintenance and Troubleshooting (585-215-861) for more information.

NOTE:

You can execute a *CentreVu* CMS maintenance restore from the console; however, the console must be powered on and *CentreVu* CMS must be in the single-user mode. Verify that you are in the single-user mode from the “System Setup: CMS State” window.

After the CMSADM restore is completed or after you have the system in an operable state, restore the *CentreVu* CMS administration and historical data from available *CentreVu* CMS maintenance backups by running a restore from the “Maintenance: Restore Data” window. See the chapter on maintenance in *CentreVu* CMS R3V6 Administration (585-215-850).

Depending on what is available, there are two possible scenarios when doing a *CentreVu* CMS maintenance restore:

- When only full maintenance backups are available
- When both full and incremental maintenance backups are available

When Only Full Maintenance Backups are Available

If only full *CentreVu* CMS maintenance backups are available, the following steps are the fastest way to get the system running:

1. Load the most recent full backup tape.
2. Do an automatic restore of the system administration data, ACD-specific data, historical data, and non-CMS data by entering `y` in the `Restore from last backup (y/n):` field.
3. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
4. Enter `3` to select the `run_cms` option.
5. Enter `2` to turn off *CentreVu* CMS.
6. Access the *CentreVu* CMS Services menu again by entering `cmssvc`. The menu appears.
7. Enter `3` to select the `run_cms` option.
8. Enter `1` to turn on *CentreVu* CMS.

When Both Full and Incremental Maintenance Backups are Available

If both full and incremental *CentreVu* CMS maintenance backups are available, the following steps are the fastest way to get the system running:

1. Load the most recent full backup tape.
2. Do a manual restore of the system administration data, ACD-specific data, historical data, and non-CMS data by entering `n` in the `Restore from last backup (y/n):` field.
3. Load the most recent incremental backup tape.
4. Restore the system administration data, ACD-specific data, historical data, and non-CMS data.
5. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
6. Enter `3` to select the `run_cms` option.
7. Enter `2` to turn off *CentreVu* CMS.
8. Access the *CentreVu* CMS Services menu again by entering `cmssvc`. The menu appears.
9. Enter `3` to select the `run_cms` option.
10. Enter `1` to turn on *CentreVu* CMS.

Change the Date and Time

Change the Date, Time, and Time Zone

The switch date and time are displayed at the top of most *CentreVu* CMS screens. If the date or time are not accurate, you must reset them.

NOTE:

Changing the switch time may cause a small distortion in the *CentreVu* CMS data when the change is made. A small amount of data may also be lost when the change occurs. For example, if the *Solaris* system time is advanced, the switch connection is reestablished causing a small amount of data to be lost.

To change the date and time, see “Verify the System Date and Time“ in Chapter 3, “Turning the System Over to the Customer.”

Resynchronize the I/O Board Clock

In certain situations, the clock on the I/O or I/O graphics board on an *Enterprise** 3000 computer may be different from the clock on the clock board. For example, this may happen when you install a card to use the SBus slot on the I/O graphics board. While the board is out of the computer, the clock is unpowered. When you reinstall the board, its clock will be different from the clock board’s clock, causing a warning message to display each time you reboot.

To resynchronize the clocks, do the following:

1. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
2. Enter `3` to select the `run_cms` option.
3. Enter `2` to turn off *CentreVu* CMS.
4. Go to the boot prompt. You can do that in one of three ways:
   a. Enter `init 0`, or
   b. Enter `/usr/sbin/shutdown -y -g0 -i0`, or
   c. Press Stop and A simultaneously.
5. Enter the following:

   ```
   copy-clock-tod-to-io-boards
   ```
6. Boot the machine by entering `boot -r`.

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Check Installed Software Packages

Overview

Use this procedure to verify that the correct software packages have been installed.

Procedure

1. Enter the following:

   `pkginfo | more`

   The system responds as follows:

```
system  AURAacs    Aurora 40X, 80X, WMS 2000/3000 Base Driver
system  AURAacsa   Aurora 40X, 80X, WMS 2000/3000 Asynchronous Driver
system  AURAsio16  Aurora 1600SE device driver
system  SUNWaccr   System Accounting, (Root)
system  SUNWaccu   System Accounting, (Usr)  .
  .
  .
```

2. Compare the list generated by the `pkginfo` command to the table listed below, which lists all the basic *Solaris* and *CentreVu* CMS software packages installed on a *system*. Please note that additional packages not shown here may be installed by the customer or the TSC.

   If you need to install any missing packages, see Appendix B, “Factory Software Installation” for more information about installing software packages.

Type of Package	Package Name	Description
system	AURAacs	Aurora 40X, 80X, WMS 2000/3000 Base Driver
system	AURAacsa	Aurora 40X, 80X, WMS 2000/3000 Asynchronous Driver
system	AURAsio16	Aurora 1600SE device driver
system	SUNWaccr	System Accounting, (Root)
system	SUNWaccu	System Accounting, (Usr)
system	SUNWadmap	System administration applications
system	SUNWadmc	System administration core libraries

Type of Package	Package Name	Description
system	SUNWadmfw	System & Network Administration Framework
system	SUNWadmr	System & Network Administration Root
system	SUNWapppr	PPP/IP Asynchronous PPP daemon configuration files
system	SUNWapppu	PPP/IP Asynchronous PPP daemon and PPP login service
system	SUNWaudio	Audio applications
system	SUNWbcp	*SunOS*[*] 4.x Binary Compatibility
system	SUNWbnur	Networking UUCP Utilities, (Root)
system	SUNWbnuu	Networking UUCP Utilities, (Usr)
system	SUNWbtool	CCS tools bundled with SunOS
system	SUNWcar	Core Architecture, (Root)
application	SUNWcclit	*Solstice*[†] Connect Center license information
system	SUNWcg6	GX (cg6) Device Driver
system	SUNWcsd	Core *Solaris* Devices
system	SUNWcsr	Core *Solaris*, (Root)
system	SUNWcsu	Core *Solaris*, (Usr)
system	SUNWdfb	Dumb Frame Buffer Device Drivers
system	SUNWdoc	Documentation Tools
system	SUNWdtbas	CDE base
system	SUNWdtcor	CORE (CDE)
system	SUNWdtdmn	CDE daemons
system	SUNWdtdst	CDE DESKTOP APPS
system	SUNWdtdte	CDE DESKTOP LOGIN ENVIRONMENT
system	SUNWdtft	CDE fonts
system	SUNWdthe	CDE HELP RUNTIME
system	SUNWdthev	CDE HELP VOLUMES
system	SUNWdticn	CDE icons
system	SUNWdtim	CDE DESKTOP APPS
system	SUNWdtma	CDE man pages
system	SUNWdtrme	CDE README FILES
system	SUNWdtwm	CDE DESKTOP WINDOW MANAGER

Type of Package	Package Name	Description
system	SUNWesu	Extended System Utilities
system	SUNWhsis	HSI/S Driver/Utilities 2.0 v1.6
system	SUNWhsis.2	HSI/S Driver/Utilities 2.0 Patch 101130-12 v1.37
system	SUNWide	IDE device drivers
system	SUNWinst	Install Software
system	SUNWipc	Interprocess Communications
system	SUNWkey	Keyboard configuration tables
system	SUNWkvm	Core Architecture, (Kvm)
system	SUNWlibC	*SPARCompilers*‡ Bundled libC
system	SUNWlibCf	*SPARCompilers* Bundled libC (cfront version)
system	SUNWlibms	*SPARCompilers* Bundled shared libm
application	SUNWlicsw	FlexLM License System
application	SUNWllc2a	LLC2 kernel modules and include files for *Solaris*/*SPARC*§
application	SUNWllc2a.2	LLC2 kernel modules and include files for *Solaris*/*SPARC*
application	SUNWllc2b	LLC2 user programs and man pages for *Solaris*/*SPARC*
system	SUNWloc	System Localization
system	SUNWlpmsg	LP Alerts
system	SUNWlpr	LP Print Service, (Root)
system	SUNWlps	LP Print Service - Server, (Usr)
system	SUNWlpu	LP Print Service - Client, (Usr)
system	SUNWman	On-Line Manual Pages
system	SUNWmd	*Solstice DiskSuite*¶
system	SUNWmd.2	*Solstice DiskSuite*
system	SUNWmfrun	*Motif*** RunTime Kit
system	SUNWmui	Automatic Maintenance Update Installation
system	SUNWnisr	Network Information System, (Root)
system	SUNWnisu	Network Information System, (Usr)
system	SUNWolaud	*OPEN LOOK*†† Audio applications
system	SUNWolbk	*OpenWindows*‡‡ online handbooks
system	SUNWoldcv	*OPEN LOOK* document and help viewer applications

Type of Package	Package Name	Description
system	SUNWoldst	*OPEN LOOK* deskset tools
system	SUNWoldte	*OPEN LOOK* Desktop Environment
system	SUNWolimt	*OPEN LOOK* imagetool
system	SUNWolrte	*OPEN LOOK* toolkits runtime environment
system	SUNWowbcp	*OpenWindows* binary compatibility
system	SUNWowrqd	*OpenWindows* required core package
system	SUNWpci	PCI Simba device drivers
system	SUNWploc	Partial Locales
system	SUNWplow	*OpenWindows* enabling for Partial Locales
system	SUNWpppk	PPP/IP and IP dialup Device Drivers
system	SUNWscbcp	*SPARCompilers* Binary Compatibility Libraries
system	SUNWscpr	Source Compatibility, (Root)
system	SUNWscpu	Source Compatibility, (Usr)
system	SUNWses	SCSI Enclosure Services Device Driver
system	SUNWsolnm	*Solaris* Naming Enabler
system	SUNWssadv	*SPARCstorage*[§§] Array Drivers
system	SUNWssaop	*SPARCstorage* Array Utility
system	SUNWter	Terminal Information
system	SUNWtltk	ToolTalk runtime
system	SUNWtoo	Programming Tools
application	SUNWvlxil	VIS/XIL Support
system	SUNWvolg	Volume Management Graphical User Interface
system	SUNWvolr	Volume Management, (Root)
system	SUNWvolu	Volume Management, (Usr)
system	SUNWvts	Online Validation Test Suite
system	SUNWvtsmn	Online Validation Test Suite Man Pages
application	SUNWx25a	X.25 kernel modules and include files for *Solaris*/*SPARC*
application	SUNWx25a.2	X.25 kernel modules and include files for *Solaris*/*SPARC*
application	SUNWx25b	X.25 user programs and libraries for *Solaris*/*SPARC*
application	SUNWx25b.2	X.25 user programs and libraries for *Solaris*/*SPARC*

Type of Package	Package Name	Description
system	SUNWxcu4	XCU4 Utilities
application	SUNWxgldg	*XGL*¶¶ Generic Loadable Libraries
application	SUNWxgler	*XGL* English Localization
application	SUNWxglft	*XGL* Stroke Fonts
application	SUNWxglrt	*XGL* Runtime Environment
application	SUNWxildg	XIL Loadable Pipeline Libraries
application	SUNWxiler	XIL English Localization
application	SUNWxilow	XIL Deskset Loadable Pipeline Libraries
application	SUNWxilrt	XIL Runtime Environment
system	SUNWxwcft	*X Windows**** common (not required) fonts
system	SUNWxwdv	*XWindows* Window Drivers
system	SUNWxwfnt	*X Windows* platform required fonts
system	SUNWxwman	*X Windows* online user man pages
system	SUNWxwmod	*OpenWindows* kernel modules
system	SUNWxwopt	nonessential MIT core clients and server extensions
system	SUNWxwplt	*X Windows* platform software
system	SUNWxwpsr	Sun4u-platform specific X server auxiliary filter modules
application	cms	Lucent Technologies CentreVu Call Management System
application	spatches	CMS Supplied Solaris Patches

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Back Out a *Solaris* Patch

Overview

If an update, upgrade, or new installation is administered, you may not need a specific patch.

CAUTION:

You should perform the following procedures only when instructed by the TSC or upon receipt of a release letter.

Procedure

To back out a *Solaris* patch, do the following steps.

1. Move to the patch directory by entering the following:

   ```
   cd /var/sadm/patch
   ```

2. Back out a patch by entering the following:

   <*patch-id*>/backout <*patch-id*>

   The <*patch-id*> is identified by the TSC or in the release letter. The system responds as follows:

   ```
   @(#) backoutpatch 3.5 93/08/11
   Doing pkgrm of SUNWcsr.8 package:

   Removal of <SUNWcsr.8> was successful.
   Restoring previous version of files
       .
       .
       .
   XXXX blocks
   Making the package database consistent with restored files:
   backoutpatch finished.
   #
   ```

3. Reboot by entering the following:

   ```
   /usr/sbin/shutdown -y -g0 -i6
   ```

Add *INFORMIX* Structured Query Language (SQL)

Overview

This section describes how to install and set up the *INFORMIX* Structured Query Language (SQL) package on your system if it was not originally installed.

NOTE:

The *INFORMIX* SQL package is optional. Only the *INFORMIX* Standard Engine (SE) and International Language Supplement (ILS) packages are required for installation.

To install the *INFORMIX* SQL software after the system has been installed, you must complete the following tasks:

CAUTION:

If you do not follow these steps, CMS errors will occur.

1. Remove the currently-installed *INFORMIX* software.
2. Install the *INFORMIX* SQL package.
3. Install the *INFORMIX* SE package.
4. Install the *INFORMIX* ILS package.

Prerequisites

- The *Solaris* operating system must be installed
- Log in as *root* at the console.

Remove the Current *INFORMIX* Software

1. At the system prompt, enter `cmsadm`. The CMSADM menu displays.
2. Enter `9` to select the `run_cms` option.
3. Enter `2` to turn off the *CentreVu* CMS. You are returned to the system prompt.
4. Enter the following to move to the *INFORMIX* directory:

   ```
   cd /opt/informix
   ```

5. Verify that you are in the *INFORMIX* directory by entering `pwd`. The system should respond as follows:

   ```
   /opt/informix
   ```

   CAUTION:

   The following command removes every file and subdirectory under the current directory. Make sure that you are in the *INFORMIX* directory.

6. Remove the existing *INFORMIX* software by entering the following:

   ```
   rm -fr *
   ```

   The *INFORMIX* software is now removed.

Install *INFORMIX SQL, SE, and ILS*

See Appendix B, “Factory Software Installation” for *INFORMIX* installation instructions.

CMSADM and CMSSVC Menus

Overview

This appendix describes all of the options of the *CentreVu*® Call Management System (CMS) Administration Menu (`cmsadm`) and the *CentreVu* CMS Services Menu (`cmssvc`).

CentreVu CMS Administration Menu (CMSADM)

Overview

The CMS administration menu (`cmsadm`) is intended for use primarily by the *CentreVu* CMS administrator.

CMSADM Screen

You must log in as *root* to access this menu. To access the cmsadm menu, enter `cmsadm` at the prompt. Select from the options on the *CentreVu* CMS administration menu as shown in the example below:

```
Lucent Technologies CentreVu(R) 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 CMS on or off
Enter choice (1-9) or q to quit:
```

The *CentreVu* CMS Administrator can do the following from this menu:

- Define a new Automatic Call Distribution (ACD) split
- Remove an ACD split
- Back up the file systems to tape
- Estimate *CentreVu* CMS disk requirements, memory requirements, and real-time refresh rate
- Install or remove a feature package
- Turn *CentreVu* CMS on or off.

The following sections explain the options on the *CentreVu* CMS Administration menu.

acd_create

The `acd_create` option on the *CentreVu* CMS Administration menu allows you to define a new ACD. The information you enter here for each ACD is the same as the `setup` option of `cmssvc`.

NOTE:

The ACD must be authorized, and therefore purchased, before it can be added to the *CentreVu* CMS. See Chapter 2, "Setting Up *CentreVu* CMS and Installing Feature Packages," for details.

1. Before you define a new ACD, you must turn off the *CentreVu* CMS by doing the following:
   a. Enter `cmsadm`. The *CentreVu* CMS Administration menu appears.
   b. Enter `9` to select `run_cms`.
   c. Enter `2` to turn off the *CentreVu* CMS. You will see the system prompt.
2. Access the *CentreVu* CMS Administration menu by entering `cmsadm`. The menu appears.
3. Enter `1` to choose `acd_create`.

   The next-available ACD is selected for creation. For example, if there are two ACDs already active, ACD 3 is selected.

4. At the prompts, you need to enter the following information:
   - Switch name for the new ACD
   - Switch model (release)
   - Is Vectoring enabled on the switch (if authorized)?
   - Is Expert Agent Selection (EAS) enabled on the switch (if authorized)?
   - Does the Central Office have disconnect supervision?
   - Local port assigned to the switch
   - Remote port assigned to the switch
   - Device used for x.25 connectivity
   - Number of splits/skills
   - Total split/skill members, summed over all splits/skills
   - Number of shifts
   - Start and stop times of all shifts
   - Number of agents logged into all splits/skills during all shifts
   - Number of trunk groups
   - Number of trunks
   - Number of unmeasured (trunk) facilities
   - Number of call work codes
   - Number of vectors (if vectoring is enabled on the switch)
   - Number of Vector Directory Numbers (VDNs) (if vectoring is enabled on the switch)

   After you have entered the required information, the program responds:

```
Updating database.

Computing space requirements and file system space availability.

ACD <name> (X) created successfully.
```

5. Turn *CentreVu* CMS back on by doing the following:
   a. Enter `cmsadm`. The *CentreVu* CMS Administration menu appears.
   b. Enter `9` to select `run_cms`.
   c. Enter `1` to turn on the *CentreVu* CMS.

      A message appears telling you that *CentreVu* CMS is running.

acd_remove

The `acd_remove` option on the *CentreVu* CMS Administration menu allows you to remove an ACD split.

NOTE:

An ACD split must exist before it can be removed.

NOTE:

If you are removing the master ACD split, you must first designate some other ACD split as the master. Use this procedure:

1. From the main CMS menu, select `System Setup - CMS State`.
2. Tab to the `Master ACD` field and enter a new name.
3. Access the action list and select `Modify`.
4. Return to the main menu and select `Logout`.

Use the following procedure to remove an ACD split:

1. You must turn off the *CentreVu* CMS by doing the following:
   a. Enter `cmsadm`. The *CentreVu* CMS Administration menu appears.
   b. Enter `9` to select `run_cms`.
   c. Enter `2` to turn off the *CentreVu* CMS. You will see the system prompt.
2. Access the *CentreVu* CMS Administration menu by entering `cmsadm`. The menu appears.
3. Enter `2` to select the `acd_remove` option.

4. To select the ACD split you want to remove, enter your choice (1-8). The program responds as follows:

```
All administration and historical data for this ACD will be
DELETED.
Do you want to continue and delete all data for this ACD? (y/n):
```

5. Enter y. The program responds as follows:

```
Removal of data for this ACD started in the background.
A completion message will be logged in
/cms/install/logdir/admin.log.
```

6. Since the ACD split is removed in the background, you can turn *CentreVu* CMS back on before the removal is complete by doing the following:
   a. Enter `cmsadm`. The *CentreVu* CMS Administration menu appears.
   b. Enter `9` to select `run_cms`.
   c. Enter `1` to turn on the *CentreVu* CMS.

      A message appears telling you that *CentreVu* CMS is running.

backup

The `backup` option on the *CentreVu* CMS Administration menu allows you to back up your file systems.

NOTE:

You do not need to turn off *CentreVu* CMS to start the backup. If *CentreVu* CMS is on, the system turns off *CentreVu* CMS during the portion of the backup which needs *CentreVu* CMS off. When that portion completes, the system turns *CentreVu* CMS back on.

See “Perform a CMSADM File System Backup” in Chapter 5, “Maintenance,” for more information about this option.

diskmap

The `diskmap` option on the *CentreVu* CMS Administration menu allows you to estimate *CentreVu* CMS disk requirements.

1. Access the *CentreVu* CMS Administration menu by entering `cmsadm`. The menu appears.
2. Enter `4` to select the `diskmap` option.
3. Answer the prompts that appear on the screen to estimate *CentreVu* CMS disk requirements.

   NOTE:

   You may back up one prompt at a time by entering any negative number (for example, -1).

   You will need the following information:

   - Customer name
   - *CentreVu* CMS host computer type
   - Total amount of Random Access Memory (RAM) equipped.
   - If you answer `y` to go to the table allocation part of the program, then you must enter the following information (in megabytes):
     - — Total amount of disk space
     - — Amount of agent, split, and trunk data
     - — Amount of trunk group, vector, and VDN data
     - — Amount of call work code, exception, agent trace, and call history data
     - — Amount of forecast, agent login/logout, and non-CMS customer data.

     You are asked if you want to run another table allocation case. If you answer `n`, then you will continue by entering the following information:
   - Will pseudo-ACD data be added? (y/n)
   - Number of ACDs (1-8)

     Note that later in this procedure, ACD numbering starts with 0 and goes to 7. This corresponds to ACDs 1-8.
   - Number of minutes in one interval (15, 30, 60)
   - Start and stop times for data collection

- Number of shifts. You must enter the following information for each shift:
  - — Number of agents
  - — Start time
  - — Stop time.
- Amount of pseudo-ACD data in MBytes
- Number of splits, trunk groups, and trunks
- Amount of split, trunk group, and trunk pseudo-ACD data in MBytes
- Number of vectors, VDNs, and call-work-codes (CWC)
- Amount of vector, VDN, and CWC pseudo-ACD data in MBytes
- Internal or external call history enabled?

  If you answer n, you will be asked if external call history is enabled, and you must enter the following:
  - — Number of exception, agent trace, and call history records
  - — Amount of exception, agent trace, and call history pseudo-ACD data in MBytes
- Is Internet Call Center enabled? If enabled, you must answer the following:
  - — Number of Internet VDNs and number of web pages
  - — Amount of Internet VDN and web-page pseudo-ACD data in MBytes
- Number of days of intrahour data saved for, number of days of daily data saved for, number of weeks of weekly data saved for, and number of months of monthly data saved for splits, agents, trunk groups, trunks, vectors, VDNs, and CWCs.
- Average number of times an agent logs out during a shift
- Amount of agent login/logout pseudo-ACD data in MBytes
- Is Forecasting enabled? If you answer y, then you must enter the following information:
  - — Number of days of intrahour data for splits
  - — Number of days of intrahour data for trunk groups
  - — Number of days of daily data for splits

  - — Number of special days (average per split)
  - — Number of days that current day reports will be saved (average per split)
- Amount of forecast pseudo-ACD data, in MBytes

4. Table sizes for the first ACD are now displayed. If there are more ACDs to enter data, the preceding procedure must be repeated for each ACD. After data for all ACDs are completed, you must enter the following data:
   - Enter any extra disk space that the customer wants for non-CMS activities (in MBytes)
   - Does VESP reside on this machine?

   The total recommended disk space is now displayed. You are asked if you want to do disk allocations now or if you want to run another case. If you do not run another case, the procedure is finished.

memory

The `memory` option on the *CentreVu* CMS Administration menu allows you to estimate your memory requirements.

1. Access the *CentreVu* CMS Administration menu by entering `cmsadm`. The menu appears.
2. Enter `5` to select the `memory` option.
3. At the prompts, you must supply the requested information:

   NOTE:

   You may back up one prompt at a time by entering any negative number (for example, -1).
   - Customer name
   - *CentreVu* CMS host computer type
   - Whether or not you are willing to allow memory paging (paging reduces performance, but requires less memory)
   - Number of ACDs

- For each ACD, you must supply the following information:
  - — Switch model
  - — Maximum number of agents simultaneously logged in

    NOTE:

    If an agent logs in to multiple splits or skills, count that agent multiple times.
  - — Number of splits or skills, trunk groups, and trunks
  - — Number of VDNs and call work codes
  - — Whether agent trace is enabled
  - — Whether Internet call center is enabled
  - — Whether internal or external call history is enabled
- Whether Open Database Connectivity (ODBC) is enabled
- Number of terminals simultaneously logged in to CMS
- Number of CentreVu Supervisor (COW) sessions simultaneously logged in to CMS
- Average number of real-time reports running per terminal
- Total number of realtime reports running
- Number of historical plus forecasting reports running simultaneously during prime time
- Number of ODBC reports running simultaneously during prime time
- Number of realtime exception reports running simultaneously during prime time
- Number of windows simultaneously running admin screens during prime time
- Number of windows simultaneously doing custom report creation or editing during prime time
- Number of windows simultaneously running call history or agent trace reports during prime time

An estimate of total memory used displays, along the recommended minimum memory configuration.

You are then prompted to run another case.

4. Enter y to run another case or n to quit. If you answer y, you are returned to entering a *CentreVu* CMS host computer type.

realtime

The `realtime` option on the *CentreVu* CMS Administration menu allows you to estimate the real-time report refresh rate your system needs.

1. Access the *CentreVu* CMS Administration menu by entering `cmsadm`. The menu appears.
2. Enter `6` to select the `realtime` option.
3. At the prompts, you must supply the requested information:

   NOTE:

   You may back up one prompt at a time by entering any negative number (for example, -1).

   - Customer name
   - *CentreVu* CMS host computer type

     The numbers after the computer type give the speed of the processor and the number of processors. For example, the computer designated as “Sparc 5/170” has one 170 MHz processor. The computer designated as “UE3000/2502” has two 250 MHz processors.
   - Number of ACDs
   - Number of agents per split and trunks per trunk group
   - Number of agents per group report and splits per split report
   - Number of vectors per vector report, VDNs per VDN report, and VDNs per VDN skill preference report
   - Supply the following for each ACD:
     - — Archiving intervals in minutes (15, 30, or 60)
     - — Will any of the following be used: agents in multiple splits, without EAS, Generic 2.2 EAS, or G3V4 with Expected Wait Time, rolling Average Speed of Answer, ii-digits, and Automatic Number Identification (ANI).
     - — Will most calls be complex (for example, will they involve either a hold, transfer, conference, or supervisor assist)
     - — Whether internal call history is enabled
     - — Whether external call history is enabled
     - — Call rate in calls per hour

  - — Approximate average agent service time, in minutes
  - — Number of agents traced simultaneously
- Number of terminals simultaneously logged in to CMS
- Number of CentreVu Supervisor (COW) sessions simultaneously logged in to CMS
- Number of internal call history or agent trace reports that will be run per hour (during prime time)
- Number of historical plus forecasting reports that will be run per hour (during the day)
- Whether Internet call center is enabled
- If Internet call center is enabled, the maximum number of hits expected per hour, summed over all web pages being tracked
- Whether ODBC is enabled
- If ODBC is enabled, the number of ODBC reports that will be run per hour
- Enter either the average number of realtime reports running per session (a different refresh period is automatically assigned for each report) or the number of reports of each type that will be running simultaneously (you must manually enter a refresh period for each report).

  If you enter `1` to get different periods for different types of reports, you must enter the following information:

  - — Number of real-time reports running per session
  - — You can answer `y` to give preferential treatment to running some reports faster at the expense of other reports
  - — Do you want to change the number of the reports

    If you answer `n` to changing the number of reports, do you want to see the list of CPU times so that you can do completely general tradeoffs?

    If you answer `y` to changing the number of reports, you are returned to choose either `1` or `2`.

  If you enter `2` to get a single period, you must manually enter the number of each type of report that is running.

  - — Split report
  - — Split status report
  - — Split top ag status report

- Split aux report
- Split top agent report
- Split call profile report
- Agent report
- Group report
- Queue/agent status report
- Queue/agent top report
- Queue/agent summary report
- Trunk group report
- Event count summary report
- Multi-ACD report
- Multi-ACD top report
- Graph split report
- Graph queue report
- Graph split call profile report
- Graph vdn call profile report
- Vector report
- VDN report
- VDN call profile report
- VDN skill preference report.

You can then change the number of reports if you change your mind.

- Whether you want to see the list of CPU times (the TAUs) so that you can do completely general tradeoffs.

  If you answer y, the CPU times are displayed.

You are then asked if you want to analyze another case.

4. Enter y to run another case or n to quit.

   If you answer y, you are returned to entering a *CentreVu* CMS host computer type.

pkg_install

The `pkg_install` option on the *CentreVu* CMS Administration menu allows you to install a feature package.

1. Access the *CentreVu* CMS Administration menu by entering `cmsadm`. The menu appears.

2. Enter `7` to select the `pkg_install` option. The program responds as follows:

```
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.

3. Enter the number that corresponds to the desired package. For more information, see Chapter 2, “Setting Up *CentreVu* CMS and Installing Feature Packages.”

pkg_remove

The `pkg_remove` option on the *CentreVu* CMS Administration menu allows you to remove a feature package. This procedure removes all files and database items associated with the feature package.

CAUTION:

Be careful when removing a package: all features and data associated with that package will be lost.

1. Access the *CentreVu* CMS Administration menu by entering `cmsadm`. The menu appears.
2. Enter `8` to select the `pkg_remove` option.

   A list of *CentreVu* CMS features that can be removed is displayed.
3. Enter the number corresponding to the feature package that you want to remove.

   A message is displayed telling you when the feature is removed.

run_cms

The `run_cms` option on the *CentreVu* CMS Administration menu allows you to turn *CentreVu* CMS on or off.

1. Access the *CentreVu* CMS Administration menu by entering `cmsadm`. The menu appears.
2. Enter `9` to select the `run_cms` option.
3. Enter `1` to turn on *CentreVu* CMS or `2` to turn off *CentreVu* CMS.

CentreVu CMS Services Menu (CMSSVC)

Overview

The *CentreVu* CMS Services (`cmssvc`) menu is intended for use primarily by Lucent Technologies services personnel.

CMSSVC Menu Screen

You must log in as *root* to access this menu. To access the cmssvc menu, enter `cmssvc` at the prompt. Select from the options on the *CentreVu* CMS Services menu as shown below:

```
Lucent Technologies CentreVu(R) Call Management System Services
Menu

Select a command from the list below.
  1) auth_display Display feature authorizations
  2) auth_set     Authorize capabilities/capacities
  3) run_cms      Turn CentreVu CMS on or off
  4) setup        Set up the initial configuration
  5) swinfo       Display switch information
  6) swsetup      Change switch information
  7) patch_inst   Install a single CMS patch from CD
  8) patch_rmv    Backout an installed CMS patch
  9) load_all     Install all CMS patches found on CD
 10) back_all     Backout all installed CMS patches from machine
Enter choice (1-10) or q to quit:
```

This menu allows services personnel to do the following:

- Display *CentreVu* CMS authorizations
- Authorize *CentreVu* CMS feature packages and capacities
- Turn *CentreVu* CMS on and off
- Set up the initial *CentreVu* CMS configuration
- Display switch information
- Change switch information
- Install a *CentreVu* CMS patch
- Back out an installed *CentreVu* CMS patch

- Install all *CentreVu* CMS patches
- Back out all installed *CentreVu* CMS patches.

The following sections explain the options on the *CentreVu* CMS Services menu.

auth_display

The `auth_display` option on the *CentreVu* CMS Services menu allows you to display *CentreVu* CMS authorizations.

1. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
2. Enter `1` to select the `auth_display` option.

   The purchased version of *CentreVu* CMS and the current authorization status for CMS features and capacities are displayed:

```
                          Version purchased:   R3V6

                               Capability/Capacity   Authorizat
                               -------------------   ----------
                                         vectoring   authorized
                                       forecasting   installed
                                          graphics   authorized
                                external call history   authorized
                               expert agent selection   not author
                                 external application   authorized
                           More than 2000 VDNs measured   authorized
               Lucent Technologies CentreVu(R) Supervisor   authorized
          Lucent Technologies CentreVu(R) Report Designer   authorized
                    Maximum number of split/skill members   1000
                                 Maximum number of ACDs   8
                  Simultaneous CentreVu Supervisor logins   200
```

   The possibilities for authorization status are as follows:

   - Authorized — The feature has been paid for, and authorization has been turned on.
   - Not authorized — The feature has not been paid for, or authorization has not been turned on.
   - Installed — The feature is authorized, and the software to support the feature has been installed.

For more information on this option, see Chapter 2, “Setting Up *CentreVu* CMS and Installing Feature Packages.”

auth_set

The `auth_set` option on the *CentreVu* CMS Services menu allows you to authorize *CentreVu* CMS features and capacities.

1. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
2. Enter `2` to select the `auth_set` option. The program responds as follows:

```
Password:
```

3. Enter the appropriate password. This password is available only to authorized personnel.
4. See Chapter 2, “Setting Up *CentreVu* CMS and Installing Feature Packages,” for more information about this option.

run_cms

The `run_cms` option on the *CentreVu* CMS Services menu allows you to turn *CentreVu* CMS on and off.

1. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
2. Enter `3` to select the `run_cms` option.
3. Enter `1` to turn on *CentreVu* CMS or `2` to turn off *CentreVu* CMS.

setup

The `setup` option on the *CentreVu* CMS Services menu allows you to set up the initial *CentreVu* CMS configuration. For example, you can set up the type of backup device you want to use (QIC 2.5-GB, 14-GB, and so on).

CAUTION:

If you run `setup` on an in-service system, you will lose all customer data on that system.

NOTE:

Do not confuse this option with the `swsetup` option which is used to change the switch information.

See Chapter 2, "Setting Up *CentreVu* CMS and Installing Feature Packages," for more information about this option.

swinfo

The `swinfo` option on the *CentreVu* CMS Services menu allows you to display the switch options currently assigned for each ACD.

1. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
2. Enter `5` to select the `swinfo` option.
3. Select the ACD you want to show information for.

   The following information is displayed:

   - Switch name
   - Switch model (release)
   - If Vectoring is enabled
   - If Expert Agent Selection is enabled
   - If the Central Office has disconnect supervision
   - Local port
   - Remote port
   - Device used for the x.25 link.

swsetup

The `swsetup` option on the *CentreVu* CMS Services menu allows you to change the switch options for each ACD.

NOTE:

Do not confuse this option with the `setup` option which is for setting up *CentreVu* CMS.

NOTE:

When you change switch parameters, you should also check the parameters in the *CentreVu* CMS System Setup: Data Storage Allocation window. In particular, if you enable vectoring, you will need to allocate space for VDNs and vectors. Changing the switch release may change the number of measured entities allowed and may also have an impact on the storage allocation for each entity.

1. Turn *CentreVu* CMS off by doing the following:
   a. Enter `cmssvc`. The *CentreVu* CMS Services menu appears.
   b. Enter `3` to select `run_cms`.
   c. Enter `2` to turn off the *CentreVu* CMS. You will see the system prompt.
2. After the *CentreVu* CMS is turned off, enter `cmssvc` again.
3. Enter `6` to select the `swsetup` option.
4. Answer the prompts that appear on the screen. You need the following information:
   - Switch name
   - Switch model (release)
   - If Vectoring is enabled
   - If Expert Agent Selection is enabled
   - If the Central Office has disconnect supervision
   - Local port

- Remote port
- Device used for the x.25 link.

A display of the information is shown. The system will then ask if the above switch administration is correct.

5. Answer `y` or `n`.
6. Turn *CentreVu* CMS on by doing the following:
   a. Enter `cmssvc`. The *CentreVu* CMS Services menu appears.
   b. Enter `3` to select `run_cms`.
   c. Enter `1` to turn on the *CentreVu* CMS. You will see the system prompt.

patch_inst

The `patch_inst` option on the *CentreVu* CMS Services menu allows you to install a single *CentreVu* CMS patch from the CD-ROM.

1. Load the "*CentreVu* CMS R3V6" CD into the CD-ROM drive.
2. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
3. Enter `7` to select the `patch_inst` option.
4. Enter the patch number.

   The system installs the patch. As it does so, it displays messages similar to the following:

```
@(#) installpatch 1.0 96/04/01
cmspx-s
Generating list of files to be patched...
Creating patch archive area...
Saving a copy of existing files to be patched...
xxxx blocks
        File compression used
Installing patch packages...

Doing pkgadd of cmspx-s package:
Installation of <cmspx-s> was successful.

Patch packages installed:
        cmspx-s

Patch installation completed.
```

5. After installing all of the patches, enter `eject cdrom` to eject the CD-ROM.
6. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes.

patch_rmv

The `patch_rmv` option on the *CentreVu* CMS Services menu allows you to back out a single *CentreVu* CMS patch installed on the machine.

1. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
2. Enter the number for the `patch_rmv` option.
3. Enter the patch number.

   The system removes the patch.
4. Repeat Steps 2 and 3 for every patch you wish to remove.

load_all

The `load_all` option on the *CentreVu* CMS Services menu allows you to install all *CentreVu* CMS patches from the CD-ROM.

1. Load the "*CentreVu* CMS R3V6" CD into the CD-ROM drive.
2. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
3. Enter `9` to select the `load_all` option.

4. Enter y.

   The system installs the patches. As it does so, it displays — for each patch installed — messages similar to the following:

```
@(#) installpatch 1.0 96/04/01
cmspx-s
Generating list of files to be patched...
Creating patch archive area...
Saving a copy of existing files to be patched...
xxxx blocks
        File compression used
Installing patch packages...

Doing pkgadd of cmspx-s package:
Installation of <cmspx-s> was successful.

Patch packages installed:
        cmspx-s

Patch installation completed.
```

5. After installing all of the patches, enter `eject cdrom` to eject the CD-ROM.
6. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes.

back_all

From the `back_all` option on the *CentreVu* CMS Services menu, you can back out all *CentreVu* CMS patches installed on the machine.

1. Access the *CentreVu* CMS Services menu by entering `cmssvc`. The menu appears.
2. Enter the number for the `back_all` option.

   The system removes all of the installed patches. As it does so, it displays a message for each patch removed.

Factory Software Installation

Overview

This appendix outlines the software installation procedures performed by the factory for *Sun*[*] *Enterprise*[†] 3000 computers and *Sun SPARCserver*[‡] computers. This procedure is also known as Assembly, Load, and Test (ALT). Except where noted, all procedures are required. You can use these procedures to bring systems in the field up to factory standards.

The factory performs the following installation procedures:

- Install the *Sun Solaris*[§] 2.5.1 operating system (Hardware: 11/97 version)
- Install the Common Desktop Environment (CDE) 1.0.2
- Install the *Sun* Online Validation Test Suite (VTS) 2.1.1
- Install the *SunLink*[¶] High-Speed Serial Interface/Sbus (HSI/S) Version 2.0 software (optional)
- Install the Bay Networks Annex Network Terminal Server (NTS) drivers (optional)
- Install the *Solstice*[**] for Server Connect X.25 Network Interface Version 9.1
- Install the *INFORMIX*[††] software
  - — Structured Query Language (SQL) Version 7.20 (optional)
  - — Standard Engine (SE) Version 7.22
  - — International Language Supplement (ILS) Version 9.13
- Install the *Solstice DiskSuite*[‡‡] 4.1 software
- Install the *Sun Solaris* patches
- Run the *Solstice DiskSuite* setup scripts
- Install the *CentreVu*® Call Management System (CMS) R3V6 software
- Install the CMS patches (if needed)
- Install the CMS Supplemental Services software

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‡_SPARCserver_ is a registered trademark of SPARC International, Inc.
§_Solaris_ is a registered trademark of Sun Microsystems, Inc.
¶_SunLink_ is a registered trademark of Sun Microsystems, Inc.
**_Solstice_ is a trademark of Sun Microsystems, Inc.
††_INFORMIX_ is a registered trademark of Informix Software, Inc.
‡‡_Solstice DiskSuite_ is a trademark of Sun Microsystems, Inc.

- Set up the CMS software
- Install the Open Database Connectivity (ODBC) software (optional)
- Install the Aurora ports card drivers (optional; available on *SPARCserver* computers only)
- Set up the remote console
- Administer the NTS (optional)
- Perform a CMSADM backup.

NOTE:

When executing commands remotely that may take a long time to complete (such as `cpio` and `/olds` commands), use the `nohup` command to ensure that the command will complete without interruption in case the data line disconnects. The following is an example using the `nohup` command:

```
nohup  cpio  -icmudf  -C  10240 -I /dev/rmt/0c “/cms” | tee
```

Install the *Solaris* Operating System

Overview

The *Solaris* installation program is a menu-driven, interactive program that guides you step by step through installing the *Solaris* software. It also has on-line help to answer your questions.

You navigate through the *Solaris* installation program with the mouse. Your keyboard, however, provides similar functionality. For example, you can use the Tab or arrow keys to move through fields and the Enter key to initiate actions.

Installing the *Solaris* 2.5.1 operating system on the *Sun* system consists of the following tasks:

- Boot from the Solaris 2.5.1 Hardware 11/97 CD
- Identify the system
- Set the date and time
- Select the *Solaris* 2.5.1 system files
- Partition the hard disks
- Install the selected options
- Assign a root password (the default is no password)
- Enable remote console access
- Set the EEPROM parameters for the A and B ports
- Create the `/var/crash/uname` directory
- Turn on the system activity recorder
- Unload the CD.

Prerequisites

Obtain the following:

- "*Solaris* 2.5.1 Hardware: 11/97" CD
- The system's name (as designated by Lucent Technologies' Technical Service Center [TSC])
- The system's Internet Protocol (IP) address (this may be the factory default or an address in a customer's network)
- The number and size of the disks equipped with the system.

Boot from the *Solaris* 2.5.1 Hardware 11/97 CD

This section describes how to boot the system from the *Solaris* 2.5.1 CD-ROM using the local console.

To perform this operation using a remote terminal, see *CentreVu* CMS R3V6 Hardware Maintenance and Troubleshooting (585-215-861).

NOTE:

The screens in this section are representative of a typical installation. Not all screens will match your installation. When possible, the recommended selections are shown with boxes highlighting the selection.

1. Turn on the system.
2. As the system begins booting up, press **Stop** and **A** simultaneously. The system responds as follows:

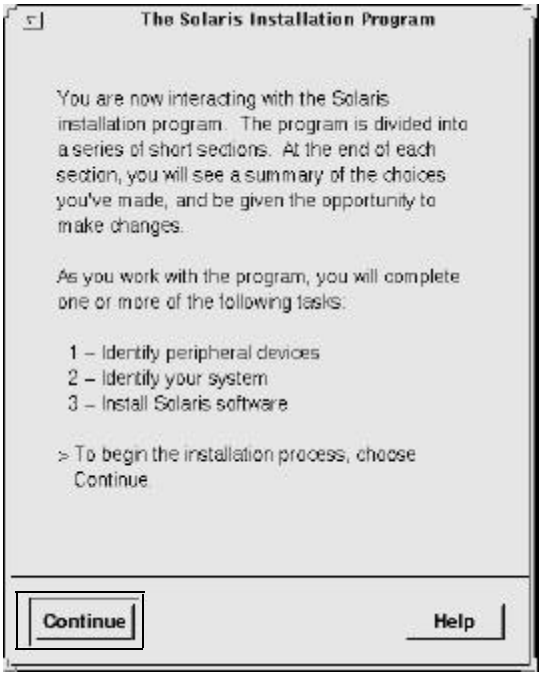
```
ok
```

3. Load the "*Solaris* 2.5.1 Hardware: 11/97" CD into the CD-ROM drive.
4. Boot the system from the CD-ROM by entering the following:

   ```
   boot cdrom
   ```

   The boot process takes about 2-10 minutes depending on platform.

The *Solaris* Installation Program screen appears:



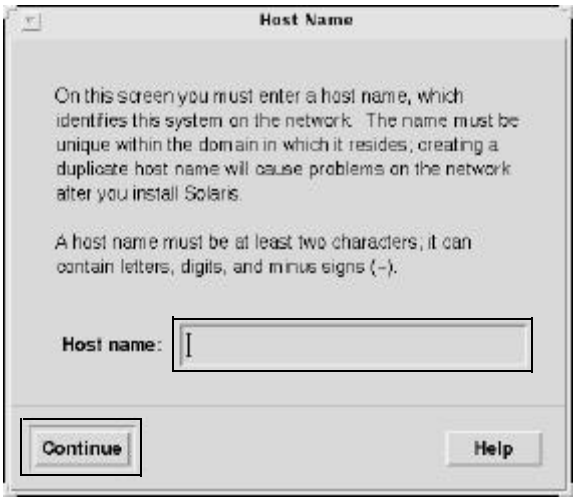
5. Click Continue.

Identify the System

The Identify This System screen appears:

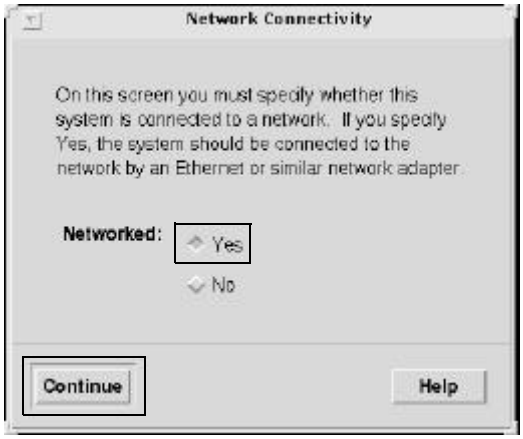
1. Click Continue.

   The Host Name screen appears:



2. Click the Host name box and enter the host name for the system. The host name for a specific system was designated by the TSC Provisioning personnel. Host names are case-sensitive and cannot start with a number. When finished, click Continue.

   The Network Connectivity screen appears:



3. Click Yes, and then click Continue.

   NOTE:

   If the system is equipped with more than one network board, the Primary Network Interface screen appears. Select “le0” for a *SPARCserver* computer or “hme0” for an *Enterprise* 3000 computer, and then click Continue.

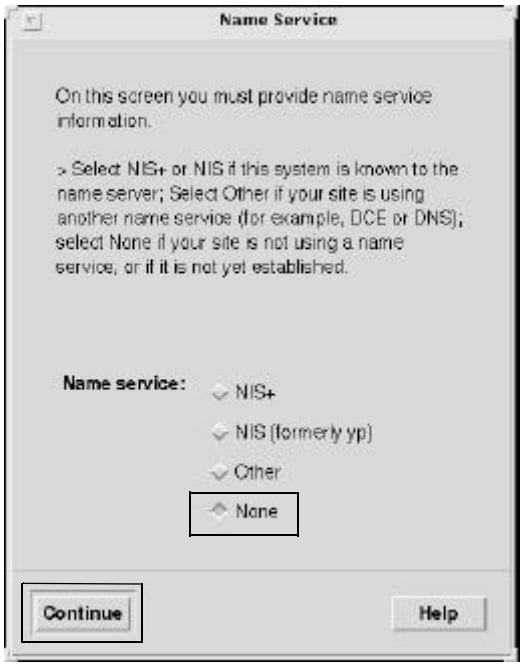
   The IP Address screen appears:

4. Click the IP address box and enter the IP address. IP address 129.200.9.1 is the factory default. You should enter the factory default address unless there is an actual network address for this site. Click Continue when finished.

   The Confirm Information screen appears:

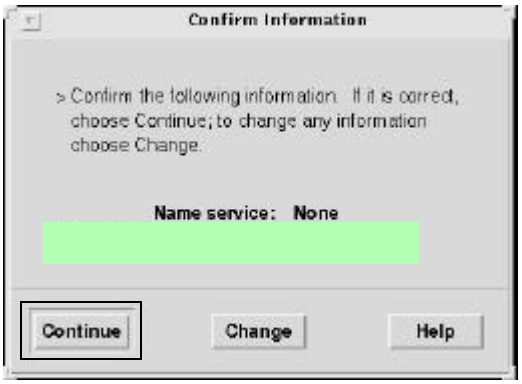
5. Click Continue if the displayed information is correct. If you click Change, the program returns to the Host Name screen.

   The Name Service screen appears:



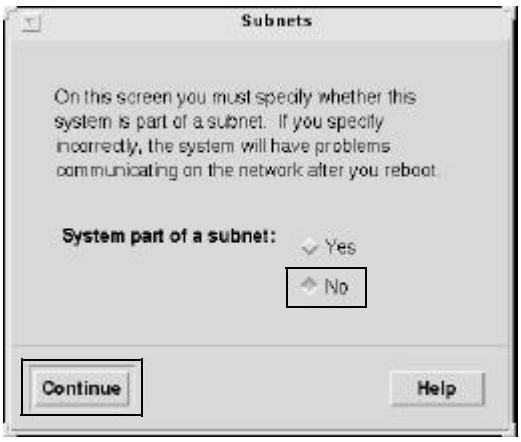
6. Click None, and then click Continue.

   The Confirm Information screen appears:



7. Click Continue if the displayed information is correct. If you click Change, the program returns to the Name Service screen.

The Subnets screen appears:



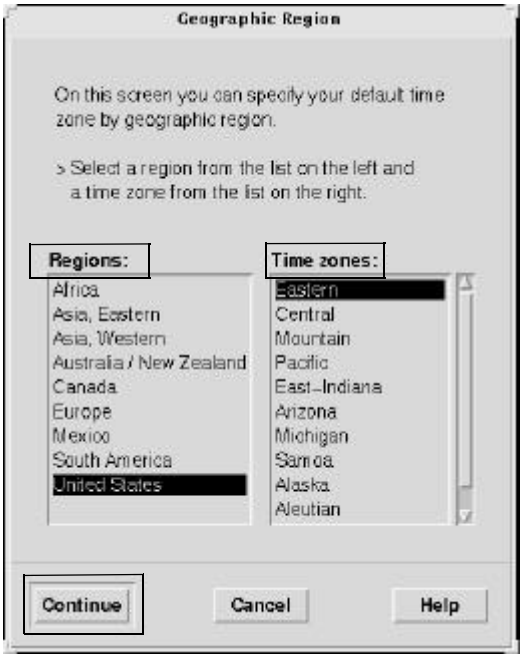
8. Click No, and then click Continue.

Set the Date and Time

The Time Zone screen appears:

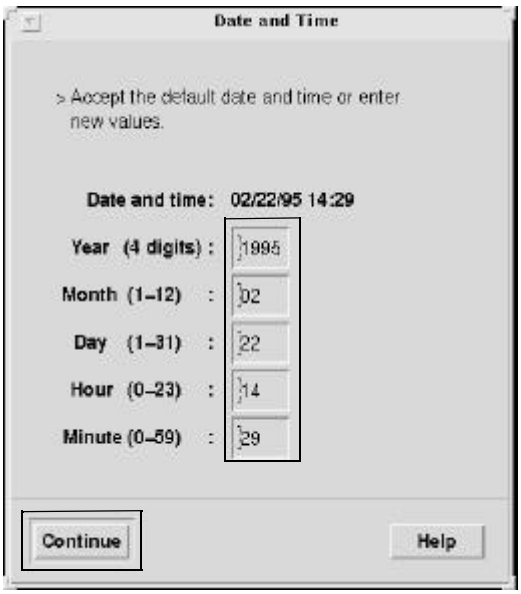
1. Click Geographic region, and then click Set.

   The Geographic Region screen appears:



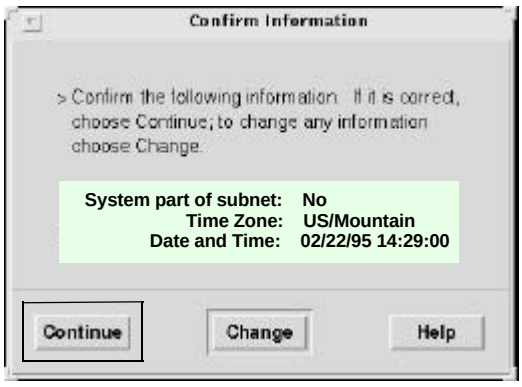
2. Click to highlight the region and time zone where this system is located, and then click Continue.

The Date and Time screen appears:



3. Click Continue to accept the default date and time, or click and drag a value in a field you wish to change, and enter the appropriate information. Click Continue when all the information is correct.

   The Confirm Information screen appears:

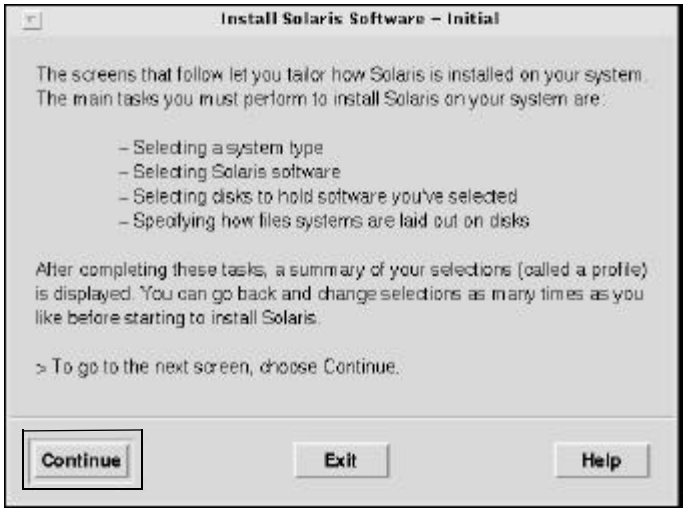


4. If the displayed information is correct, click Continue. If you click Change, the program returns to the Subnets screen.

   The system date and time are now set. The program continues with the selection of *Solaris* 2.5.1 system files.

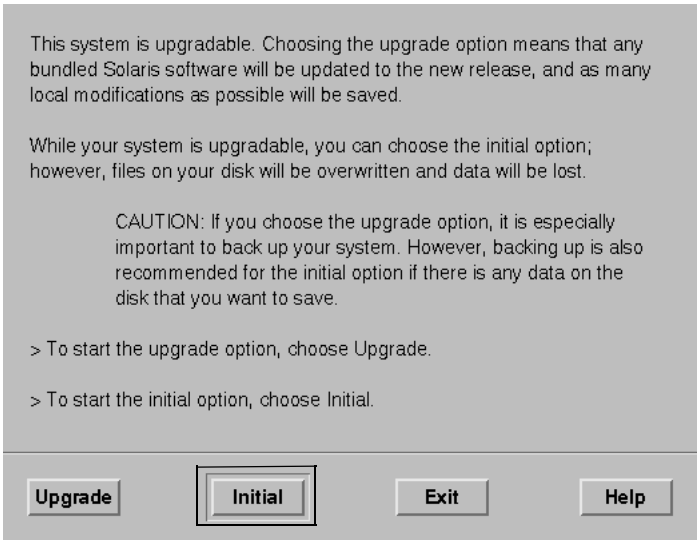
Select the *Solaris* 2.5.1 System Files

After a few minutes, the Install *Solaris* Software screen appears:



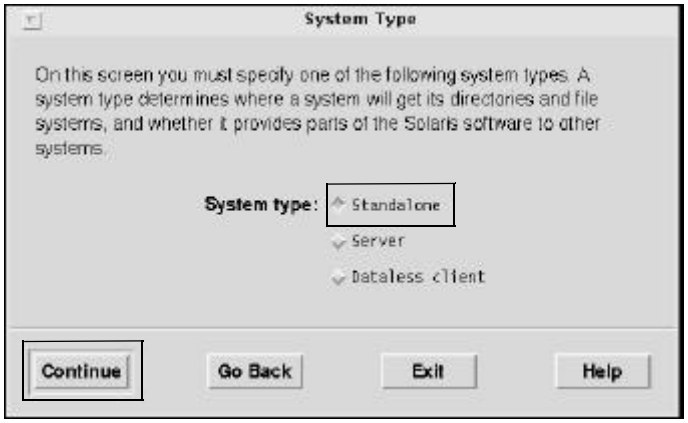
1. Click Continue.

   If *Solaris* is already installed on the machine, which is the case for machines in the field, the Upgrade System screen appears.



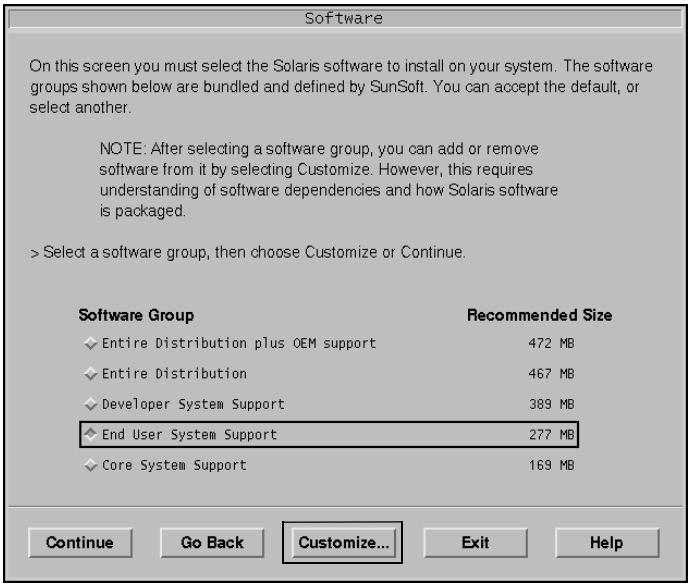
2. Click Initial to reinstall the operating system.

The System Type screen appears:



3. Click Standalone, and then click Continue.

   The Software screen appears:

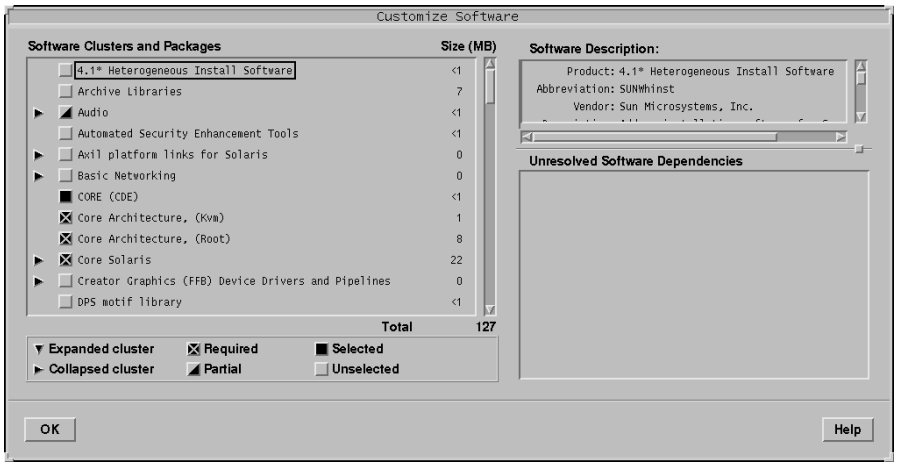


4. Click End User System Support, and then click **Customize** (*NOT* Continue).

   NOTE:

   If you click Continue instead of Customize, the Disks screen (shown on page B-15) appears, which is incorrect. If this happens, click Go Back from the Disks screen.

The Customize Software screen appears:



5. Click to select the following packages (using the scroll bar when necessary to bring the package names into view):
   - Basic Networking
   - On-Line Manual Pages
   - Point-to-Point Protocol
   - System Accounting
   - Terminal Information.

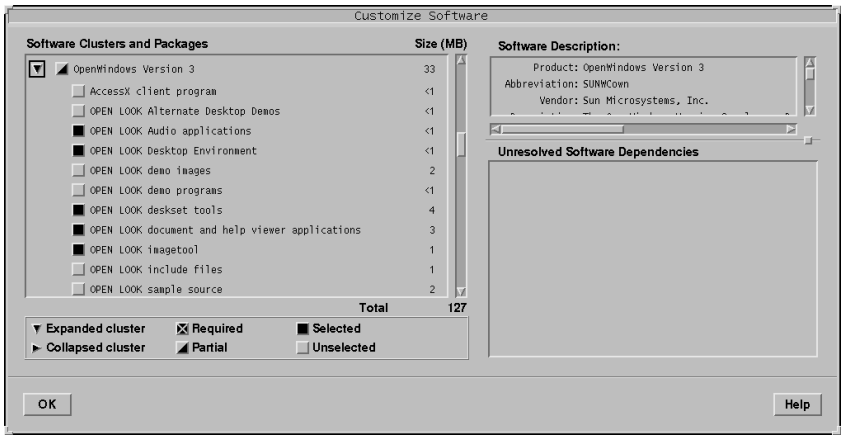
   NOTE:

   Packages are “selected” when the box is filled in. Do not deselect any packages that are already selected.

6. Scroll up, and then click the triangular icon to expand the “*OpenWindows** Version 3” cluster.

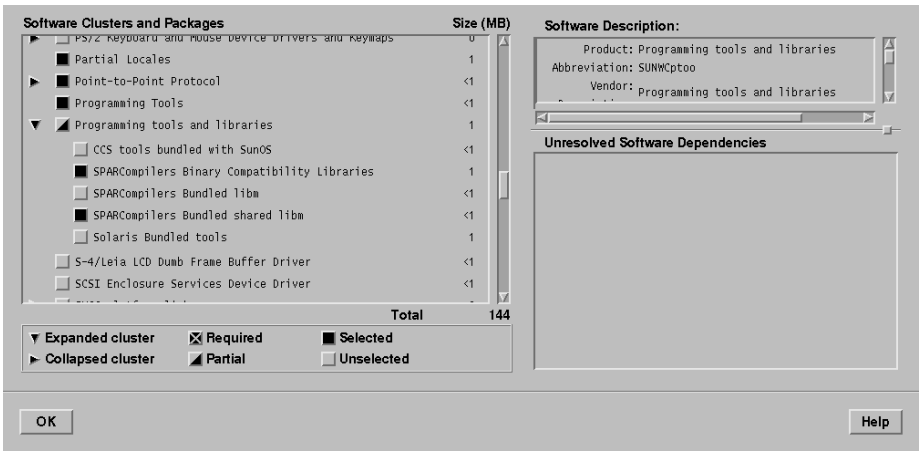
**OpenWindows* is a trademark of Sun Microsystems, Inc.

The program responds as follows:



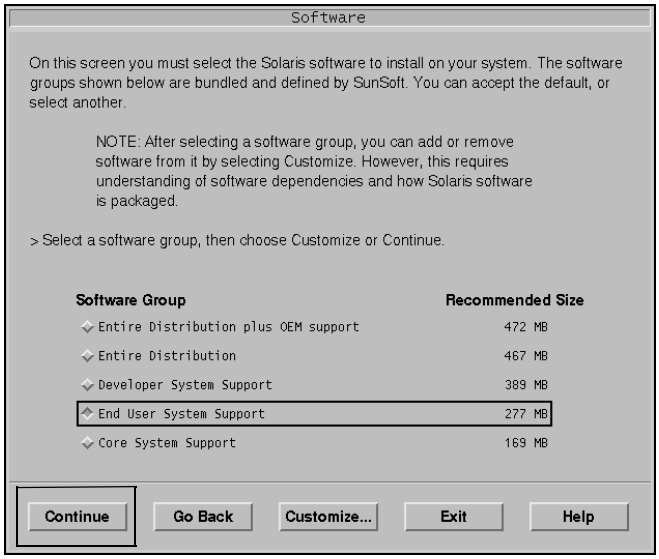
7. Scroll down and select the “X Windows online user man pages” package.
8. Scroll up, then click the triangular icon to collapse the “*OpenWindows* Version 3” cluster.
9. Scroll down and then click the triangular icon to expand the “Programming tools and libraries” cluster.

   The program responds as follows:



10. Select the “CCS tools bundled with *Sun*OS” package.
11. Click the triangular icon to collapse the “Programming tools and libraries” cluster.

12. Click OK. The Software screen appears again.

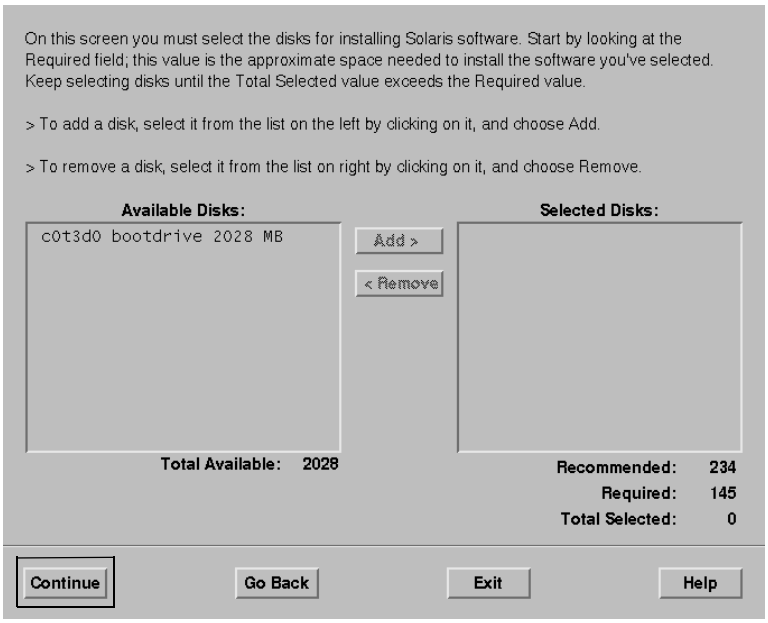


13. Click Continue.

    The *Solaris* 2.5.1 software packages are now selected and will be installed after the disks are partitioned.

Partition the Hard Disks

The Disks screen appears:

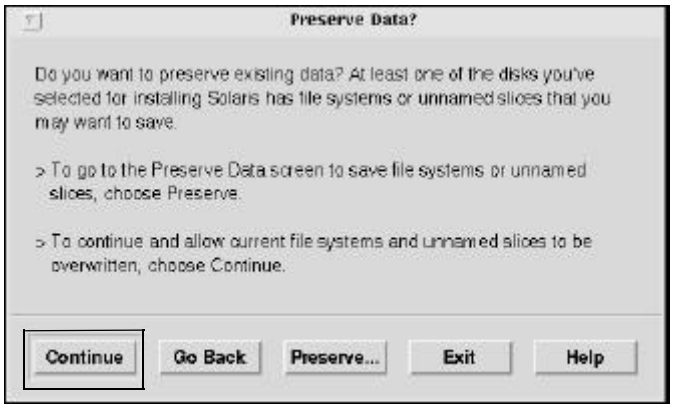


NOTE:

In the above screen, all the disks equipped with the system should be listed as available. If not, you may have a connectivity problem. The screen examples in this section may differ according to your system's disk configuration. The example above shows a single 2.1 GB disk.

1. Select the first disk.
2. Click Add so the available disk becomes a selected disk.
3. Move all disks into the "selected" column by repeating Steps 1 and 2.
4. After all of the disks have been moved to the "selected" column, click Continue.

The Preserve Data screen appears:

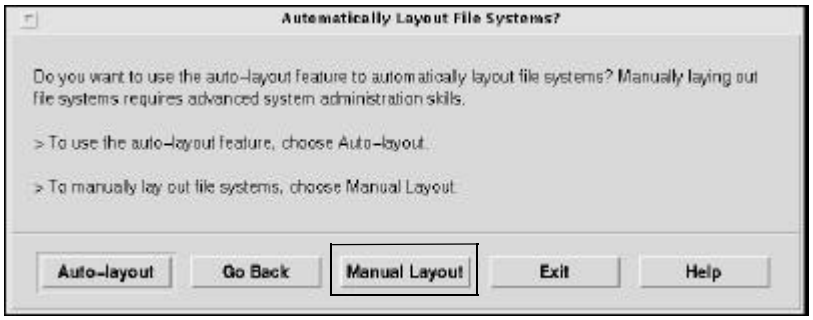


NOTE:

The Preserve Data screen may not display if this is the first time the operating system has been installed on your machine.

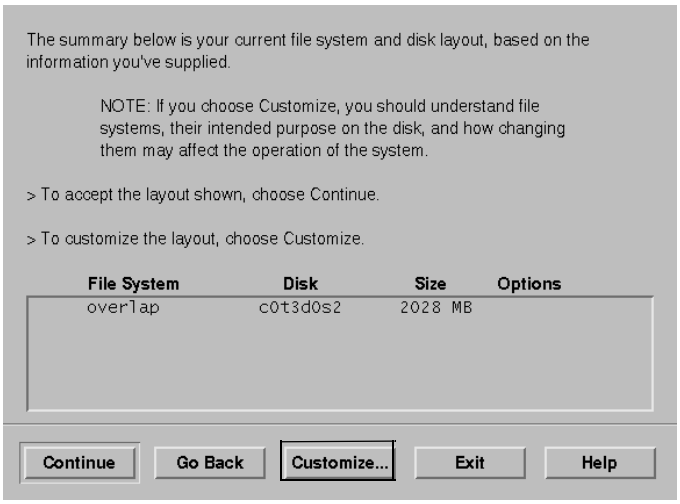
5. Click Continue.

   The Automatically Layout File Systems screen appears:



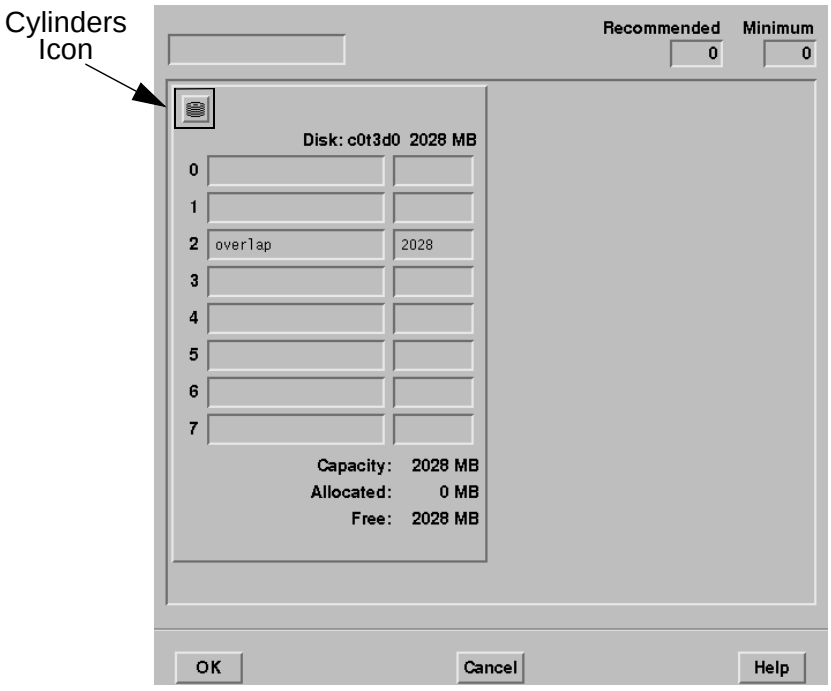
6. Click Manual Layout.

   The File System and Disk Layout screen appears:



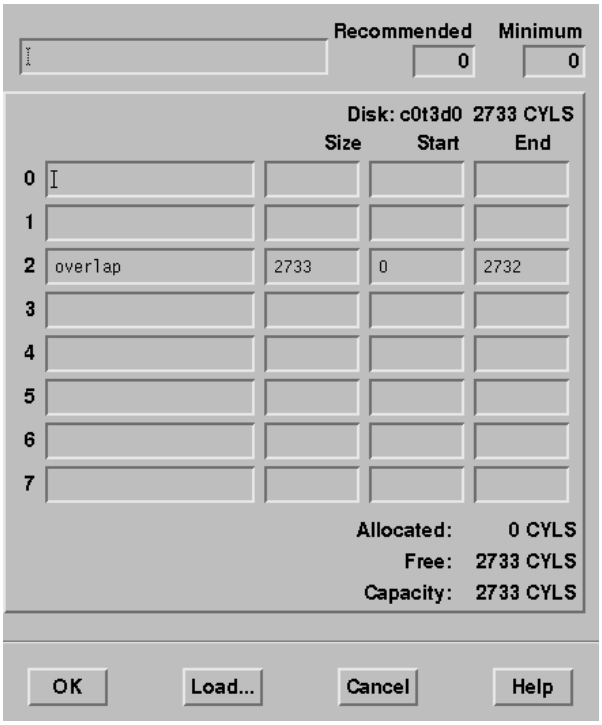
7. Click **Customize** (*NOT* Continue).

   The Customize Disks screen appears:



8. Disk partitioning should be done in cylinders, not Mbytes. To do this, click the cylinders icon in the upper left-hand corner of the disk 1 column.

The Customize Disks by Cylinders screen appears:



9. Use the information from the following table to partition disk 1 by filling in the file system name and cylinder value for each partition.

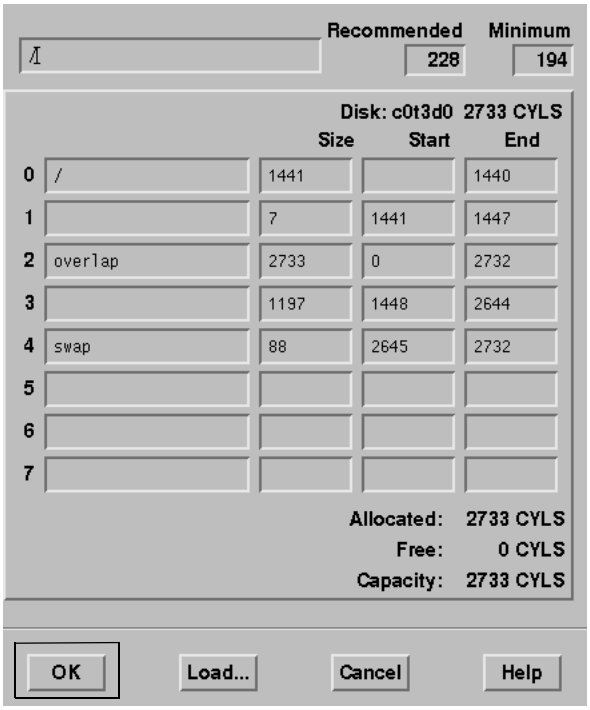
NOTE:

The size of the overlap file system always defaults to the size of the entire disk. Do not change this value.

Disk 1 Partition Values

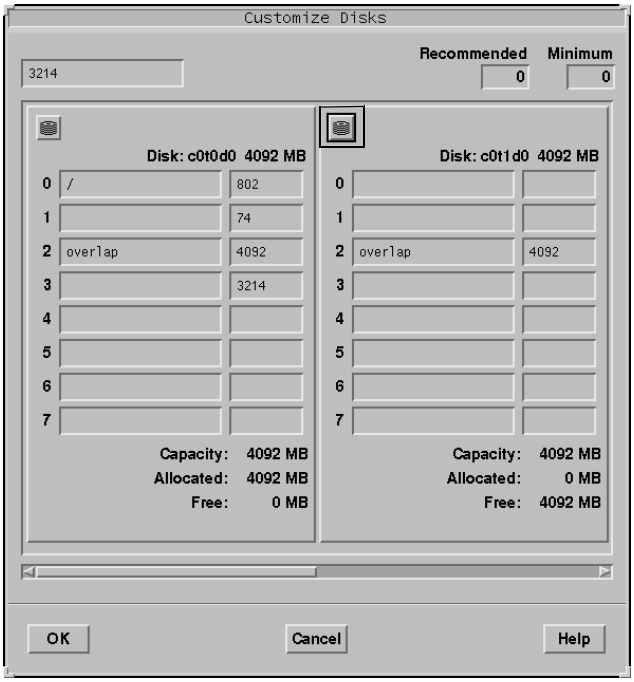
Partition	File System Name	8.4 GB Disk	4.2 GB Disk	2.1 GB Disk
0	/	616	1023	1441
1	*(unnamed)*	7	7	7
2	overlap	4924	3880	2733
3	*(unnamed)*	4263	2788	1197
4	swap	38	62	88

The following example shows how the Customize Disks by Cylinders screen appears when Disk 1 is a 2.1-GB disk:



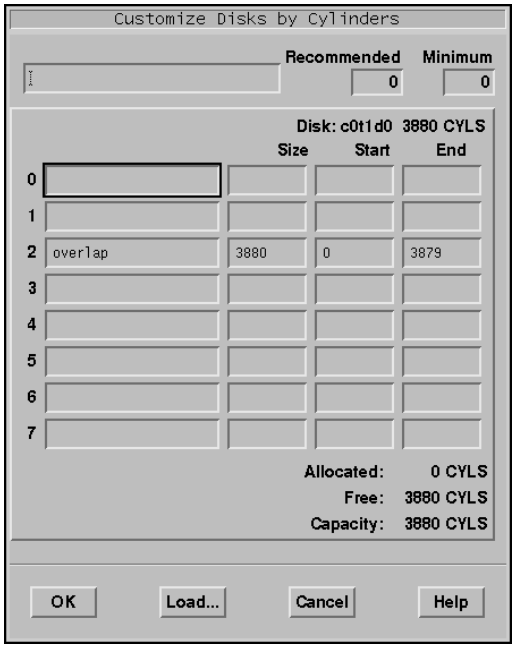
10. Click OK after setting up the partitions for disk 1.

The Customize Disks screen appears again (this example shows a two-disk system with 4.2 GB disks):



11. If there is another disk, click the cylinders icon for the next disk to be partitioned; otherwise, go to Step 14.

    The Customize Disks by Cylinders screen appears for the selected disk:



12. Use the information from the following table to partition each additional disk by filling in the file system name and cylinder value for each partition.

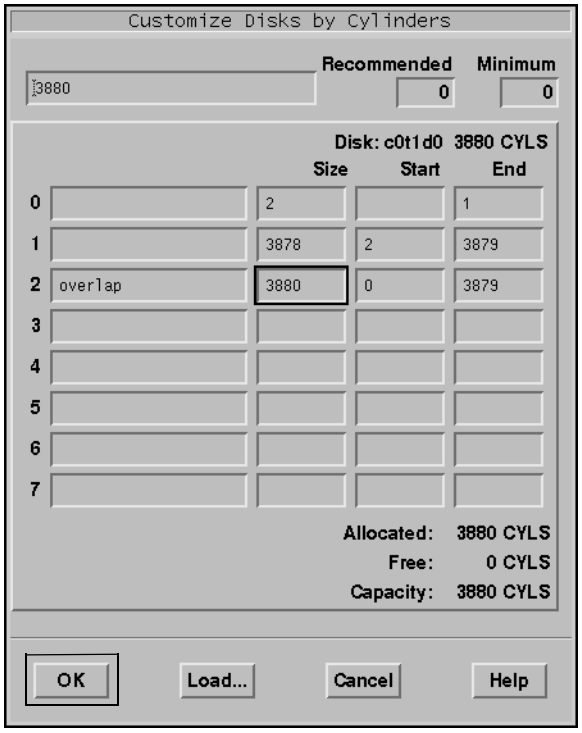
NOTE:

The size of the overlap file system always defaults to the size of the entire disk. Do not change this value.

Additional Disk Partition Values

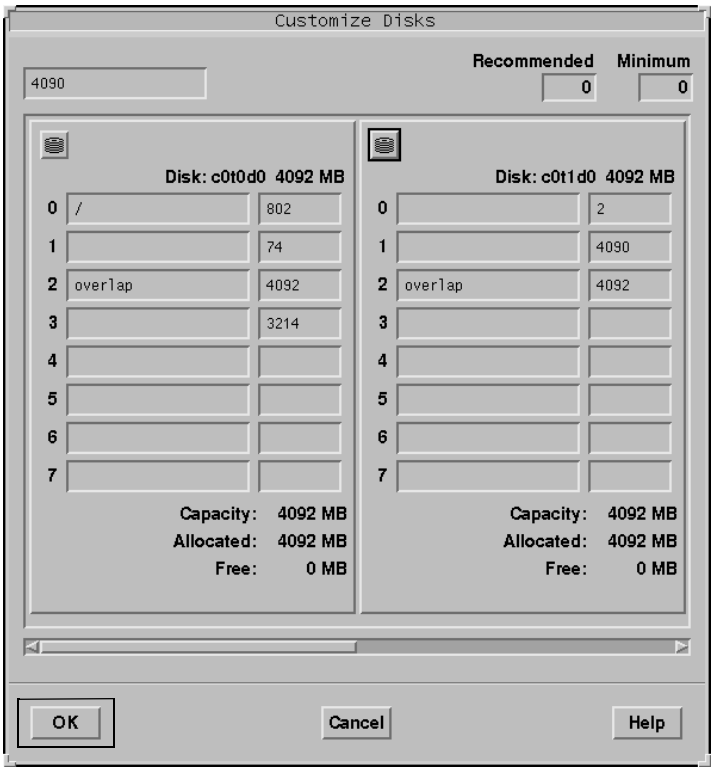
Partition	File System Name	8.4 GB Disk	4.2 GB Disk	2.1 GB Disk	1.05 GB Disk
0	*(unnamed)*	2	2	2	2
1	*(unnamed)*	4922	3878	2731	2034
2	overlap	4924	3880	2733	2036

Properly set up, the Customize Disks by Cylinders screen for a 4.2 GB disk would appear as follows:



13. Click OK.

    The Customize Disks screen appears again (on an actual system, the values shown will differ):

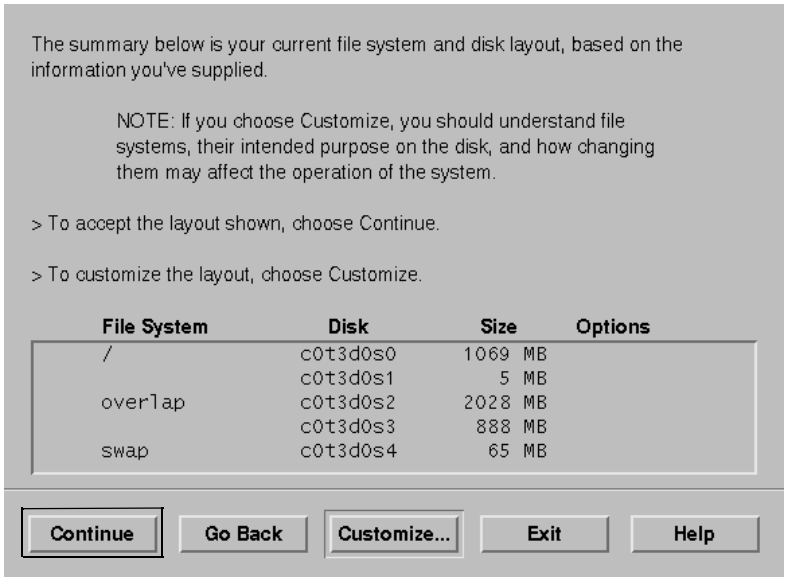


CAUTION:

If there is another disk attached to your system, repeat Steps 11 through 13 for that disk. Continue on to Step 14 only when you have partitioned every hard disk on your system.

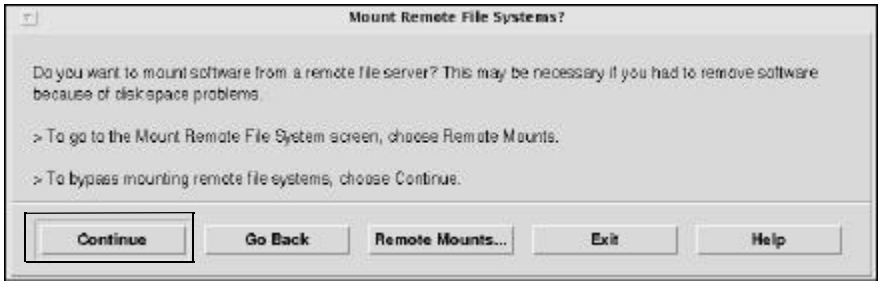
14. Click the OK button on the Customize Disks screen.

The File System and Disk Layout screen appears:



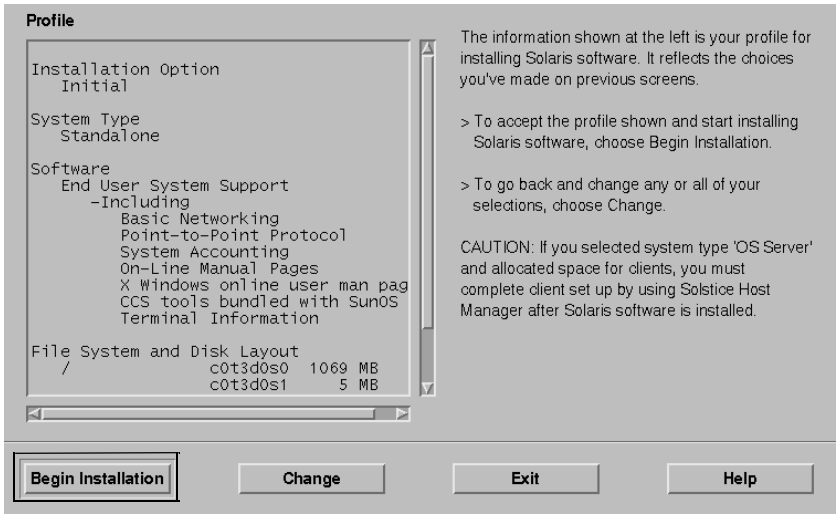
15. Click Continue.

    The Mount Remote File Systems screen appears:



16. Click Continue.

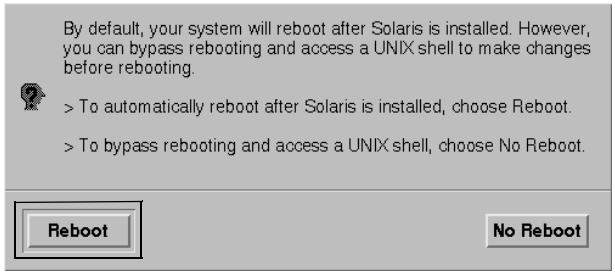
The Profile screen appears:



Install the Selected Options

1. Click Begin Installation.

   The program responds as follows:



2. Click Reboot.

   The disk partitioning process begins with the display of the Installing *Solaris* - Progress screen as shown below:

   This process may take from 40 minutes to several hours depending on the number of disks being partitioned, the hardware platform, and the speed of your CD-ROM drive. As the disks are partitioned and *Solaris* 2.5.1 system files are copied to the disk, the progress gauge is updated to indicate the progress of the installation.

   The progress screen may disappear during the process. However, the *Solaris* Install Console screen should remain in the upper left hand corner of your monitor screen and keep you posted on the progress of the load.

   When the process finishes, the system reboots and the “create a root password” screen appears.

Assign a Root Password

When the installation completes, the machine reboots and responds as follows:

```
On this screen you can create a root password.

A root password can contain any number of characters, but
only the first eight characters in the password are
significant. (For example, if you create ‘a1b2c3d4e5f6’ as
your root password, you can use ‘a1b2c3d4’ to gain root
access.)

You will be prompted to type the root password twice; for
security, the password will not be displayed on the screen
as you type it.

> If you do not want a root password, press RETURN twice.

Root password:
```

1. Enter the root password. Until it is time to turn the system over to the customer, it is recommended that you press Enter to assign a blank password. The program responds as follows:

```
Re-enter your root password.

Press Return to continue.
```

2. Reenter the root password or press Enter for a blank password. The program responds:

```
System identification is completed
Setting default interface for multicast; add net 224.0.0.0:
gateway <hostname>
syslog services starting.
Print services started.
volume management starting.
The system is ready.

hostname console login:
```

3. Log in as *root*. The system prompt displays.

Enable Remote Console Access

The following must be done to allow remote console access by the TSC.

1. Edit the login file using the following:

   ```
   vi /etc/default/login
   ```

   Find the line:

   ```
   CONSOLE=/dev/console
   ```

   and comment it out by inserting a pound sign at the beginning of the line. After the change, the new line will look like this:

   ```
   #CONSOLE=/dev/console
   ```

2. Write the read-only file using the `:w!` command.
3. Quit the file using the `:q` command.

Set the EEPROM Parameters for the A and B Ports

This section describes how to set the firmware `eeprom` values for the A and B ports.

1. Enter the following commands to set the `eeprom` values for port A:

   ```
   eeprom ttya-rts-dtr-off=true
   eeprom ttya-ignore-cd=false
   eeprom ttya-mode=9600,8,n,l,-
   ```

   This sets the A port to 9600 baud.

2. Enter the following commands to set the eeprom values for port B:

   ```
   eeprom ttyb-rts-dtr-off=true
   eeprom ttyb-ignore-cd=false
   eeprom ttyb-mode=9600,8,n,l,-
   ```

   This sets the B port to 9600 baud.

3. Reboot the system to activate these commands by entering `init 6`.

   The login screen appears.

4. Log in as *root*.

Create the /var/crash/uname Directory

Create the `/var/crash/uname` directory by executing the following commands:

```
mkdir /var/crash
mkdir /var/crash/‘uname -n‘
```

Turn On the System Activity Recorder

1. Enter the following commands:

   `su - sys` (the prompt changes to $)

   ```
   cd /var/opt
   crontab -l > cron.sys
   ```

2. Edit the `cron.sys` file (`vi cron.sys`). There should be three lines at the end of the file that look similar to the following:

   ```
   # 0 * * * 0-6 /usr/lib/sa/sa1
   # 20,40 8-17 * * 1-5 /usr/lib/sa/sa1
   # 5 18 * * 1-5 /usr/lib/sa/sa2 -s 8:00 -e 18:01 -i 1200 -A
   ```

3. Uncomment these three lines by removing the pound signs at the beginning of the lines. That is, change the lines to look like the following:

   ```
   0 * * * 0-6 /usr/lib/sa/sa1
   20,40 8-17 * * 1-5 /usr/lib/sa/sa1
   5 18 * * 1-5 /usr/lib/sa/sa2 -s 8:00 -e 18:01 -i 1200 -A
   ```

4. Write and quit the file.
5. Enter `id` to confirm that you are using the `sys` id.
6. Enter the following commands:

   ```
   crontab -r
   crontab cron.sys
   ```

7. Enter the following to confirm that the changes you made are intact:

   ```
   crontab -l
   ```

8. Press Control-D to leave superuser mode.

   The prompt changes back to `#`.

Unload the CD

1. Remove the CD-ROM from the drive by entering `eject cdrom`.
2. Remove the CD-ROM from the disk tray, place the CD-ROM back in its case, and push the CD-ROM tray in until it closes.

Install the Common Desktop Environment (CDE) 1.0.2

Overview

The Common Desktop Environment (CDE) 1.0.2 provides the user interface to the *Solaris* operating system.

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- Log in as *root* at the console
- Obtain the "*Solaris* Desktop 1.1" CD.

Procedure

1. Load the "*Solaris* Desktop 1.1" CD into the CD-ROM drive.
2. Enter `mount` to list the devices currently mounted. The CD is listed in a message similar to the following:

```
      .
      .
      .
/cdrom/solaris_2_5_1_desktop_1_1 on
/vol/dev/dsk/c0t6d0/solaris_2_5_1_desktop_1_1 read only on
Wed Feb 4 17:06:27 1998
```

3. Change to the CD's installation directory by entering the following:

   `cd /cdrom/solaris_2_5_1_desktop_1_1/CDE/sparc`

4. Run the installation program by entering the following:

   `./install-cde`

The program responds as follows:

```
        Solaris Common Desktop Environment
               Installation Script
                    Main Menu
_____________________________________________________________

1. Begin Installation (With Default Configuration Settings)
2. Modify Configuration Settings
3. Cancel Installation

   DEFAULT CONFIGURATION SETTINGS
   Installation Location:          [ /usr/dt ]
   End User CDE Package (28M):     [ YES   ]
   Developer CDE Packages (24M):   [ NO    ]
   Answerbook CDE Package (120M):  [ NO    ]
   Interactive Installation:       [ NO    ]
   Solaris Desktop Login
    at System Boot:                [ YES   ]
   Installation Locale:            [ EN    ]
_____________________________________________________________
   SELECT A NUMBER [1]
```

5. Press Enter. The program responds as follows:

```
    Begin CDE Installation Now? (Y/N) [Y]
```

6. Press Enter. The program responds as follows:

```
CDE packages will now be automatically installed...
The average install time on a Sparc 2 is 30 minutes...
Cleaning up any existing CDE packages...
Starting Install.....
     .
  (copyright and trademark messages)
     .
Installation of <SUNWdtft> was successful.
     .
     .
Installation of <SUNWdtrme> was successful.
_____________________________________________________
Note: A pkgadd log which contains a complete log of all the
output from the “pkgadd” utility can be found at:
  pkgadd log: /usr/tmp/SunSoft_CDE1.0.2_pkgadd.log.<date-
time>

Note: CDE has been installed on this system, please reboot
this machine before starting CDE

The install-cde script has completed.
```

7. Install the CDE manual pages by entering the following:

   `/usr/sbin/pkgadd -d ./cde-developer`

The program responds as follows:

```
The following packages are available:
 1  SUNWdtab     CDE DTBUILDER
                 (sparc) 1.0.2, REV=10.96.04.12
 2  SUNWdtdem    CDE DEMOS
                 (sparc) 1.0.2, REV=10.96.04.12
 3  SUNWdthed    CDE HELP DEVELOPER ENVIRONMENT
                 (sparc) 1.0.2, REV=10.96.04.12
 4  SUNWdtinc    CDE Includes
                 (sparc) 1.0.2,REV=10.96.04.12
 5  SUNWdtma     CDE man pages
                 (sparc) 1.0.2,REV=10.96.04.12
 6  SUNWdtmad    CDE developer man pages
                 (sparc) 1.0.2,REV=10.96.04.12
 7  SUNWmfdev    Motif Development Kit
                 (sparc) 1.2.3,REV=10.95.09.29
 8  SUNWmfdm     Motif Demos
                 (sparc) 1.2.3,REV=10.95.09.20
 9  SUNWmfman    CDE Motif Development Kit Manuals
                 (sparc) 1.2.3,REV=10.95.09.20
10  SUNWtltkd    ToolTalk CDE developer support
                 (sparc) 3.5.0,REV=10.95.09.20
... 1 more menu choices to follow;
<RETURN> for more choices, <CTRL-D> to stop display:
```

8. Press Enter. The program responds as follows:

```
 11  SUNWtltkm     ToolTalk CDE manual pages
                     (sparc) 3.5.0,REV=10.95.09.20
 Select package(s) you wish to process (or 'all' to process
 all packages). (default: all) [?,??,q]:
```

9. Enter `5` to select the `SUNWdtma` option. The program displays *Sun* licensing information, and then installs SUNWdtma as shown in the following example:

```
Processing package instance <SUNWdtma> from
</cdrom/solaris_2_5_1_desktop_1_1/CDE/sparc/cde-developer>

CDE man pages
(sparc) 1.0.2
      .
      .
/usr/dt/share/man/man5/dttrashaction.5
/usr/dt/share/man/man6/ttsnoop.6
[ verifying class <none> ]

Installation of <SUNWdtma> was successful
```

When the installation finishes, the program responds as follows:

```
The following packages are available:
 1  SUNWdtab     CDE DTBUILDER
                 (sparc) 1.0.2, REV=10.96.04.12
     .
     .
     .
10  SUNWtltkd    ToolTalk CDE developer support
                 (sparc) 3.5.0,REV=10.95.09.20

... 1 more menu choices to follow;
<RETURN> for more choices, <CTRL-D> to stop display:
```

10. Press Control-D.

    The program responds as follows:

```
Select packages you wish to process (or ‘all’ to process al
packages). (default: all) [?,??,q]:
```

11. Enter `q.` The system prompt reappears.
12. Enter `cd` to move to the root directory.
13. Enter `eject cdrom` to remove the CD-ROM from the drive.

14. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes.
15. Reboot the machine by entering the following:

    ```
    /usr/sbin/shutdown -y -i6 -g0
    ```

    When the system reboots, the CDE desktop login displays.
16. Log in as *root* to continue the installation. The installation of the CDE software is now complete.

Install the *Sun* Online Validation Test Suite (VTS) 2.1.1

Overview

Installing the *Sun* Online Validation Test Suite (VTS) 2.1.1 software provides test facilities for the system.

Prerequisites

- The *Solaris* 2.5.1 operating system and the CDE must be installed
- Log in as *root* at the console
- Obtain the "Updates for *Solaris* Operating Environment 2.5.1 Hardware: 11/97" CD.

Procedure

1. Load the "Updates for *Solaris* Operating Environment 2.5.1 Hardware: 11/97" CD into the CD-ROM drive.
2. Use a right mouse click to display the Workspace Menu.
3. Click on Programs.

   The Programs submenu appears.
4. Click on Console from the submenu.

   A console window appears.
5. Enter `mount` to verify the name of the CD-ROM. The program responds with a list of devices and filesystems currently mounted as shown below:

```
      .
      .
      .
/cdrom/upd_sol_2_5_1_hw1197_smcc on
/vol/dev/dsk/c0t6d0/upd_sol_2_5_1_hw1197_smcc read only on
Wed Jan 21 11:08:05 1998
```

6. Enter the following:

```
/usr/sbin/pkgadd -d /cdrom/cdrom0/SMCC SUNWvts SUNWvtsmn
```

The program responds as follows:

```
Processing package instance <SUNWvts> from
</cdrom/upd_sol_2_5_1_hw1197_smcc/SMCC>

Online Validation Test Suite
   .
   .
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with
super-user permission during the process of installing this
package.

Do you want to continue with the installation of <SUNWvts>
[y,n,?] y
```

7. Enter y. The program responds with installation feedback for the SUNWvts and SUNWvtsmn packages as follows:

```
Installing Online Validation Test Suite as <SUNWvts>

## Installing part 1 of 1.
/opt/SUNWvts/README
/opt/SUNWvts/bin/.customtest
   .
   .
/usr/share/man/man1m/vtsui.1m
/usr/share/man/man1m/vtsui.ol.1m
[ verifying class <none> ]

Installation of <SUNWvtsmn> was successful.
```

8. When the system prompt appears, enter `eject cdrom` to eject the CD-ROM.
9. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes. The installation of the *Sun* VTS software is now complete.

Install the *SunLink* HSI/S Software

Overview

The *SunLink* HSI/S card(s) provides interface ports to the *SUN* system. If your system does not have an HSI/S card, skip this section.

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- The HSI/S card(s) must be installed before installing the software
- Log in as *root* at the console
- Obtain the "*SunLink* HSI/S 2.0" CD.

Procedure

1. Load the "*SunLink* HSI/S 2.0" CD into the CD-ROM drive.
2. Enter `mount` to verify the name of the CD-ROM. The program responds with a list of devices and filesystems currently mounted as shown below:

```
      .
      .
      .
/cdrom/unnamed_cdrom on /vol/dev/dsk on Wed Jan 21 11:08:05 1998
```

3. Enter the following:

   `/usr/sbin/pkgadd -d /cdrom/unnamed_cdrom`

4. The program responds as follows:

```
The following packages are available:
1   SUNWhsis     HSI/S Driver/Utilities 2.0 v1.6
                 (sparc) 2.0

Select package(s) you wish to process (or 'all' to
process all packages). (default: all) [?,??,q]:
```

5. Press Enter to select all. The program responds as follows:

```
Processing package instance <SUNWhsis> from
</cdrom/unnamed_cdrom>

HSI/S Driver/Utilities 2.0 v1.6
(sparc) 2.0
    Copyright 1993 Sun Microsystems, Inc. All Rights Reserved.
      . . .
      . . .
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with
super-user permission during the process of installing this
package.

Do you want to continue with the installation of this
package [y,n,?]
```

6. Enter y. The program responds as follows:

```
Installing HSI/S Driver/Utilities 2.0 v1.6 as <SUNWhsis>
## Installing part 1 of 1.
/opt/SUNWconn/hsis/drv/HSI
    .
    .
NOTE: HSI driver will be loaded when it is referenced

Installation of <SUNWhsis> was successful.

The following packages are available:
  1 SUNWhsis     HSI/S Driver/Utilities 2.0 v1.6
                 (sparc) 2.0

Select package(s) you wish to process (or 'all' to
process all packages). (default: all) [?,??,q]:
```

7. Enter q. The program responds with the system prompt.
8. Enter `eject cdrom` to remove the CD-ROM from the drive:
9. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes. The installation of the HSI/S software is now complete.

Install the Bay Networks Annex NTS Drivers

Overview

This procedure installs the NTS drivers. If your system is not using an NTS, skip this section

NOTE:

If you are reinstalling the NTS drivers, the options presented will have minor differences.

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- Log in as *root* at the console
- Obtain the “Bay Networks Annex Release 10.0 with Release 4.2 Host Tools, Annex Manager 2.3, and Quick2Config 2.3” CD.

Procedure

1. Load the “Bay Networks Annex Release 10.0 with Release 4.2 Host Tools, Annex Manager 2.3, and Quick2Config 2.3” CD into the CD-ROM drive.
2. Enter `mount` to verify the name of the CD-ROM. The program responds with a list of devices and filesystems currently mounted as shown below:

```
      . . .
      . . .
      . . .
/cdrom/baynet_annex_system on /vol/dev/dsk/c0t6d0/baynet_annex_sy
read only on Wed Feb  4 14:47:40 1998
```

3. Enter the following:

   `/cdrom/baynet_annex_system/unix/install`

4. The program responds as follows:

```
This command is used to install Comm. Server Software (boot
images, security, command line management) and Annex Manager
(X-Motif GUI management application). The versions that will
be installed are:

     Comm. Server Software   R10.0-R4.2HT
     Annex Manager           R2.3
     .
     .
     .
Do you want to continue (y/n/q=quit)  [y]:
```

5. Press Enter. The program responds as follows:

```
After installing one product you will be asked if you want
to install the other product.
Indicate desired action:
   1) Install Comm.Server Software
   2) Install Annex Manager
   3) Quit

Enter desired action [1]:
```

6. Press Enter. The program responds as follows:

```
For the installation to proceed, we must copy software to a
directory on a hard disk on the host. Please enter the name
of the directory to be used.

Enter the name of the Comm. Server Software installation
directory.
Directory name [/usr/annex/cs_R10.0-R4.2HT]:
```

7. Press Enter. The program responds as follows:

```
Comm. Server Software Installation Script

This installation shell script will examine your system and
possibly ask you questions to generate the needed configuration
to allow you to compile the Comm. Server host utilities.
     .
     .
     .
Type carriage return to continue. Your cursor should be here-->
```

8. Press Enter. The program responds as follows:

```
Locating common programs...
     .
     .
     .
Where do you want the Annex utilities installed?
Utility directory [/usr/annex]:
```

9. Press Enter. The program responds as follows:

```
WARNING: The directory already exists. Host tools in this
directory will be renamed prior to installation of new
versions.

Please indicate the directory where the Comm.Server
operational images and boot files are to be installed.  You
will need at least 2408 KB of disk space in this directory
just to install the images.  In addition you will need 1 to
3 megabytes for dump files for each Annex serviced by this
file server.  Enter "?" for more help.

BFS directory [/usr/spool/erpcd/bfs]:
```

10. Press Enter. The program responds as follows:

```
Do you wish to install manual pages at this time? [y]:
```

11. Enter y. The program responds as follows:

```
On-line manual pages will be installed in the appropriate
subdirectory (i.e., ANNEX and index) of the manual base
directory.

What is the the manual page base directory? (q=quit)
[/usr/man]:
```

12. Press Enter. The program responds as follows:

```
Manual pages there will be packed after being installed.

Binary images exist for this host.  You also have a C compiler
so you could also install source code and compile it.  The
recommended option is to install binary images only.

Available installation options are:
    1. Install binary images only (7MB)
    2. Install source code only, but do not compile (11MB)
    3. Get both binary images and source code, but do not
compile (13MB)
    4. Quit

Enter installation choice [1]:
```

13. Press Enter. The program responds as follows:

```
To continue with this installation you need 7 MB of disk
space in directory /usr/annex/cs_R10.0-R4.2HT.
Please ensure that this disk space is available.

You may quit the installation or you may escape to a shell
now to free up disk space and then continue with this
installation (to do this answer "!" at the prompt below).

Are you ready to continue (y/q=quit) [y]:
```

14. Press Enter. The program responds as follows:

```
1)      Com-Server Annex 3

2)      Com-Server MicroAnnex

3)      Install all images

Please select the annex model(s) you will be using.
You can specify a list separated by spaces or 'N' for none:
```

15. Enter `3` to select the `Install all images` option. The program responds as follows:

```
Calling command: tar -xf
/cdrom/baynet_annex_system/unix/software.tar  bfs/config.annex
bfs/modems.annex bfs/oper.42.enet bfs/oper.52.enet man bin/SOL2
src/examples src/snmp src/erpcd
This may take some time.
*** Installing Comm.Server images ***
*** Installing manual pages ***

Executing "du -s bin/[A-Z]*"
    3386bin/SOL2

To save room on your system, the above directories can be
removed. You may want to enter "?" at the prompt below to get
more help.

Remove these directories (y/n) [n]:
```

16. Enter `y`. The program responds as follows:

```
The access control protocol server (ACP) that handles
security requests depends on data in a file named acp_regime.
This file does not exist and must be created with a line that
specifies a security policy for your site.

What is your default security regime:
    1) acp
    2) native UNIX
    3) SecureID
    4) safeword
    5) kerberos
    6) deny (access will be denied)
    7) none (access is unconditionally granted)
    8) radius

Enter security regime [1]:
```

17. Enter `7` to select the `none` option. The program responds as follows:

```
Do you want the host restrictions specified in acp_restrict
to apply to PPP and SLIP (IP) connections as well as CLI
telnet and rlogin connections?

Do you want the restrictions to apply to PPP and SLIP? [n]:
```

18. Press Enter. The program responds:

```
Do you want the erpcd daemon to provide access control (y/n)
[y]:
```

19. Enter n. The program responds as follows:

```
Copies of the following files have been updated:
         service annex-initd
Do you want to install any of these files (y/n) [y]:
```

20. Press Enter. The program responds as follows:

```
Copy file save/modified/service to /etc/services (y/n) [y]:
```

21. Press Enter. The program responds as follows:

```
Copy file save/modified/annex-initd /etc/rc2.d/annex-initd (y
[y]:
```

22. Press Enter. The program responds as follows:

```
WARNING: The file annex-initd will have to be linked or copied
an appropriate file in /etc/rc2.d to have the erpcd daemon
started and shut-down automatically.


No more system files to create or update

Do you want to start-up the new version of the erpcd daemon? (y
[y]:
```

23. Enter y. The program responds as follows:

```
Starting-up the new version of the erpcd daemon.
            Comm.Server Software Installation Script
*********************************************************
***                      Done                         ***
*********************************************************

Do you wish to install the Annex Manager (y/n/q=quit) [y]:
```

24. Enter n. The program responds with the system prompt.
25. Create a startup file to run the annex boot daemon, erpcd, by entering the following:

    ```
    cat > /etc/rc2.d/s99annex-initd
    ```

    The system responds with a blank screen.
26. Enter the following:

    ```
    /etc/rc2.d/S99annex-initd start
    ```
27. Press Enter, then press Control-D to exit the `cat` command.
28. Enter the following commands to change permissions on the startup file:

    ```
    chmod 744 /etc/rc2.d/s99annex-initd
    chmod 744 /etc/rc2.d/annex-initd
    ```
29. Link the most useful binary files as shown below:

    ```
    ln -s /usr/annex/na /usr/bin/na
    ln -s /usr/annex/rtelnet /usr/bin/rtelnet
    ln -s /usr/annex/aprint /usr/bin/aprint
    ```
30. Enter `eject cdrom` to remove the CD-ROM from the drive:
31. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes. The NTS driver installation is now complete.

Install the *Solstice* for Server Connect X.25 Driver

Overview

This procedure installs the X.25 drivers used for connections to the switch.

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- Log in as *root* at the console
- Obtain the "*Solstice* for Server Connect, Version - March 1997" CD
- Obtain the 21-character password for your X.25 license.

  If the password for your X.25 license is not included with your CD, you must contact *Sun* directly. See the Proof of License Certificate that is included with the CD for procedures you must follow to obtain your password. Note that the only way *Sun* will deliver this password is via FAX or electronic mail.

Retrieve System Information

If you already know your `hostname`, `hostid`, and X.25 license password, fill in the table below, skip this procedure, and go to the "Install the Solstice for Server Connect X.25 Driver" procedure. If you do not already know your `hostname` and `hostid`, use this procedure to determine that information:

1. Enter `showrev`.

   The program displays something similar to the following:

```
Hostname: XXXXXXXX
Hostid: XXXXXXX
Release: 5.5.1
Kernel architecture: sun4m
Application architecture: sparc
Hardware provider: Sun_Microsystems
Domain:
Kernel version: SunOS 5.5.1 Generic <number & date>
```

2. Identify the `Hostname` and `Hostid` (similar to that shown in bold on the previous screen). Use the following table to record this information, along with your X.25 password.

Hostname	
Hostid	
X.25 Password	

Install the *Solstice* for Server Connect X.25 Drivers

1. Load the "*Solstice* for Server Connect, Version - March 1997" CD into the CD-ROM drive.
2. Enter `mount` to verify the name of the CD-ROM. The program responds with a list of devices and filesystems currently mounted as shown below:

```
      . . .
      . . .
      . . .
/cdrom/server_connect_397 on /vol/dev/dsk/c0t6d0/server_connect_ .
#
```

3. Change directories by entering the following:

   `cd /cdrom/server_connect_397/products`

4. Enter the following:

   `/usr/sbin/pkgadd -d x25/Image/sparc`

   The program responds as follows:

```
The following packages are available:
  1   SUNWllc2a    LLC2 kernel modules and include files for Solaris/SPARC
                    (sparc) 9.1
  2   SUNW11c2b    LLC2 user programs and man pages for Solaris/SPARC
                   (sparc) 9.1
  3   SUNWx25a     X.25 kernel modules and include files for Solaris/SPARC
                   (sparc) 9.1
  4   SUNWx25b     X.25 user programs and libraries for Solaris/SPARC
                   (sparc) 9.1
  5   SUNWx25h     Solstice X.25 9.1 documentation in HTML
                   (all) 1.1


Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

5. Enter 1 2 3 4. The program responds as follows:

```
Processing package instance <SUNWllc2a> from
</cdrom/server_connect_397/products/x25/Image/sparc>

       .....
       .....
       .....

This package contains scripts shich will be executed with super-user
permission during the process of installing this package.

Do you want to continue with the installation of <SUNWllc2a> [y,n,?]
```

6. Enter y. The program responds as follows:

```
Installing LLC2 kernel modules and include files for Solaris/SPARC as <SUNWllc2a

## Installing part 1 of 1.
       .....
       .....
       .....

This package contains scripts shich will be executed with super-user
permission during the process of installing this package.

Do you want to continue with the installation of <SUNWx25a> [y,n,?]
```

7. Enter y. The program responds as follows:

```
Installing X.25 kernel modules and include files for Solaris/SPARC as <SUNWx25a>

## Installing part 1 of 1.
       .....
       .....
       .....

This package contains scripts shich will be executed with super-user
permission during the process of installing this package.

Do you want to continue with the installation of <SUNWx25b> [y,n,?]
```

8. Enter y. The program responds as follows:

```
Installing X.25 user programs and libraries for Solaris/SPARC as <SUNWx25b>

## Installing part 1 of 1.
       .....
       .....
       .....
[verifying class <none>]
## Executing postinstall script.
Make sure to run the license insertion tool or the license configuration scrip
on this machine to install additional licenses.

Installation of <SUNWx25b> was successful.

The following packages are available:
  1   SUNWllc2a    LLC2 kernel modules and include files for Solaris/SPARC
                    (sparc) 9.1
  2   SUNW11c2b    LLC2 user programs and man pages for Solaris/SPARC
                   (sparc) 9.1
  3   SUNWx25a     X.25 kernel modules and include files for Solaris/SPARC
                   (sparc) 9.1
  4   SUNWx25b     X.25 user programs and libraries for Solaris/SPARC
                   (sparc) 9.1
  5   SUNWx25h     Solstice X.25 9.1 documentation in HTML
                   (all) 1.1

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

9. Enter q.

   The program responds with the system prompt.

10. Enter the following:

    `/usr/sbin/pkgadd -d licenses/Image/sparc`

    The program responds as follows:

```
The following packages are available:
   1  SUNWcclit    Solstice Connect Center license information
                    (sparc) 4.1
   2  SUNWlicsw    FlexLM License System
                    (sparc) 4.1

  Select package(s) you wish to process (or 'all' to process
  all packages). (default: all) [?,??,q]:
```

11. Press Enter. The program responds as follows:

```
Processing package instance <SUNWcclit> from
</cdrom/server_connect_397/products/Image/sparc>

       ....
       ....

This package contains scripts which will be executed with super-user
permission during the process of installing this package.

Do you want to continue with the installation of <SUNWcclit> [y,n,?]
```

12. Enter y. The program responds as follows:

```
Installing Solstice Connect Center license information as <SUNWcclit>

## Installing part 1 of 1.
       .....
       .....
This package contains scripts which will be executed with super-user
permission during the process of installing this package.

Do you want to continue with the installation of <SUNWlicsw> [y,n,?]
```

13. Enter y. The program responds as follows:

```
Installing FlexLM License System as <SUNWlicsw>

## Installing preinstall script.
## Installing part 1 of 1.
       .....
       .....
Installation of <SUNWlicsw> was successful.

The following packages are available:
  1  SUNWcclit    Solstice Connect Center licence information
                   (sparc) 4.1
  2  SUNWlicsw    FlexLM License System
                   (sparc) 4.1

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

14. Enter q.
15. Enter `cd` to move to the root directory.
16. Enter `eject cdrom` to remove the CD-ROM from the drive.
17. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes. The installation of the *Solstice* for Server Connect X.25 software is complete; you must now install the *SunLink* X.25 license.

Install the X.25 License

CAUTION:

Do **not** change the host name of your computer after installing the X.25 license. Changing the system's host name disables the X.25 software license.

NOTE:

If performing this procedure from a remote terminal, be sure to set you termtype to `6300+` after each reboot.

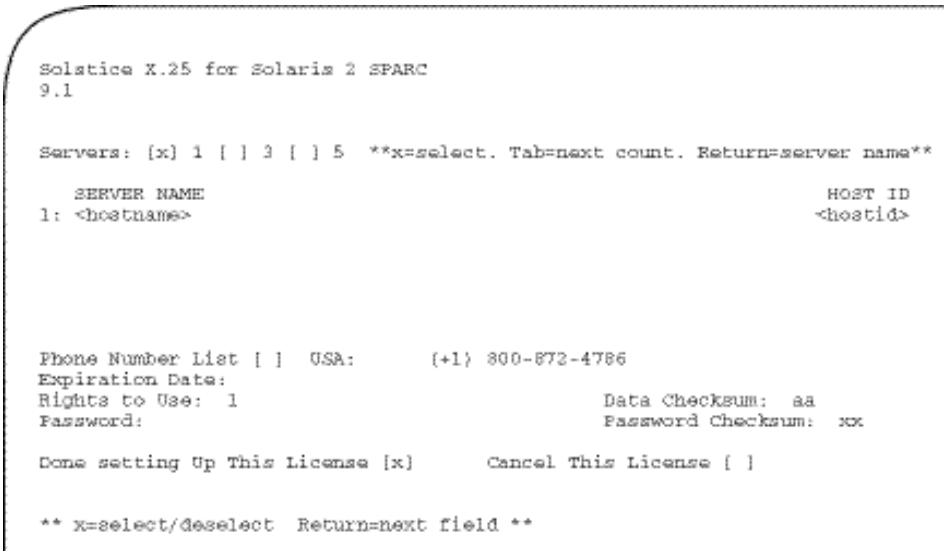
1. Enter the following:

   `/etc/opt/licenses/lit_tty`

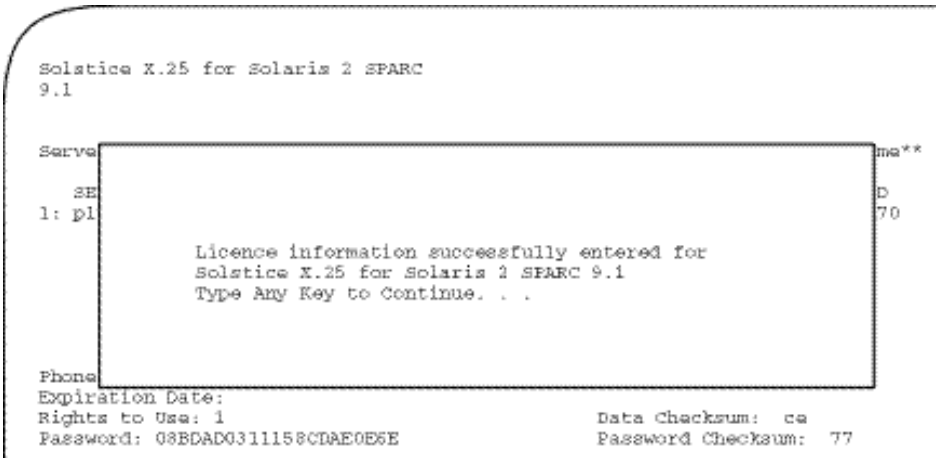
   The program responds by displaying the following screen:

```
Select Product


[ ]  Solstice Frame Relay 2.0 for SPARC
[ ]  Solstice Frame Relay 2.0 for X86
[ ]  Solstice PPP 3.0.1 for SPARC
[ ]  Solstice PPP 3.0.1 for x86
[ ]  Solstice OSI (Stack) 8.1 for SPARC
[ ]  Solstice OSI (Stack) 8.1 for x86
[ ]  Solstice FTAM 8.0.2 for SPARC
[ ]  Solstice FTAM 8.0.2 for x86
[x]  Solstice X.25 for Solaris 2 SPARC 9.1
[ ]  Solstice x.25 for Solaris 2 x86 9.1
[ ]  Solstice x.400 MTA 9.0 for SPARC
[ ]  Solstice x.400 Message Store 9.0 for SPARC
[ ]  Solstice SMTP/x.400 Internet Adaptor 9.0 for SPARC


                                                Page 1 of 2
[ ]  Exit - Save Licenses          [ ]  Exit - Don't Save License
** x=select product and go to license screen **
** Return=next product **
** n=Next Page    p=Previous Page$
```

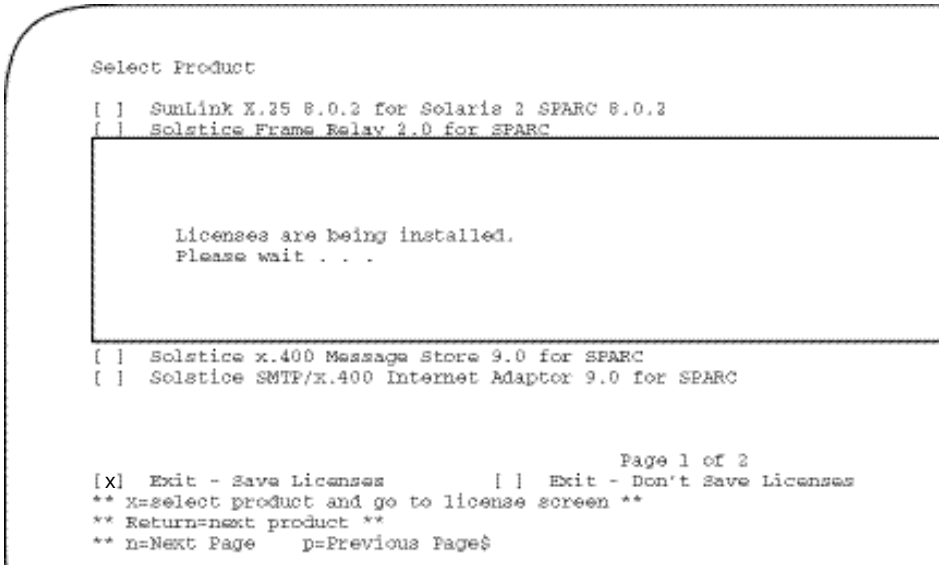
2. Press Enter repeatedly (do not use Tab or the arrow keys) until the cursor moves to the brackets in front of the line that reads `Solstice X.25 for Solaris 2 SPARC 9.1`.
3. Enter an x in the brackets. The program responds with the following screen:



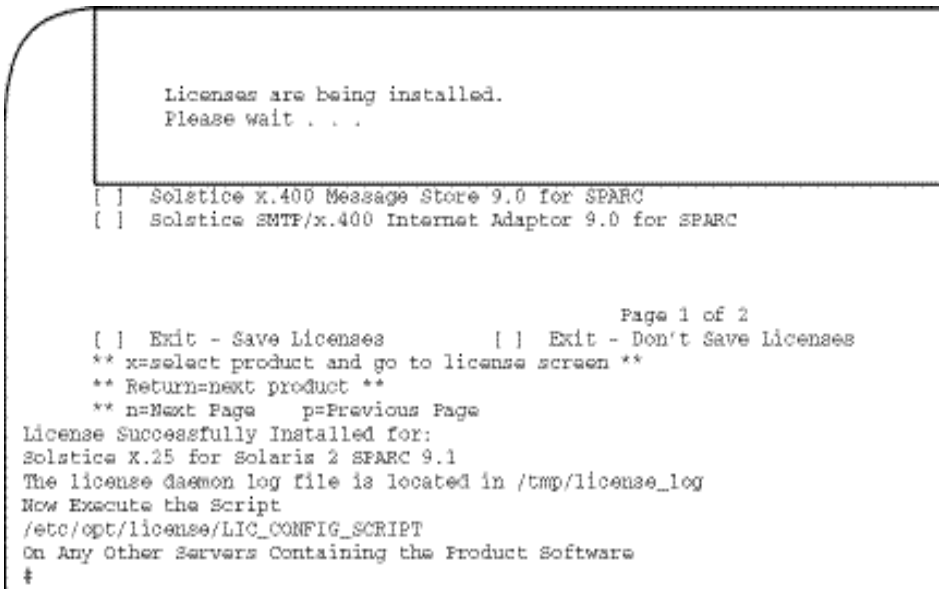
4. Enter an `x` in the brackets between `Servers:` and `1`. Press Enter.
5. Enter the SERVER NAME (Hostname) as recorded earlier in the section “Retrieve System Information.” Press Enter.
6. Enter the HOST ID (Hostid) as recorded earlier in the section “Retrieve System Information.” Press Enter.
7. Using Enter, position the cursor on the `Rights to Use:` field. Enter a `1,` and press Enter.
8. Using Enter, position the cursor on the `Password:` field, enter the 21-character password, and press Enter.
9. Enter an `x` in the brackets for the `Done Setting Up This License [ ]` field. The program displays a popup screen similar to the following:



10. Press Enter.
11. Using Enter, move the cursor to the `[ ] Exit - Save Licenses` field. Enter an `x` in that field. The program displays a popup screen as follows:



When the license installation completes, the program responds as follows:



Disregard the `Now Execute the Script` statement on this screen. This has already been done. The licensing of the *SunLink* X.25 software is complete. Check the `/tmp/license_log` file to verify that the license was installed correctly.

Install the *INFORMIX* Software

Overview

Installing the *INFORMIX* software consists of the following tasks:

- Set the environment
- Install the *INFORMIX* Structured Query Language (SQL) 7.20 package (optional)
- Install the *INFORMIX* Standard Engine (SE) 7.22 package (required)
- Install the *INFORMIX* International Language Supplement (ILS) 9.13 package (required).

You may have also received an *INFORMIX* ESQL software package. This package is not used and should not be installed.

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- Log in as *root* at the console
- Obtain the "*INFORMIX* SQL Version 7.20" CD, License serial number (S/N), and Serial Number Key (optional)
- Obtain the "*INFORMIX* SE Version 7.22" CD, License S/N, and Serial Number Key (required).
- Obtain the "*INFORMIX* ILS Version 9.13" CD (required).

Set Up the *INFORMIX* Environment

1. Enter the following commands to set the terminal type:

   ```
   TERM=sun-cmd
   export TERM
   ```

2. Add a new group and user to the system by entering the following commands:

   ```
   groupadd -g 100 informix
   useradd -g informix -u 100 -m -d /opt/informix informix
   ```

3. Set the environment variables by entering the following commands:

```
INFORMIXDIR=/opt/informix
export INFORMIXDIR
PATH=$PATH:$INFORMIXDIR/bin
export PATH
```

The *INFORMIX* installation environment is now set.

Install the *INFORMIX* SQL 7.20 Package (Optional)

NOTE:

This software package is optional and is needed only if you are using custom reports. If you do not need this package, skip this section and go to "Install the INFORMIX SE 7.22 Package (Required)" section.

1. Load the "*INFORMIX* SQL 7.20" CD into the CD-ROM drive.
2. Change to the *INFORMIX* directory by entering:

   ```
   cd $INFORMIXDIR
   ```

3. To make sure you are in the *INFORMIX* directory, enter `pwd`. The system should respond as follows:

```
/opt/informix
```

4. Enter the following command to copy the *INFORMIX* SQL files from the CD-ROM to the current directory:

   ```
   tar xvf /cdrom/unnamed_cdrom*/sql.tar
   ```

   The program responds as follows:

```
x installsql, XXX bytes, XX tape blocks
x bin/isql, XXX bytes, XX tape blocks
. . . . .
. . . . .
. . . . .
x demo/sql2/stock.unl, XXX bytes, XX tape blocks
#
```

5. Enter the following to start the installation of the *INFORMIX* SQL software package:

   ```
   ./installsql
   ```

   The program responds as follows:

```
INFORMIX-SQL Version 7.20.UC1
Copyright (C) 1984-1996 Informix Software, Inc.

Installation Script

This installation procedure must be run by root (super-
user). It will change the owner, group, and mode of all
files of this package in this directory.  There must be a
user "informix" and a group "informix" known to the system.

Press RETURN to continue,
or the interrupt key (usually CTRL-C or DEL) to abort.
```

6. Press Enter to continue with the installation procedure. The program responds as follows:

```
Enter your serial number (e.g.,INF#R999999) >
```

7. Enter the 11-character License S/N (serial number) that is on your license. The program responds as follows:

```
Enter your serial number KEY (uppercase letters only) >
```

8. Enter the 6-character Serial Number Key that is on your license. The program responds as follows:

```
WARNING!
        This software, and its authorized use and number of
users, are subject to the applicable license agreement with
Informix Software, Inc. If the number of users exceeds the
licensed number, the excess users may be prevented from using th
software.  UNAUTHORIZED USE OR COPYING MAY SUBJECT YOU AND YOUR
COMPANY TO SEVERE CIVIL AND CRIMINAL LIABILITIES.

Press RETURN to continue,
or the interrupt key (usually CTRL-C or DEL) to abort.
```

9. Press Enter to continue with the installation procedure. The program responds as follows:

```
Installing directory .
. . . . .
. . . . .
. . . . .
Installation of INFORMIX-SQL complete.
#
```

10. Enter `eject cdrom` to remove the CD-ROM from the drive.
11. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes. The installation of the *INFORMIX* SQL software is complete; you must now install the *INFORMIX* SE software.

Install the *INFORMIX* SE 7.22 Package (Required)

1. Load the "*INFORMIX* SE Version 7.22" CD into the CD-ROM drive.
2. Change to the *INFORMIX* directory by entering the following:

   `cd $INFORMIXDIR`
3. To make sure you are in the *INFORMIX* directory, enter `pwd`. The system should respond as follows:

```
/opt/informix
```

4. Enter the following command to copy the *INFORMIX* SE files from the CD-ROM to the current directory:

   `tar xvf /cdrom/unnamed_cdrom*/se.tar`

   The program responds as follows:

```
x installse, XXX bytes, XX tape blocks
x bin/secheck, XXX bytes, XX tape blocks
. . . . .
. . . . .
. . . . .
#
```

5. Enter the following to start the installation of the *INFORMIX* SE software package:

   ```
   ./installse
   ```

   The program responds as follows:

```
INFORMIX-SE Version 7.22.UC1
Copyright (C) 1984-1996 Informix Software, Inc.

Installation Script

This installation procedure must be run by root (super-user).
It will change the owner, group, and mode of all files of this
package in this directory. There must be a user “informix” and
a group “informix” known to the system.

Press RETURN to continue,
or the interrupt key (usually CTRL-C or DEL) to abort.
```

6. Press Enter to continue with the installation procedure. The program responds as follows:

```
Enter your serial number (e.g.,INF#R999999) >
```

7. Enter the 11-character License S/N (serial number) that is on your license. The program responds as follows:

```
Enter your serial number KEY (uppercase letters only) >
```

8. Enter the 6-character Serial Number Key that is on your license. The program responds as follows:

```
WARNING!
         This software, and its authorized use and number of
users, are subject to the applicable license agreement with
Informix Software, Inc. If the number of users exceeds the
licensed number, the excess users may be prevented from using the
software. UNAUTHORIZED USE OR COPYING MAY SUBJECT YOU AND YOUR
COMPANY TO SEVERE CIVIL AND CRIMINAL LIABILITIES.

Press RETURN to continue,
or the interrupt key (usually CTRL-C or DEL) to abort.
```

9. Press Enter to continue with the installation. The program responds as follows:

```
Installing directory .
. . . . .
. . . . .
. . . . .
Installation of INFORMIX-SE complete.
#
```

10. Enter `eject cdrom` to remove the CD-ROM from the drive:
11. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes. The installation of the *INFORMIX* SE software is complete. The installation of the *INFORMIX* SE software is complete; you must now install the *INFORMIX* ILS software

Install the *INFORMIX* ILS 9.13 Package (Required)

1. Load the "*INFORMIX* ILS Version 9.13" CD into the CD-ROM drive.
2. Change to the *INFORMIX* directory by entering the following:

   `cd $INFORMIXDIR`
3. To make sure you are in the *INFORMIX* directory, enter `pwd`. The system should respond as follows:

```
/opt/informix
```

4. Enter the following command to start the *INFORMIX* ILS installation program:

   `sh /cdrom/informix/install`

   The program responds as follows:

```
      INTERNATIONAL LANGUAGE SUPPLEMENT USER INTERFACE LANGUAGE

    (1)  English           (5)  Russian
    (2)  German            (6)  Polish
    (3)  French            (7)  Czech
    (4)  Spanish           (8)  Slovak

    (9)  Help
    (10) Exit

Select installer language?
```

5. Enter the number that corresponds with the language you wish to use during the installation program (for example, enter `1` to select `English`). If you select a language other than English, you must also select a display character set. After you make that selection, the program responds as follows:

```
              INFORMIX INTERNATIONAL LANGUAGE SUPPLEMENT (ILS)
                   INSTALLER FOR ALL UNIX PLATFORMS

Choose install type:
    (1) Express Install
          Installs everything relating to one or more languages.

    (2) Custom Install
          You specify exactly what you want to install.
Other options:
    (3) Help
          Displays information on the contents of this package,
          and explains the options on this screen.
    (4) Exit
          Exit this installer.

  (E)nglish (D)eutsch/German (F)rancais/French e(S)panol/Spanish
  (R)ussian (P)oliski/Polish (C)ekych/Czech    s(L)ovych/Slovak

Enter one choice, and hit ENTER:
```

6. Enter `2` to select `Custom Install`. The program responds as follows:

```
                    Custom Install
                    --------------

    (1) User interface
          Installs a localised user interface for Servers and Tools.

    (2) Locale
          Installs locales by language, territory and code page.

    (3) Operating System locales
          Installs operating system equivalent locales.

    (4) Code set conversion
          Installs code set conversion files between code pages.

    (5) Help                      (6) GLS source install [Enabled]
    (7) Previous Screen           (8) Exit

     (E)nglish (D)eutsch/German (F)rancais/French e(S)panol/Spanish
     (R)ussian (P)oliski/Polish (C)ekych/Czech    s(L)ovych/Slovak

Select the components to install:
```

7. Enter `2 4` to select the `Locale` and `Code set conversion` options. The program responds as follows:

```
LOCALES - LANGUAGES

  Install locales and associated character maps for what languages?

     (1)  Arabic           (11) Greek            (21) Romanian
     (2)  Bulgarian        (12) Hebrew           (22) Russian
     (3)  Chinese          (13) Icelandic        (23) Serbo-Croatian
     (4)  Czech            (14) Italian          (24) Slovak
     (5)  Danish           (15) Japanese         (25) Spanish
     (6)  Dutch            (16) Korean           (26) Swedish
     (7)  English          (17) Latvian          (27) Thai
     (8)  Finnish          (18) Norwegian        (28) Turkish
     (9)  French           (19) Polish           (29) Ukrainian
     (10) German            (20) Portuguese

     (30) Help              (31) All Of The Above
     (32) Custom Screen     (33) Exit

     (E)nglish (D)eutsch/German (F)rancais/French e(S)panol/Spanish
     (R)ussian (P)oliski/Polish (C)ekych/Czech    s(L)ovych/Slovak

Enter one or more choices, separated with spaces, and hit ENTER:
```

8. Enter `7` to select `English`. The program responds as follows:

```
LOCALES - TERRITORIES

  Install English language locales for what territories?

     (1)  Australia
     (2)  United Kingdom
     (3)  United States

     (4)  Help              (5)  All Of The Above
     (6)  Custom Screen     (7)  Exit

     (E)nglish (D)eutsch/German (F)rancais/French e(S)panol/Spanish
     (R)ussian (P)oliski/Polish (C)ekych/Czech    s(L)ovych/Slovak

Enter one or more choices, separated with spaces, and hit ENTER:
```

9. Enter `3` to select `United States`. The program responds as follows:

```
LOCALE - CODESETS

  Install English language locales for what codesets?

     (1)  ISO 8859-1
     (2)  DOS Code Page 850
     (3)  Windows CP 1252
     (4)  UNICODE
     (5)  UTF8

     (6)  Help              (7)  All Of The Above
     (8)  Custom Screen     (9)  Exit

     (E)nglish (D)eutsch/German (F)rancais/French e(S)panol/Spanish
     (R)ussian (P)oliski/Polish (C)ekych/Czech    s(L)ovych/Slovak

Enter one or more choices, separated with spaces, and hit ENTER:
```

10. Enter `5` to select `UTF8`. The program responds as follows:

```
CODESET CONVERSION REGIONS

  Choose the regions for which you require codeset conversion tables.
     (1)  Arabic            (7)  Japanese
     (2)  Baltic            (8)  Korean
     (3)  Cyrillic          (9)  Simplified Chinese
     (4)  Eastern European  (10) Trad. Chinese
     (5)  Greek             (11) Turkish
     (6)  Hebrew            (12) Western European

     (13) Help              (14) All Of The Above
     (15) Custom Screen     (16) Exit

     (E)nglish (D)eutsch/German (F)rancais/French e(S)panol/Spanish
     (R)ussian (P)oliski/Polish (C)ekych/Czech    s(L)ovych/Slovak

Enter one or more choices, separated with spaces, and hit ENTER:
```

11. Enter `7 12` to select `Japanese` and `Western Europe`. The program responds as follows:

```
CODESET CONVERSION TABLES - CODESETS
  Install Japanese codeset conversion tables for what codesets?

  (1)  Shift-JIS+JISX0212
  (2)  Standard-Shift-JIS
  (3)  UJIS/EUC
  (4)  UNICODE
  (5)  UTF8

     (6)  Help              (7)  All Of The Above
     (8)  Custom Screen     (9)  Exit

     (E)nglish (D)eutsch/German (F)rancais/French e(S)panol/Spanish
     (R)ussian (P)oliski/Polish (C)ekych/Czech    s(L)ovych/Slovak

  Select two or more options.  All available combinations of the
  selected options will be installed.
```

12. Enter `1 2 5` to select `Shift-JIS+JISX0212`, `Standard-Shift-JIS`, and `UTF8`. The program responds as follows:

```
CODESET CONVERSION TABLES - CODESETS
  Install Western European codeset conversion tables for what codesets?

  (1)  ASCII 7-bit        (9)  IBM CCSID 00273    (17) IBM CCSID 871
  (2)  DOS Code Page 437  (10) IBM CCSID 00277    (18) ISO-7-Danish
  (3)  DOS Code Page 850  (11) IBM CCSID 00278    (19) ISO-7-German
  (4)  DOS Code Page 860  (12) IBM CCSID 00280    (20) ISO 8859-1
  (5)  DOS Code Page 863  (13) IBM CCSID 00284    (21) UNICODE
  (6)  DOS Code Page 865  (14) IBM CCSID 00285    (22) UTF8
  (7)  EBCDIC             (15) IBM CCSID 00297    (23) Windows CP 1252
  (8)  HP-Roman8          (16) IBM CCSID 00500

     (24) Help              (25) All Of The Above
     (26) Custom Screen     (27) Exit

     (E)nglish (D)eutsch/German (F)rancais/French e(S)panol/Spanish
     (R)ussian (P)oliski/Polish (C)ekych/Czech    s(L)ovych/Slovak

  Select two or more options.  All available combinations of the
  selected options will be installed.
```

13. Enter `20 22` to select `ISO 8859-1` and `UTF8`. The program responds as follows:

```
 SUMMARY: You have chosen to install the following
-------------------------------------------------------------

Installing locales:

  English            United States      UTF8

Installing codeset conversion tables:

  Japanese           Shift-JIS+JISX0212
                     Standard-Shift-JIS
                     UTF8

  Western European   ISO 8859-1
                     UTF8

Hit ENTER to confirm or `q` to return to main menu.
```

14. Press Enter to begin installation. The program responds as follows:

```
   Installing international software  Please wait...
   Installing gls...
   Installation complete.
   See $INFORMIXDIR/ils.log for a list of installed files.
   See $INFORMIXDIR/release/README and
       $INFORMIXDIR/release/ILS_COMPAT for further information.

Hit ENTER to return to main menu...
```

15. Press Enter. The program responds as follows:

```
              INFORMIX INTERNATIONAL LANGUAGE SUPPLEMENT (ILS)
                   INSTALLER FOR ALL UNIX PLATFORMS

Choose install type:
    (1) Express Install
          Installs everything relating to one or more languages.

    (2) Custom Install
          You specify exactly what you want to install.
Other options:
    (3) Help
          Displays information on the contents of this package,
          and explains the options on this screen.
    (4) Exit
          Exit this installer.

   (E)nglish (D)eutsch/German (F)rancais/French e(S)panol/Spanish
   (R)ussian (P)oliski/Polish (C)ekych/Czech    s(L)ovych/Slovak

Enter one choice, and hit ENTER:
```

16. Enter `4` to exit the installation program. The program responds as follows:

```
      Exiting the International Language Supplement installer.
```

17. Enter `eject cdrom` to remove the CD-ROM from the drive.
18. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes. The installation of the *INFORMIX* ILS software is complete.

Install the *Solstice DiskSuite* Software

Overview

The *Solstice DiskSuite* software package allows the disks of the system to be managed as if they were a single file system. *Solstice DiskSuite* software is included in all new R3V6 installations.

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- Log in as *root* at the console
- Obtain the "*Solstice DiskSuite* 4.1" CD
- You must have partitioned the hard disks for the *Solstice DiskSuite* system, as specified in the partitioning tables earlier in this appendix (see "Partition the Hard Disks").

Procedure

1. Load the "*Solstice DiskSuite* 4.1" CD into the CD-ROM drive.
2. Enter `mount` to verify the name of the CD-ROM. The program responds with a list of devices and filesystems currently mounted as shown below:

```
      .
      .
/cdrom/disksuite_4_1 on /vol/dsk/c0t6d0/disksuite_4_1 read
only on Mon Jan 19 12:36:55 1998
```

3. Begin the installation by entering the following:

   ```
   /usr/sbin/pkgadd -d  /cdrom/disksuite_4_1/sparc
   ```

   The program responds as follows:

```
The following packages are available:
 1  SUNWadm5r  Solstice AdminSuite root supplement for Solaris
                 (sparc) 6.5, REV=95.10.26.00.11
 2  SUNWadm5u  Solstice AdminSuite supplement for Solaris 2.3
                 (sparc) 6.5, REV=95.10.26.00.11
 3  SUNWadmsm  Solstice AdminSuite Storage Manager Applicatior
                 (sparc) 6.5-FCS, REV=96.04.18.16.52
 4  SUNWmd     Solstice DiskSuite
                 (sparc) 4.1-FCS, REV=6.0
 5  SUNWmdg    Solstice DiskSuite Tool
                 (sparc) 4.1-FCS, REV=6.0
 6  SUNWmdn    Solstice DiskSuite Log Daemon
                 (sparc) 4.1-FCS, REV=6.0
 7  SUNWsadmc  Solstice AdminSuite Core Method
                 (sparc) 6.5, REV=96.04.18.16.51
 8  SUNWsadm1  Solstice Admintool Launcher.
                 (sparc) 6.5, REV=95.10.26.23.04
 9  SUNWsadmo  Solstice AdminSuite Object Library
                 (sparc) 6.5, REV=96.04.18.16.51

Select package(s) you wish to process (or 'all' to process
all packages).(default:all)[?,??,q]:
```

4. Enter `4` to select the `SUNWmd` option. The program responds as follows:

```
Processing package instance <SUNWmd> from </cdrom/disksuite_4_1/sparc>

Solstice DiskSuite.
   .
   .
   10 package pathnames are already properly installed.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with super-user
permissions during the process of installing this package.

Do you want to continue with installation of <SUNWmd> [y,n.?]
```

5. Enter y. The program responds as follows:

```
Installing Solstice DiskSuite as <SUNWmd>

## Executing preinstall script.
## Installing part 1 of 1.
    .
    .
[ verifying class <preserve> ]
## Executing postinstall script.
Installation of <SUNWmd> was successful.
```

The program responds as follows:

```
The following packages are available:
 1  SUNWadm5r  Solstice AdminSuite root supplement for Solaris
                (sparc) 6.5, REV=95.10.26.00.11
 2  SUNWadm5u  Solstice AdminSuite supplement for Solaris 2.3
                (sparc) 6.5, REV=95.10.26.00.11
 3  SUNWadmsm  Solstice AdminSuite Storage Manager Applicatior
                (sparc) 6.5-FCS, REV=96.04.18.16.52
 4  SUNWmd     Solstice DiskSuite
                (sparc) 4.1-FCS, REV=6.0
 5  SUNWmdg    Solstice DiskSuite Tool
                (sparc) 4.1-FCS, REV=6.0
 6  SUNWmdn    Solstice DiskSuite Log Daemon
                (sparc) 4.1-FCS, REV=6.0
 7  SUNWsadmc  Solstice AdminSuite Core Method
                (sparc) 6.5, REV=96.04.18.16.51
 8  SUNWsadm1  Solstice Admintool Launcher.
                (sparc) 6.5, REV=95.10.26.23.04
 9  SUNWsadmo  Solstice AdminSuite Object Library
                (sparc) 6.5, REV=96.04.18.16.51

Select package(s) you wish to process (or 'all' to process
all packages).(default:all)[?,??,q]:
```

6. Enter `q`. The program responds as follows:

```
*** IMPORTANT NOTICE ***
This machine must now be rebooted in order to ensure sane
operation. Execute
        shutdown  -y  -i6  -g0
and wait for the "Console Login:" prompt.
#
```

7. When the system prompt appears, enter `eject cdrom` to eject the CD-ROM.

8. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes.
9. Reboot the system by entering the following:

   ```
   /usr/sbin/shutdown -y -i6 -g0
   ```

   The system begins to reboot.

   NOTE:

   Ignore any “forceload of ... failed” warning messages during the boot.

10. Log in as *root* at the *Solaris* desktop login screen.

Install the *Sun Solaris* Patches

Overview

The Sun Solaris patches are delivered with the *CentreVu* CMS software.

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- The *Solstice DiskSuite* software must be installed
- Log in as *root* at the console
- Obtain the "*CentreVu* CMS R3V6" CD.

Procedure

1. Load the "*CentreVu* CMS R3V6" CD into the CD-ROM drive.
2. Use a right mouse click to display the Workspace Menu.
3. Click on Programs.

   The Programs submenu displays.
4. Click on Console from the submenu.

   A console window displays.
5. Enter `mount` to verify the name of the CD-ROM. The program responds with a list of devices and filesystems currently mounted as shown below:

```
  ...
  ...
/cdrom/cms on /vol/dev/dsk/....
```

6. Begin the installation by entering the following:

   `/usr/sbin/pkgadd -d /cdrom/cms`

   The program responds as follows:

```
The following packages are available:
  1  cms          Lucent CentreVu(R) Call Management System
                  (sparc) r3v6
  2  spatches     CMS Supplied Solaris Patches
                  (sparc) 1.0

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

7. Enter `2` to select the `spatches` option. The program responds as follows:

```
Processing package instance <spatches> from </cdrom/cms>

CMS Supplied Solaris Patches
(sparc) 1.0
```

   After a short period of time, the program responds as follows:

```
## Processing package information.
## Processing system information.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with
super-user permission during the process of installing
this package.

Do you want to continue with the installation of
<spatches> [y,n,?]
```

8. Enter `y` to continue. The program responds as follows:

```
Installing CMS Supplied Solaris Patches as <spatches>

## Installing part 1 of 1.
101130-12 is not needed
Spooling 103461-18
Spooling 103566-24
. . .
. . .
Installation of <spatches> was successful.

The following packages are available:
 1 cms        Lucent CentreVu(R) Call Management System
                (sparc) r3V6
 2 spatches     CMS Supplied Solaris Patches
                (sparc) 1.0

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

9. Enter `q.` The program responds with the system prompt.
10. Enter the following to continue installing the patches:

    `/tmp/patches/install_patches`

    The program responds as follows:

```
Checking installed packages and patches...
Generating list of files to be patched...
Verifying sufficient filesystem capacity (exhaustive method)
Installing patch packages...

Patch number 103461-18 has been successfully installed.
See /var/sadm/patch/103461-18/log for details

Patch packages installed:
  SUNWmfrun
    .
    .
```

    The program generates various lists of files to be patched. This can take several hours to process, depending on the number of patches and the hardware platform. When it finishes, the program displays the system prompt.

11. Reboot the system by entering the following commands:

    ```
    cd
    /usr/sbin/shutdown -y -i6 -g0
    ```

    The system comes up with the CDE prompt.

12. Log in as *root*. The *Sun Solaris* patches have been successfully installed and the system kernel has been rebuilt. Do *not* remove the "*CentreVu* CMS R3V6" CD from the CD-ROM drive.

Run the *Solstice DiskSuite* Setup Scripts

Overview

Running the *Solstice DiskSuite* setup scripts consists of three separate procedures:

1. Prepare the disk subsystem
2. Run the setup scripts
3. Set up the swap files.

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- The *Solstice DiskSuite* software must be installed
- The *Solaris* patches must be installed
- Log in as *root* at the console
- The "*CentreVu* CMS R3V6" CD should be loaded in the CD-ROM drive.

Prepare the Disk Subsystem

1. Use a right mouse click to display the Workspace Menu.
2. Click on Programs.

   The Programs submenu appears.
3. Click on Console from the submenu.

   A console window appears.
4. Set the environment to the Korn Shell by entering these commands:

   ```
   ksh -o vi
   ```

   ```
   stty erase <Control-H>
   ```

   (where <*Control-H*> indicates you should press and hold the Control key as you press the H key)

   The stty command sets up your backspace key as an actual backspace. If you do not enter this command, you will have to use the Delete key as a backspace.

5. Prepare to run the *Solstice DiskSuite* setup scripts by entering the following commands:

   ```
   mkdir  /olds
   cp  /cdrom/cdrom0/cms/reloc/rdonly/olds_install/*  /olds
   cd  /olds
   chmod +x /olds/olds
   ```

6. Create system files for the *Solstice DiskSuite* software by entering these commands:

   ```
   export  PATH=$PATH:/usr/opt/SUNWmd/sbin
   /olds/olds  -check_disks
   ```

   The system responds:

```
number of external scsi controllers with disks  is = 0
number of disks is = 1
checking device: c0t3d0
Warning: Current Disk has mounted partitions.
checking device: c0t6d0
device: c0t6d0 will not be used
checking device: c[0-3]t1[0-9]d0
device: c[0-3]t1[0-9]d0 will not be used
valid disks are c0t3d0
Warning: Current Disk has mounted partitions.
Warning: Current Disk has mounted partitions.
disk:c0t3d0 is partitioned ok
Success, checking disks.
```

7. Enter the following:

   ```
   /olds/olds  -mk_files
   ```

   The system responds:

```
number of external scsi controllers with disks  is = 0
number of disks is = 1
Success, creating md.tab.new and/or vfstab.new.
```

NOTE:

If check disks fails, see “Troubleshoot a *Solstice DiskSuite* Software Install” in Chapter 4, “Troubleshooting.”

8. When the system prompt reappears, verify that all the disk drives on your system have been recognized. To do that, enter the following:

   `vi /olds/md.tab.new`

   Find the `#/cms` section; it should reflect the precise number of disk drives on your system. The example below, for instance, shows one disk drive on the system:

```
#state database replicas
mddb00 c0t3d0s1
mddb01 c0t1d0s0
#/cms
d19 1 1 /dev/rdsk/c0t3d0s3
d21 -m d19
```

9. If everything is correct, enter `:q!` to quit the file and continue with the “Run the Setup Scripts” section.

   If there is a discrepancy, check for disk recognition errors using the procedure, “Check for Disk Recognition Errors” on page B-86.”

Run the Setup Scripts

1. Run the *Solstice DiskSuite* setup scripts by entering the commands shown below. **Run the commands in the order shown, and be sure to enter both commands. Otherwise, your system will not be set up to run the *Solstice DiskSuite* software.**

   ```
   /olds/olds  -metadbs
   ```

   ```
   /olds/olds  -setup
   ```

   The `olds -setup` command may take some time. It should take about 1 minute of run time for each gigabyte of hard disk space on your system.

   If either command should fail, make a note of the error message and see Chapter 4, “Troubleshooting.”

   If all the commands succeed, the system responds to the final command with a series of lines reflecting the structure of your disk system. Those lines will look something like the following (the specific disk names will vary from system to system):

```
scsi=c1
number of external scsi controllers with disks  is = 1
number of disks is = 2
checking device: c0t0d0
Warning: Current Disk has mounted partitions.
checking device: c0t2d0
device: c0t2d0 will not be used
checking device: c1t3d0
checking device: c[0-3]t1[0-9]d0
device: c[0-3]t1[0-9]d0 will not be used
valid disks are c0t0d0 c1t3d0
Warning: Current Disk has mounted partitions.
disk:c0t0d0 is partitioned ok
disk:c1t3d0 is partitioned ok
d19: Concat/Stripe is setup
   .
   .
```

The program begins to construct the new file system. When the "Success..." message displays and the system prompt reappears, the file system is complete and you are ready to continue with the installation. The program responds as follows:

```
setting optimization for space with minfree less than 10%
/dev/md/rdsk/d19:14422590 sectors in 15262 cylinders of 15 tracks, 63
sectors
      7042.3MB in 954 cyl groups (16 c/g, 7.38MB/g, 3584 i/g)
super-block backups (for fsck -F ufs -o b=#) at:
 32, 15216, 30400, 45584, 60768, 75952, 91136, 106320, 121504, 136688,
151872,
 167056, 182240, 197424, 212608, 227792, 241952, 257136, 272320, 287504,
   .
   .
   .
14198416, 14213600, 14228784, 14243968, 14259152, 14273312, 14288496,
 14303680, 14318864, 14334048, 14349232, 14364416, 14379600, 14394784,
 14409968,
ufs fsck: sanity check: /dev/md/rdsk/d19 okay
Success, system set up successfully
```

2. Create and mount `/cms` and verify the disk space by entering the following commands:

   ```
   mkdir /cms
   mount /cms
   df -k
   ```

   The system responds as follows:

```
Filesystem             kbytes    used   avail capacity  Mounted on
/dev/dsk/c0t0d0s0    1039785  257252  678563    28%    /
/proc                      0       0       0     0%    /proc
fd                         0       0       0     0%    /dev/fd
swap                  137648     200  137448     1%    /tmp
/vol/dev/dsk/c0t2d0/devcms
                      437878      -1       0   100%    /cdrom/devc
/dev/md/dsk/d19      xxxxxxx       9 6768599     1%    /cms
```

   The `/cms` "kbytes" figure (shown here as xxxxxxxx) is a critical number. Use this number to verify that the *Solstice DiskSuite* software is administering all the available disks. Use the following tables to make the necessary calculations for the disk sizes on your system.

Calculation	Result
(1a) Divide the `/cms` line's "kbytes" figure by 1000 (move the decimal point three places to the left) and record the result.	(1a)
(1b) Enter the figure from the "/cms Size (in MB)" column below corresponding to the number of hard disks in your system.	(1b)

Number of Disks	/cms Size (in MB)		
	2.1 GB Disks	4.2 GB Disks	8.4 GB Disks
1	876	2874	7298
2	2875	6872	15724
3	4874	10870	24150
4	6873	14868	32576
5	8872	18866	41002
6	10871	22864	49428
7	12870	26862	57854
8	14869	30860	66280
9	16868	34858	74706
10	18867	38856	83132
11	20866	42854	91558
12	22865	46852	99984

(1a) and (1b) should be *approximately* equal. The two will not correspond exactly, but they should be reasonably close — within about 10% of each other.

3. A major discrepancy between the two figures usually indicates a connectivity problem. You can check connectivity by entering the following:

   `/usr/opt/SUNWmd/sbin/metastat`

The system responds by listing the devices making up each metadevice. The relevant metadevice for the purposes of this check is d19 as shown in the following example:

```
      .
      .
      .
d19: Concat/Stripe
   Size: xxxxxxxx blocks
   Stripe 0:
      Device          Start Block  Dbase
       c0t0d0s3              0    No
   Stripe 1:
      Device          Start Block  Dbase
       c0t1d0s1              0    No
   Stripe 2:
      Device          Start Block  Dbase
       c0t2d0s1              0    No
   Stripe 3:
      Device          Start Block  Dbase
       c0t3d0s1              0    No

      .
      .
```

If the stripes of d19 do not account for all the disk drives on your system, check your disk drive connections. If discrepancies persist, telephone the Lucent National Customer Care Center at 1-800-242-2121, or contact your Lucent representative or distributor.

Set up the Swap Files

The system requires one swap file for the `/cms` file system. You must create the swap file with the olds script. The script determines how big the files need to be.

1. Create the files by running the olds script with swap file options, as follows:

   ```
   /olds/olds -addswapfile /cms
   ```

   The program responds as follows:

   ```
   Success, Swap file created.
   ```

2. Reboot the system by entering `init 6`.
3. At the *Solaris* Desktop Screen, log in as *root*.
4. Use a right mouse click to display the Workspace Menu.
5. Click on Programs.

   The Programs submenu displays.

6. Click on Console from the submenu.

   A console window displays.

7. Verify that the space has been allocated by entering `swap -l`. The program responds as follows:

   ```
   swapfile             dev  swaplo blocks   free
   /dev/dsk/c0t3d0s4   32,28      8 133752  103040
   /cms/swap             -        8 124920   92512
   ```

8. If you receive the message “No swap devices configured,” edit the `/etc/vfstab` file using the command `vi /etc/vfstab`. Check to see that the lines with `/cms` and with `swap` are *not* commented out (that is, the lines should *not* have a # sign at the beginning of the line). If the lines do have a # sign at the beginning of the line, remove the # sign, write and quite the file, and then execute the following command:

   ```
   swap -a /cms/swap
   ```

   The command should respond as follows:

   ```
   Success, Swapfile created use swap -l to verify
   ```

9. Finally, reenter the `swap -l` command to verify that the swap devices have been configured as they should have been. The program responds as follows:

   ```
   swapfile             dev  swaplo blocks   free
   /dev/dsk/c0t3d0s4   32,28      8 133752  103040
   /cms/swap             -        8 124920   92512
   ```

Check for Disk Recognition Errors

1. Reboot the system with an `init 0` command. The system reboots and displays the `ok` prompt.
2. Turn off the system unit.
3. Turn off the system monitor.
4. Turn off all external devices starting with the device closest to the system unit and working toward the farthest device.
5. Check all disk drive connections to make certain they are secure. Also check the Small Computer System Interface (SCSI) IDs on the disk drives to make sure no two drives have the same IDs.
6. Turn on the power to the system units in the opposite order in which you powered them off.

   Power on the external devices first, working your way toward the system unit. Then power on the system unit itself and, finally, the system monitor.

   When you power on the system unit, the system begins to boot. Interrupt the boot by pressing **Stop** and **A** simultaneously. The system responds:

```
ok
```

7. Enter the following:

   ```
   setenv  auto-boot?  false
   ```

   This keeps the system from rebooting when you do a reset.

8. On an *Enterprise* 3000 computer, enter the following:

   ```
   reset all
   ```

   On a *SPARCserver* computer, enter the following:

   ```
   reset
   ```

   These commands may take a minute to complete.

9. To verify that the system sees all SCSI devices, including the new disk drive, enter the following:

   `probe-scsi` or `probe-scsi-all`

```
This command may hang the system if a Stop-A or halt command h
been executed. Please type reset-all to reset the system befo
executing this command. Do you wish to continue?
```

The program should respond as follows:

```
/iommu@f,e0000000/sbus@f.e0001000/esp@3,200000
Target 1
  Unit 0 Disk SEAGATE ST14801 SUN04246266 Copyright (C)
1991
Target 3
  Unit 0 Disk SEAGATE ST14801 SUN04246266 Copyright (C)
1991
. . . . .
. . . . .
Target 6
  Unit 0 Disk Removable Read Only Device SONY CD-ROM CDU-
8012

ok
```

10. **IMPORTANT:** When you have verified that the system is recognizing all its disk drives, before you reboot again, enter the following:

    `setenv auto-boot? true`

    Failure to do so will cause the reboot to stop at the boot prompt instead of proceeding through the normal boot-up.

11. Enter `boot -r`. The system responds as follows:

```
Boot device ...
   .
   .
Configuring the /dev directory
   .
   .
/dev/rdsk/c0t1d0s1 mounted
   .
   .
hostname console login:
```

12. Log in as *root*. The system responds as follows:

```
Sun Microsystems Inc. SunOS 5.2 Generic November 1995
#
```

13. Repeat Steps 6 through 8 of “Prepare the Disk Subsystem” in this section.

Install the *CentreVu* CMS Software

Overview

The following procedures are used to install the *CentreVu* CMS R3V6 software.

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- All the preceding factory software installation requirements in this appendix must be completed
- Log in as *root* at the console
- The "*CentreVu* CMS R3V6" CD should already be loaded in the CD-ROM drive.

Procedure

1. Enter `who -r` to determine the computer's state. You should see a message similar to the following:

```
.    run-level 3 <date and time> 3   0 S
```

2. If the computer is *not* in run-level 3, enter the following:

   `/usr/sbin/shutdown -y -i6 -g0`

3. After the shutdown, log back in as *root*.
4. Enter `mount` to verify the name of the CD-ROM. The program responds with a list of devices and filesystems currently mounted as shown below:

```
      . . .
      . . .
      . . .
/cdrom/cms on /vol/dev/dsk/.....
```

5. Add the CMS package by entering the following:

   `/usr/sbin/pkgadd -d /cdrom/cms`

   The program responds as follows:

```
The following packages are available:
  1  cms          Lucent CentreVu(R) Call Management System
                  (sparc) r3v6
  2  spatches     CMS Supplied Solaris Patches
                  (sparc) 1.0

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

6. Enter `1` to select the `cms` option. The program responds as follows:

```
Processing package instance <cms> from </cdrom/cms>

Lucent Technologies CentreVu(R) Call Management System
(sparc) r3v6
     .
     .
/usr/sbin/mountall
* /var/crash <attribute change only>
  /var/spool/cron/crontabs/root

* - conflict with a file which does not belong to any package.

Do you want to install these conflicting files [y,n,?,q]
```

7. Enter y. The program responds as follows:

```
## Checking for setuid/setgid programs.

The following files are being installed with setuid and/or
setgid permissions:
  /cms/bin/mqpeek <setuid root>
  /cms/bin/spi <setuid root>
  /cms/perfbin/memsnap2 <setuid root setgid root>
  /cms/toolsbin/chk_ext <setuid root>
  /cms/toolsbin/cmsu <setuid root>
  /cms/toolsbin/initSimConf <setuid root setgid root>
  /cms/toolsbin/psx <setuid root setgid root>
  /cms/toolsbin/setSimLink <setuid root setgid root>
 /cms/toolsbin/shmdump <setgid sys>
  /usr/spool/lp/cmstermDSR <setuid root setgid lp>

Do you want to install these as setuid/setgid files [y,n,?,q]
```

8. Enter y. The program responds as follows:

```
This package contains scripts which will be executed with super-
user permission during the process of installing this package.

Do you want to continue with the installation of <cms> [y,n,?]
```

9. Enter y. The program responds as follows:

```
Installing Lucent Technologies CentreVu(R) Call Management
System as <cms>

## Executing preinstall script.
Creating cms group id
Creating cms user id
6 blocks
Assigning a new password for cms
New password:
```

10. Enter the password for the cms login. The program responds as follows:

```
Re-enter new password:
```

11. Reenter the password for cms. The program responds as follows:

```
Creating cmssvc user id
6 blocks
Assigning a new password for cmssvc
New password:
```

12. Enter the password for the cmssvc login. Please note that the cmssvc login is used only by services; protect the cmssvc password. The program responds as follows:

```
Re-enter new password:
```

13. Reenter the password for cmssvc. The program responds as follows:

```
## Installing part 1 of 1.
/usr/elog <symbolic link>
/cms/aas/db/acd1/baas_db.log
/cms/aas/db/acd2/baas_db.log
   .
   .
   .
```

The program takes up to 40 minutes to download the *CentreVu* CMS R3V6 software from the CD-ROM to the hard disk. A list of files is displayed as the software is downloaded. When the download finishes, the responds as follows:

```
Installation of <cms> was successful.

The following packages are available:
  1  cms          Lucent CentreVu(R) Call Management System
                  (sparc) r3v6
  2  spatches     CMS Supplied Solaris Patches
                  (sparc) 1.0
Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

14. Enter `q.` The program responds as follows:

```
The machine must now be rebooted in order to ensure same
operation. Execute shutdown -y -i6 -g0 and wait for the
“console login” prompt.
#
```

15. Enter the following to begin the shutdown:

    ```
    /usr/sbin/shutdown -y -i6 -g0
    ```

16. Log in as *root*.

17. Unlink `/var/crash/uname` from `/dump` by entering the following:

    ```
    rm -rf /var/crash/uname
    ```

Install the CMS Patches

Overview

There are three occasions when you may have to install CMS patches:

- During a factory installation
- Immediately after upgrading CMS
- As a bug fix.

If you are loading patches just after upgrading your system, it is best to turn CMS off until you have the patches installed. The reason for that is that the prerequisites for patch installation differ with the patch. Some require that CMS be off, others require that data collection be off, and still others require CMS to be in single-user mode. To be absolutely safe, and to help the upgrade proceed as quickly as possible, just turn CMS off.

If you are loading patches as a factory installation or a bug fix without upgrading your base load, you may install the patches without turning CMS off. Each patch will let you know if you need to do anything special to accomplish the load.

The readme file for CMS lists CMS run level requirements for the patch.

NOTE:

The features must be authorized on your system before patches can be installed. Call 1-800-242-2121 to have authorizations installed.

NOTE:

We recommend that you always install all available patches. If you believe you should not be installing a particular patch, call the National Customer Care Center at 1-800-242-2121, or consult with your Lucent distributor or representative, before deciding to skip it.

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- All the preceding factory software installation requirements in this appendix must be completed
- Log in as *root* at the console
- The "*CentreVu* CMS R3V6" CD should already be loaded in the CD-ROM drive.

Procedure

1. Enter `cmssvc` to display the CMS Services menu as shown below:

```
 Lucent Technologies CentreVu(R) Call Management System Services Menu

Select a command from the list below.
   1) auth_display Display feature authorizations
   2) auth_set     Authorize capabilities/capacities
   3) run_cms      Turn CentreVu CMS on or off
   4) setup        Set up the initial configuration
   5) swinfo       Display switch information
   6) swsetup      Change switch information
   7) patch_inst   Install a single CMS patch from CD
   8) patch_rmv    Backout an installed CMS patch
   9) load_all     Install all CMS patches found on CD
  10) back_all     Backout all installed CMS patches from machine
Enter choice (1-10) or q to quit:
```

2. Enter `2` to select the `auth_set` option. The authorizations must be set before you can install the patches. Use the default values for now. The actual values will be entered later in another procedure.
3. Enter `9` to select the `load_all` option to load all of the patches. If you want to load one patch at a time, enter `7` to select the `patch_inst` option.
4. Enter `y` if you are loading all of the patches. Enter the patch number if you are loading only one patch. The system installs the patch or patches. As it does so, it displays messages similar to the following for each patch installed:

```
@(#) installpatch 1.0 96/04/01
cmspx-s
Generating list of files to be patched...
Creating patch archive area...
Saving a copy of existing files to be patched...
xxxx blocks
        File compression used
Installing patch packages...

Doing pkgadd of cmspx-s package:
Installation of <cmspx-s> was successful.

Patch packages installed:
        cmspx-s

Patch installation completed.
```

5. After installing all of the patches, enter `eject cdrom` to eject the CD-ROM.
6. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes.

Install the CMS Supplemental Services Software

Overview

The following procedures are used to install the *CentreVu* CMS R3V6 Supplemental Services software. The CMS Supplemental Services use an installation manager program that, once installed, will check future CD installations of Supplemental Services for new software packages and updates to existing software packages. At this time, only one software package, Administration History Log, uses the installation manager.

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- All the preceding factory software installation requirements in this appendix must be completed
- Log in as *root* at the console
- Obtain the "*CentreVu* CMS R3V6 Supplemental Services" CD.

Procedure

1. Load the "*CentreVu* CMS R3V6 Supplemental Services" CD into the CD-ROM drive.
2. Enter `who -r` to determine the computer's state. You should see a message similar to the following:

```
.    run-level 3 <date and time> 3   0 S
```

3. If the computer is *not* in run-level 3, enter the following:

   ```
   /usr/sbin/shutdown -y -i6 -g0
   ```

4. After the shutdown, log back in as *root*.

5. Enter `mount` to verify the name of the CD-ROM. The program responds with a list of devices and filesystems currently mounted.

```
      . . .
      . . .
      . . .
/cdrom/cms on /vol/dev/dsk/c0t2d0/cms read only on Wed Apr 15
12:04:34 1998
```

6. Add the CMS package by entering the following:

   `/usr/sbin/pkgadd -d /cdrom/cms LUim`

   The program responds as follows:

```
Processing package instance <LUim> from </cdrom/cms>

Lucent Installation Manager
(sparc) 0.20

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## Processing package information.
## Processing system information.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with super-
user permission during the process of installing this package.

Do you want to continue with the installation of <LUim> [y,n,?]
```

7. Enter y. The program responds as follows:

```
Installing Lucent Installation Manager as <LUim>

## Installing part 1 of 1.
/opt/LUim/bin/examine_cd
/opt/LUim/bin/install
   .
   .
[ verifying class <none> ]
/opt/LUim/response/SUNWsbum <linked pathname>
/opt/LUim/response/SUNWsbus1 <linked pathname>
/opt/LUim/response/SUNWsbus2 <linked pathname>
## Executing postinstall script.
volume management starting.

Installation of <LUim> was successful.
```

After the Installation Manager package is installed, the program checks the CD for any new or updated packages. The status of the Installation Manager displays on window labeled Installation Manager Log. On a new system, the program responds as follows:

```
package LUim is already properly installed
installing LUahl package

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Installation of <LUahl> was successful.
Installing jre1.1.5
Unpacking...
   .
   .
  inflating: jre1.1.5/LICENSE
  inflating: jre1.1.5/README
Done.
installing /cdrom/cdrom0/orbixlibs/libITinimt.so
installing /cdrom/cdrom0/orbixlibs/liborbixmt.so
installing /cdrom/cdrom0/rwlibs/libdbt12d.so
installing /cdrom/cdrom0/rwlibs/libstd12d.so
installing /cdrom/cdrom0/rwlibs/libstd4d.so
installing /cdrom/cdrom0/rwlibs/libthr12d.so
installing /cdrom/cdrom0/rwlibs/libtls12d.so
```

When the program finishes, the CD is automatically ejected. The log window displays for about 10 seconds, and then goes away. The installation details are logged to a temporary file found at `/tmp/cdlog`. This log file will remain intact until the next system reboot.

8. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes.

Set Up CMS

Overview

After the CMS patches have been installed, TSC personnel set up the *CentreVu* CMS application to work with the customer's configuration. If the customer has ordered additional *CentreVu* CMS feature packages, these need to be installed as well.

Procedure

Chapter 2, "Setting Up *CentreVu* CMS and Installing Feature Packages," contains detailed instructions for setting up the CMS software.

Install the Aurora Ports Card Drivers

Overview

The following procedures are used to install the Aurora ports card drivers. The Aurora ports card is available for the *SPARCserver* computers only.

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- All the preceding factory software installation requirements in this appendix must be completed
- Log in as *root* at the console
- Obtain the “Aurora Drivers” CD.

Procedure

1. Load the “Aurora Drivers” CD into the CD-ROM drive.
2. Enter `who -r` to determine the computer’s state. You should see a message similar to the following:

```
.    run-level 3 <date and time> 3   0 S
```

3. If the computer is *not* in run-level 3, enter the following:

   `/usr/sbin/shutdown -y -i6 -g0`

4. After the shutdown, log back in as *root*.
5. Enter `mount` to verify the name of the CD-ROM. The program responds with a list of devices and filesystems currently mounted as shown below:

```
      . . .
      . . .
      . . .
/cdrom/aurora_drivers on /vol/dev/dsk/c0t2d0/aurora_drivers
read only on Wed Apr  1 12:10:33 1998
```

6. Add the Aurora package by entering the following:

   ```
   /usr/sbin/pkgadd -d /cdrom/cdrom0
   ```

   The program responds as follows:

```
The following packages are available:
  1  AURAacs   Aurora 40X, 80X, WMS 2000/3000 Base Driver
                  (sparc) 6.14
  2  AURAacsa  Aurora 40X, 80X, WMS 2000/3000 Asynchronous Drive
                  (sparc) 3.14
  3  AURAsio16 Aurora 1600SE device driver
                  (sparc) 5.13
Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

7. Select `1` and `2` to install the 8-port card drivers, select `3` to install the 16-port card drivers, or press Enter to select both sets of drivers.

   NOTE:

   Do *not* try to install the 16-port card drivers and then install the 8-port card drivers; you will get errors during installation. The following screens show the installation for both sets of drivers. If you select one or the other, your installation screens will differ.

   The program responds as follows:

```
Processing package instance <AURAacs> from
</cdrom/aurora_drivers>
Aurora 40X, 80X, WMS 2000/3000 Base Driver
(sparc) 6.14
   .
   .
This package contains scripts which will be executed with
super-user permission during the process of installing this
package.

Do you want to continue with the installation of <AURAacs>
[y,n,?]
```

8. Enter y. The program responds as follows:

```
Installing Aurora 40X, 80X, WMS 2000/3000 Base Driver
as <AURAacs>
## Installing part 1 of 1.
/etc/rc2.d/S91AURAacs
   .
   .
[ verifying class <sed> ]
## Executing postinstall script.

Installation of <AURAacs> successful.

There are 2 more packages to be installed.

Do you want to continue with installation [y,n,?]
```

9. Enter y. The program responds as follows:

```
Processing package instance <AURAacsa> from
</cdrom/aurora_drivers>
Aurora 40X, 80X, WMS 2000/3000 Asynchronous Driver
(sparc) 3.14
   .
   .
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
## Verifying package dependencies.
Do you want to continue with the installation of <AURAacsa>
[y,n,?]
```

10. Enter y. The program responds as follows:

```
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with super-
user permission during the process of installing this package.

Do you want to continue with the installation of <AURAacsa>
[y,n,?]
```

11. Enter y. The program responds as follows:

```
Installing Aurora 40X, 80X, WMS 2000/3000 Asynchronous Driver a
<AURAacsa>
## Installing part 1 of 1.
/etc/rc2.d/S92AURAacsa
   .
   .
## Executing postinstall script.

Installation of <AURAacsa> successful.

There is 1 more package to be installed.

Do you want to continue with installation [y,n,?]
```

12. Enter y. The program responds as follows:

```
Processing package instance <AURAsio16> from
</cdrom/aurora_drivers>
Aurora 1600SE device driver
(sparc) 5.13
   .
   .
This package contains scripts which will be executed with super
user permission during the process of installing this package.

Do you want to continue with the installation of <AURAsio16>
[y,n,?]
```

13. Enter y. The program responds as follows:

```
Installing Aurora 1600SE device driver as <AURAsio16>
## Installing part 1 of 1.
/kernel/drv/sio16
   .
   .
Installation of <AURAsio16> successful.

The following packages are available:

  1  AURAacs   Aurora 40X, 80X, WMS 2000/3000 Base Driver
                   (sparc) 6.14
  2  AURAacsa  Aurora 40X, 80X, WMS 2000/3000 Asynchronous Drive
                   (sparc) 3.14
  3  AURAsio16 Aurora 1600SE device driver
                   (sparc) 5.13

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

14. Enter q.
15. Enter `eject cdrom` to eject the CD-ROM.
16. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes.

Install the Open Database Connectivity Software

Overview

The following procedures are used to install the *OpenLink** Open Database Connectivity (ODBC) software. For more information about the ODBC feature, see *CentreVu* CMS R3V6 Open Database Connectivity (585-215-852).

Prerequisites

- The *Solaris* 2.5.1 operating system must be installed
- All the preceding factory software installation requirements in this appendix must be completed
- Log in as *root* at the console
- Obtain the “CMS *OpenLink* ODBC Driver” CD.

Procedure

1. Load the “CMS *OpenLink* ODBC Driver” CD into the CD-ROM drive.
2. Enter `who -r` to determine the computer’s state. You should see a message similar to the following:

```
.    run-level 3 <date and time> 3   0 S
```

3. If the computer is *not* in run-level 3, enter the following:

```
/usr/sbin/shutdown -y -i6 -g0
```

4. After the shutdown, log back in as *root*.

**OpenLink* is a trademark of OpenLink Software.

5. Enter `mount` to verify the name of the CD-ROM. The program responds with a list of devices and filesystems currently mounted as shown below:

```
      . . .
      . . .
      . . .
/cdrom/cdrom0/server on /vol/dev/dsk read only on Wed Apr  1
12:10:33 1998
```

6. Create the *OpenLink* ODBC driver directory by entering the following commands:

   `mkdir /usr/openlink`

   `cd /usr/openlink`

   pwd (to confirm you are in `/usr/openlink`)

7. Enter the following commands to copy the files from the CD-ROM and install the files:

   `cp /cdrom/cdrom0/server/* .`

   `./install.sh`

8. At the prompt, enter `root` as the name of the user who will own the programs and as the name of the group that will own the programs.

9. Enter the following to configure and initiate the ODBC software:

   `/cms/dc/odbc/odbc_init`

10. Enter the following to verify that the ODBC Request Broker is active on the server:

    `ps -ef | grep oplrqb`

11. Enter `cd` to move to the root directory.

12. Enter `eject cdrom` to eject the CD-ROM.

13. Remove the CD, place it back in its case, and push the CD-ROM tray in until it closes.

Set Up the Remote Console

Overview

This section describes how to set up the software for using the remote console.

Administer the Remote Console Port

To administer the A port on the back of your *Sun* computer, do the following:

1. Enter the following to remove the current A port administration:

   `/cms/install/bin/abcadm -r ttya`

   The program responds as follows:

```
ttya is currently set to be incoming

Are you sure you want to change it? [y,n,?]
```

2. Enter y. The program responds as follows:

```
ttya administration removed
```

3. Enter the following to remove the current B port administration:

   `/cms/install/bin/abcadm -r ttyb`

   The program responds as follows:

```
ttyb administration removed

Are you sure you want to change it? [y,n,?]
```

4. Enter y. The program responds as follows:

```
ttyb administration removed
```

5. Enter the following to administer the A port:

   ```
   /cms/install/bin/abcadm -i -b 9600 ttya
   ```

   The program responds as follows:

```
ttya set to incoming port 9600 baud
#
```

The remote console port has been administered.

Test the Remote Console Port

Test the A port on the back of a *Sun* computer by redirecting the console from the local console to the remote console, and then redirecting the console back to the local console from the remote console.

1. Dial in (from the remote console) to the remote console modem (that is, access the A port on the computer), and log in as *root*.
2. Remove the port monitor by entering the following:

   ```
   /cms/install/bin/abcadm -r ttya
   ```

   The program responds as follows:

```
ttya is currently set to be incoming

Are you sure you want to change it? [y,n,?]
```

3. Enter y. The program responds as follows:

```
ttya administration removed
```

4. Redirect the console to the A port (remote console) by entering the following:

   ```
   /cms/install/bin/abcadm -c -b 9600 ttya
   ```

   The program responds as follows:

```
This change requires a reboot to take affect

Are you ready to reboot? [y,n,?]
```

5. Enter y. The system will automatically reboot, and the A port will come up as the console.

   As the system reboots, the shutting down messages will appear on the local console. When the system starts to come back up, the local console should go blank, and the system boot diagnostics should appear on the remote console. After the system reboots, a login prompt should appear on the remote console.

6. Log in to the remote console as *root*.

   NOTE:

   At this time, an *OpenWindows* login window appears on the local console.

7. Redirect the console back to the local console by entering the following:

   ```
   /cms/install/bin/abcadm -c local
   ```

   The program responds as follows:

```
Console set to local

This change requires a reboot to take affect

Are you ready to reboot? [y,n,?]
```

8. Enter y. The system automatically reboots and the A port comes up as a regular dial-in port with the `login:` prompt displayed.

   As the system reboots, the shutting-down messages appears on the remote console. When the system starts to come back up, the system boot diagnostics should appear on the local console. After the system reboots, a login prompt should appear on the local console.

9. Log into the local console as *root*.

   The console has been redirected from the remote console to the local console.

Administer the NTS

Overview

Each NTS needs to be administered so it will be recognized on the network. The following networking items need to be administered:

- Internet address
- Subnet mask
- Preferred load host internet address
- Broadcast address
- Type of IP packet encapsulation.

NOTE:

The administration process needs to be completed on each NTS being installed. If you administer more than one NTS for this system, the IP addresses must be unique (see the table in Prerequisites).

Prerequisites

Obtain the Standard Network IP address and NTS IP address for each NTS you are administering:

Device	Network Name	IP Address*
Host Computer	*hostname*	129.200.9.1
First NTS	cmsterm1	129.200.9.11
Second NTS	cmsterm2	129.200.9.12
Third NTS	cmsterm3	129.200.9.13
Fourth NTS	cmsterm4	129.200.9.14
Fifth NTS	cmsterm5	129.200.9.15
Sixth NTS	cmsterm6	129.200.9.16
Seventh NTS	cmsterm7	129.200.9.17

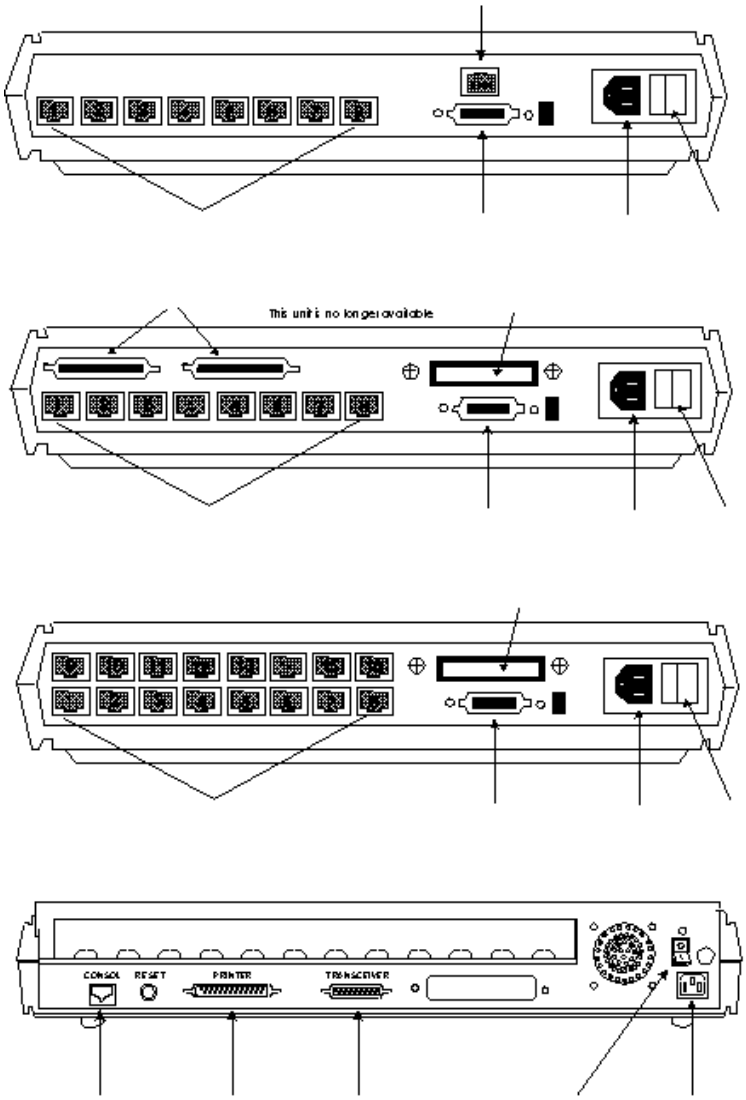
* The IP addresses shown here are the factory defaults. Use the actual system addresses as required.

Procedure

1. Edit the *hosts* file by entering the following:

   ```
   vi /etc/inet/hosts
   ```

2. Add a separate line in this file for each NTS that corresponds to the addresses from the Prerequisites table.
3. Enter `:w!` to overwrite the existing file.
4. Enter `:q` to quit editing the file.
5. Connect the power cord to the NTS (see the following figure).



6. Connect the 10-T transceiver to the network transceiver port on the back panel of the NTS.
7. Connect the network hub unit to the NTS (10-T transceiver) using a UTP network cable.

   Connect a dumb terminal to the **CONSOLE** port on the rear of the NTS using the console cable and adapter that came with the NTS. On the 8- and 16-port NTSs, the **CONSOLE** port is port **#1**.

   You will need the following for the 8- and 16-port units:

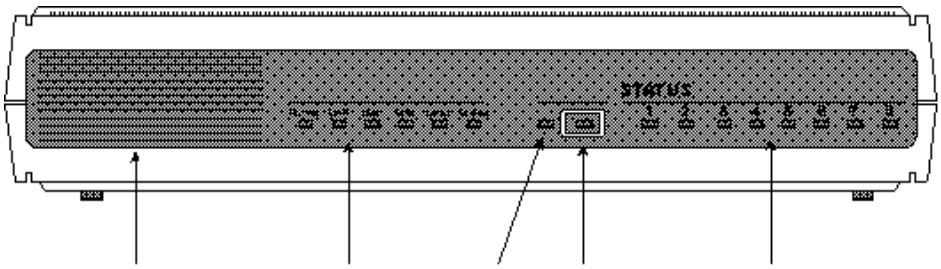
   - Console Cable
   - Adapter - comcode 407361823
   - Null Modem - comcode 407122043.

   You will need the following for the 64-port unit:

   - Console Cable
   - Adapter - part number 06-988-260-20.

   NOTE:

   The terminal options should be set to 9600 bps, 8 bits, no parity, and a stop bit.
8. Turn on the NTS, and within 15 seconds push the **TEST** switch on the front of the NTS (see the following figure).



9. The NTS goes through its hardware diagnostics, and the following prompt should appear:

```
Monitor::
```

10. Enter the `erase` command.

    NOTE:

    There are two types of information that can be erased:

    - EEPROM (configuration information)
    - FLASH (self-boot image).

    If only one type of information is present, the program begins to erase it. If there are two types of information, the program prompts you to select the information you want to erase. Erase both the EEPROM and the FLASH information.

    The program responds as follows:

```
Erase
   1) EEPROM (i.e., Configuration Information)
   2) FLASH (i.e., Self Boot Image)
Enter 1 or 2::
```

11. Enter `1` to erase EEPROM. The program responds as follows:

```
Erase all non-volatile EEPROM memory? (y/n) [n]::
```

12. Enter y. The program responds as follows:

```
Erasing xxxx bytes of non-volatile memory. Please wait....
.............................
Erased xxxx bytes of non-volatile memory complete.
Monitor::
```

13. Repeat Steps 10 through 12, but select `2` (FLASH) to erase the FLASH information.

14. After you have completed the `erase` command, enter `addr`. The program responds as follows:

```
Enter Internet address [<uninitialized>]::
```

15. Enter the IP address for this NTS. This should follow the IP address structure outlined earlier in Prerequisites. The program responds as follows:

```
     Internet address : XXX.XXX.XXX.XXX

Enter Subnet mask [255.255.255.0]::
```

16. Enter the appropriate netmask, or press Enter to accept the default. The program responds as follows:

```
     Subnet mask: xxx.xxx.x.x

Enter preferred load host Internet address [<any host>]::
```

17. Enter the IP address of the *Sun* system. The program responds as follows:

```
     Preferred load host address XXX.XXX.XXX.XXX

Enter Broadcast address [0.0.0.0]::
```

18. Press Enter to accept the default broadcast message address. The program responds as follows:

```
Enter Preferred dump address [0.0.0.0]::)
```

19. Enter the IP address of the *Sun* system. The program responds as follows:

```
     Preferred dump address: xxx.xx.x.x

Select type of IP packet encapsulation (ieee802/ethernet)
[<ethernet>] ::
```

20. Press Enter to accept the default IP packet encapsulation. The program responds with the following question if you have an 8- or 16-port NTS:

```
     Type of IP packet encapsulation: <ethernet>

Load Broadcast Y/N [Y]::
```

The program returns to the `monitor::` prompt if you have a 64-port NTS.

21. Enter `N`. The program returns to the `monitor::` prompt.
22. Enter the `boot` command at the monitor prompt to reinitialize the NTS with the new parameters. The program responds as follows:

```
Enter boot file name [oper.42.enet]::
```

NOTE:

The boot file name differs depending on the type of NTS. For the 8- and 16-port NTS, the boot file name is `[(ip) “oper.52.enet”,(mop)“OPER_52_ENET.SYS”]::`. For the 64- port NTS, the boot file name is `oper.42.enet`.

23. Press Enter to accept the default boot file name. The program responds as follows:

```
      Requesting boot file “oper.42.enet”.
      Unanswered requests shown as ‘?’,
                                transmission errors as ‘*’.

      Booting file: oper.42.enet from 129.200.9.1

      Loading image from 129.200.9.1
 ....................
```

The periods (dots) continue to appear as the NTS is initialized and set up.

NOTE:

If the program displays “SELF” instead of the IP address (129.200.9.1 is the factory default; your IP address may be different), it means that you did not erase EEPROM. Go back to Step 10 to erase EEPROM.

When the initialization finishes, the program responds as follows:

```
annex::
```

24. Disconnect the dumb terminal from the NTS.

The NTS has been administered.

Perform a CMSADM File System Backup

The CMSADM file system backup saves all the file systems on the machine onto a tape.

Overview

The CMSADM file system backup includes the following:

- *Solaris* 2.5.1 system files and programs
- *CentreVu* CMS programs and data
- Non-*CentreVu* CMS customer data placed on the computer (in addition to the *CentreVu* CMS data).

The CMSADM file system backup should be done as follows:

- After the *CentreVu* CMS is provisioned

  This backup contains the *Solaris* system files and programs and *CentreVu* CMS configuration data placed on the computer by TSC provisioning personnel.

  In addition, field technicians should perform a *CentreVu* CMS full maintenance backup before they turn a new system over to the customer. See *CentreVu* CMS R3V6 Administration (585-215-850).
- Before and after the *CentreVu* CMS software is upgraded or updated
- Monthly.

The number of cartridge tapes required to complete a CMSADM file system backup depends on the amount of data on the system and the capacity of the backup tape. The program estimates the number of tapes required and informs the user.

Prerequisites

- Before starting the backup procedures in this section, log in as *root,* and enter `lp /etc/vfstab`. The output from the printer is necessary when doing a system restore. Bundle the printout of the `/etc/vfstab` file with the system backup tape(s) for future reference.
- Verify that the computer is in a *Solaris* multi-user state (2 or 3). To check if you are in the multi-user state, enter `who -r`.

Procedure

1. Enter `cmsadm` to access the *CentreVu* CMS Administration menu. The *CentreVu* CMS Administration menu appears as follows:

```
Lucent Technologies CentreVu(R) 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 CMS on or off
Enter choice (1-9) or q to quit:
```

2. Enter `3` to select the `backup` option.

   The program responds as follows:

```
   Select tape drive to use:
      1) 150MB cartridge tape
      2) 14.0 Gbyte 8mm tape
      3) 5.0 Gbyte 8mm tape
      4) 2.5 Gbyte cartridge tape
      5) 4.0 - 8.0 Gbyte cartridge tape

   Enter choice (1-5):
```

3. Enter the number for the tape drive installed on your system.

   The system begins calculating the approximate number of tapes required. You are not prompted.

   If the number of tapes required is 1, the system responds as follows:

```
The backup will need approximately 1 tape.

Please insert the first cartridge tape into </dev/rmt/x>.

Press ENTER when ready:
```

   If the number of tapes required is more than one, the system responds as follows:

```
The backup will need approximately <X> tapes.

Be sure to number the cartridge tapes consecutively in the
order they will be inserted.

Please insert the first cartridge tape into </dev/rmt/x>.

Press ENTER when ready:
```

4. To begin the backup, insert the cartridge tape, wait for the tape to rewind and reposition, and then press Enter.

   If *CentreVu* CMS is turned on, the system responds as follows:

```
The backup is about to begin, CMS is currently on. CMS
will be turned off automatically during that portion of
the backup which needs CMS off.
Press ENTER to proceed or Del to quit.
```

5. To continue the backup, press Enter.

   If you are using one tape, the system responds as follows:

```
Backing up files...
.................
...(dots continue to display as the system is backed up)
XXXXXX Blocks
Tape verification
XXXXXX Blocks

Please label the backup tape(s) with the date and the
current CMS version (r3v6xx.x).
```

   If you are using more than one tape, the system responds as follows:

```
Backing up files ...
.................
.................
.................
Please remove the current tape, number it, insert
tape number X, and press ENTER.
```

6. Insert the next tape and press Enter to continue. When you insert another tape, allow it to rewind and reposition before you press Enter.

   After the system completes the backup, the system responds as follows:

```
Tape Verification
Insert the first tape

Press return to proceed:(there is a delay as tape is
verified)
```

7. Insert the first tape and press Enter to continue. If you are using more than one tape, the system responds as follows:

```
Tape Verification
Insert the first tape

Press return to proceed:(there is a delay as tape is
verified)

Please insert tape number X and press return: (there is a
delay as tape is verified)
```

   After the tape verification, the system responds as follows:

```
Please label the backup tape(s) with the date and the
current CMS version (<version>).
```

8. Label the CMSADM backup tapes with the date and *CentreVu* CMS version. The CMSADM file system backup is complete.

Glossary

Overview

This Glossary defines terms and acronyms used in this document that may not be familiar to you. The Glossary includes a separate list of Acronyms at the end.

Terminology

Access Permissions — Permissions assigned to a Call Management System (CMS) user so that the user can access different subsystems in CMS or administer specific elements (splits/skills, trunks, vectors, and so on) of Automatic Call Distribution (ACD). Access permissions are specified as **read** or **write** permission. Read permission allows the CMS user to access and view data (for example, run reports or view the Dictionary subsystem). Write permission allows the CMS user to add, modify, or delete data and execute processes.

Acknowledgment — A window that requires the user to confirm an action or to acknowledge a system message (for example, system going down, warning, or fatal error for the user window). This window cannot be moved, sized, or scrolled and disappears only when the user confirms the message.

Action List — A menu in the upper right corner of most user windows. The menu lists the actions available for that particular user window (for example, add, modify, delete, and so on). The user selects an action after entering necessary data in the window.

Add Package — A *Solaris** operating system command (`pkgadd`) that allows you to add an additional software package.

Agent — A person who answers calls to an extension in an ACD split. This person is known to CMS by a login identification keyed into a voice terminal.

Agent Login ID — A 1- to 4-digit number (Generic 2) or a 1- to 9-digit number (Generic 3) entered by the agent at the ACD extension to activate the position. Agent logins are required for all CMS-measured ACD agents.

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Agent Skill
The different types of calls a particular agent can handle. An agent can be assigned up to four skills. These skills are assigned as either primary or secondary skills. See “Primary Skill” or “Secondary Skill” definitions in this Glossary.

Agent State
A feature of agent call handling that allows agents to change their availability to the system (for example, ACW, AVAIL, ACD).

Announcement
A recorded message that tells the caller what destination the call has reached. The announcement also often tries to persuade the caller to stay on the line. With Call Vectoring, announcements can be part of a vector’s call processing. An announcement is assigned to a vector by entering an announcement number.

Asynchronous Connector
A logical device used to control the computer timing protocol in which a specific operation is begun upon receipt of an indication (signal) that the preceding operation has been completed.

Asynchronous Data Transmission
A scheme for transmitting data where each character is preceded by a start bit and followed by a stop bit, thus permitting data elements to occur at irregular intervals. This type of transmission is advantageous when transmission is not regular (when characters are typed at a keyboard).

Asynchronous Data Unit (ADU)
A data communications equipment (DCE) type device that allows direct connection between RS-232 equipment and the digital switch.

Automatic Call Distribution (ACD)
A switch feature. ACD is software that channels high-volume incoming call traffic to agent groups (splits or skills).

Also an agent state where the extension is engaged in an ACD call (with the agent either talking to the caller or the call waiting on hold).

Backup
The process of protecting data by writing the contents of the disk to a tape that can be removed from the computer and stored safely. A spare copy of data or software that you keep in case the original is damaged or lost. CMS provides three different types of backups: CMSADM File System Backup, CMS Full Maintenance Backup, and CMS Incremental Maintenance Backup.

Boot
To load the system software into memory and start it running.

Bus
A signal route to which several items of a computer system may be connected in parallel so that signals can be passed between them.

In general, a multiconductor electrical path used to transfer information over a common connection from any of several sources to any of several destinations.

Cables — Wires or bundles of wires configured with adapters or connectors at each end and used to connect two or more hardware devices.

Call Level Interface (CLI) — A database programming interface from the Structured Query Language (SQL) Access Group, an SQL membership organization. Under CLI, SQL statements are passed directly to the server without being recompiled.

Call Management System Query Language (CMS-QL) — A relational database management (operating) system used to organize most of CMS's data. Automatically comes with CMS and runs in the background.

Call Vectoring — A highly flexible method for processing ACD calls using Vector Directory Numbers (VDNs) and vectors as processing points between trunk groups and splits or skills. Call vectoring permits treatment of calls that is independent of splits or skills.

Cartridge Tape — A 0.25-inch (6.35-mm) magnetic tape used in the tape drive of the Desktop Backup Pack and External Storage Module to read and write data.

***CentreVu*® CMS** — *CentreVu* Call Management System (CMS). A software product used by business customers that have a Lucent Technologies telecommunications switch and receive a large volume of telephone calls that are processed through the Automatic Call Distribution (ACD) feature of the switch.

CMS Administration (CMSADM) Filesystem Backup — A backup that saves all the file systems on the machine which includes *Solaris* 2.5.1 system and programs, CMS programs and data, and non-CMS data you place on the computer in addition to the CMS data. See the "Backup" definition for more details.

Command — A command is an instruction used to tell the computer to perform a function or to carry out an activity.

Configuration — Configuration is the way that the computer is set up to allow for particular uses or situations.

Copy — Copy means to duplicate information.

Custom Reports — Real-time or historical reports that have been customized from standard reports or created from original design.

Daemon Pronounced “demon.” A *UNIX*[*] program that executes in the background ready to perform an operation when required. Usually unattended processes initiated at start-up, such as print spoolers, e-mail handlers or schedulers.

Data Collection Off CMS is not collecting ACD data. If you turn off data collection, CMS will not collect data on current call activity.

Database A group of files that store ACD data according to a specific time frame: current and previous intrahour real-time data and intrahour, daily, weekly, and monthly historical data.

Database Item A name for a specific type of data stored in one of the CMS databases. A database item may store ACD identifiers (split numbers or names, login IDs, VDNs, and so on) or statistical data on ACD performance (number of ACD calls, wait time for calls in queue, current states of individual agents, and so on).

Database Tables Tables that CMS uses to collect, store, and retrieve ACD data. Standard CMS items (database items) are names of columns in the CMS database tables.

Data Communications Equipment (DCE) Modems are a good example of DCE. Any equipment that connects to Data Terminal equipment (DTE) using an RS-232 standard interface.

Data Communications Interface Unit (DCIU) A hardware device on the Generic 2 switches that prepares and sends architecture messages to other switches or application adjuncts.

Data Terminal Equipment (DTE) Data Terminal Equipment (DTE) includes terminals, personal computers, and workstations. A *Sun*[†] *SPARCserver*[‡] computer is a DTE device.

Device The term used to refer to the peripheral itself; for example, a hard disk or a tape drive. A peripheral is sometimes referred to as a subdevice or an Logical Unit (LU).

Disk A round platter, or set of platters, coated with magnetic medium and organized into concentric tracks for storing data.

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*_UNIX_ is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company Limited.
†_Sun_ is a registered trademark of Sun Microsystems, Inc.
‡_SPARCserver_ is a trademark of SPARC International, Inc.

Dynamic random access memory Single In-line Memory Module (DSIMM)

A small printed circuit card that contains Dynamic Random Access Memory (DRAM).

Error Correction Code (ECC)

A code that protects the customer's system and data from single bit soft errors that can occur frequently depending on the environment.

Error Message

An error message is a response from a program indicating that a problem has arisen or something unexpected has happened, requiring your attention.

Ethernet

A type of network hardware that allows communication between systems connected directly together by transceiver taps, transceiver cables, and a coaxial cable. Also implemented using twisted-pair telecommunications wire and cable.

Ethernet Address

A unique number assigned to each system when it is manufactured. The Ethernet address of your system is displayed on the banner screen that appears when you power on your system.

Exception

A type of activity on the ACD which falls outside of the limits the customer has defined. An exceptional condition is defined in the CMS Exceptions subsystem, and usually indicates abnormal or unacceptable performance on the ACD (by agents, splits or skills, VDNs, vectors, trunks, or trunk groups).

Expert Agent Distribution (EAD)

A call queued for a skill will go to the most idle agent (primary skill agent). Agents who are idle and have secondary agent skills will receive the call queued for a skill if there are no primary agents available.

Expert Agent Selection (EAS)

An optional feature that bases call distribution on agent skill (such as language capability). EAS matches the skills required to handle a call to an agent who has at least one of the skills required.

External Controller

A connector that is outside the cabinet and is accessible to the user without having to open any doors, remove any panels, or remove any cabinet covers (also known as an "External Connector").

Forecast Reports

These reports display expected call traffic and agent or trunk group requirements for the customer's call center for a particular day or period in the future.

Gigabyte (GB)

One gigabyte equals 2^{30} bytes (1073741824 bytes).

Hand-Shaking Logic A format used to initiate a data connection between two data module devices.

Hard Disk A device that stores operating systems, programs, and data files.

High Speed Serial Interface/SBus (HSI/S) The HSI/S controller card is a 4-port serial communications SBus card. Each of the four ports is used for a single physical X.25 link. It is an add-on package that is needed by CMS for multiple ACDs.

Historical Database Contains intrahour records for up to 62 days in the past, daily records for up to 5 years in the past, and weekly or monthly records for up to 10 years for each CMS-measured agent, split or skill, trunk, trunk group, vector, and VDN.

Historical Reports Reports that display past ACD data for various agent, split or skill, trunk, trunk group, vector, or VDN activities.

Host Adapter An I/O card that plugs into the computer backplane and is used as an interface between the computer system and the Small Computer System Interface (SCSI) bus.

Host Computer A computer that is attached to a network and provides services other than simply acting as a store-and-forward processor or communication switch. The *Sun SPARCserver* or *Sun Enterprise 3000* computer is your host computer and hosts the CMS application software.

Host Name A name that you (or your system administrator) assign to your system unit to uniquely identify it to the *Solaris 2.5.1* operating system (and also to the network).

Hung System A system that does not respond to input from the keyboard or mouse.

INFORMIX* A relational database management system used to organize CMS's data. An add-on software package needed by CMS.

Install The procedures used to set up the hardware and software of a computer, terminal, printer, and modem so that they can be used. Installing often includes customizing the system for a particular situation or user.

Interface A common boundary between two systems or pieces of equipment.

**INFORMIX* is a registered trademark of Informix Software, Inc.

International Telecommunications Union (ITU)
Formerly the Consultative Committee for International Telephony and Telegraphy (CCITT). An international organization that sets communications standards.

Internet Protocol (IP)
An integral part of the internet communication protocol system (see Transmission Control Protocol/Internet Protocol [TCP/IP]). The IP provides the routing mechanism of the TCP/IP. See also Network Address.

Interval-Based Items
A category of database items. These items represent the amount of time during a collection interval spent doing a particular activity. Interval-based items are updated throughout the collection interval and timing is restarted at the end of the interval. Interval-based items should only be used to show the amount of time in an interval for an activity or to calculate percentages of time spent in an interval. Interval-based items should not be used to calculate averages (such as average hold time).

Intrahour Interval
A 15-, 30-, or 60-minute segment of time starting on the hour. An intrahour interval is the basic unit of CMS report time.

Keyboard
An input device for entering information by typing.

Keyboard Port
The port on your Desktop *Sun SPARCserver* computer unit where the keyboard cable is connected.

Link Access Procedure Balanced
The ITU standard error correction protocol used on most current X.25 packet switching networks.

Link
A transmitter-receiver channel or system that connects two locations.

Log In
The process of gaining access to a system by entering a user name and, optionally, a password.

Log Out
The process of exiting from a system.

Logical Unit
The term used to refer to a peripheral device such as a disk drive.

Measured
A term that means an ACD element (agent, split or skill, trunk, trunk group, vector, VDN) has been identified to CMS for collection of data.

Megabyte (MB)
One megabyte equals 2^{20} bytes (1048576 bytes).

Menu
A list of items from which the user can select one. A menu cannot be moved or sized and does not count in the user window count.

Messages Temporary windows used only for displaying information like “field help” and syntactical field errors. Message windows cannot be moved, sized, or scrolled and do not count in the user-window count. Messages windows are automatically removed when the user corrects the error or moves to the next field.

Modem A device that enables a computer or terminal to establish a connection with another computer or terminal and to communicate data through telephone lines.

Multi-user Mode A mode of CMS in which any administered CMS user can log into CMS. Data continues to be collected if data collection is “on.”

Network Address A unique number assigned to each system on a network, consisting of the network number and the system number. Also known as Internet Address or Internet Protocol (IP) address.

Network Hub Hardware that connects a computer to a Network Terminal Server (NTS).

Network Terminal Server (NTS) A hardware terminal that connects to the Network Hub via cabling. The NTS provides 50-pin switch champ connectors used to attach 64 serial devices using the patch panel cables and patch panels.

Network Terminal Server Patch Panel Hardware that has ports for connecting serial peripheral devices (for example, printers, terminals and modems). The NTS patch panel connects to the NTS via PBX-Champ cabling.

Non-Volatile Random Access Memory (NVRAM) A random access memory (RAM) system that holds its contents when external power is lost.

Open Window A window that remains open because the user has not yet closed it with the “Exit” Screen Label Key (SLK). An open window becomes the current window when it initially appears on the screen or when the user makes it the current window using the “Current” SLK.

Operating System (OS) The software that controls and allocates the resources, such as memory, disk storage, and the screen display for the computer.

Partitions Sections of the hard disk that are used to store an operating system and data files or programs. By dividing the disk into partitions, you can use the space allocated in a more efficient and organized manner.

Password A character string that is associated with a user name. Provides security for a user account. Desktop *Sun SPARCserver* computers require you to type a

password when you log into the system, so that no unauthorized person can use your system.

Port (I/O Port) A designation of the location of a circuit that provides an interface between the system and lines and/or trunks.

Primary Skill An agent will handle calls to many skills before calls to secondary skills. See “Agent Skill” in this Glossary.

Primary Window The first window opened in response to a menu selection. A primary window may also generate another user window (secondary window). A primary window can be moved, sized, or scrolled, and counts in the window count.

Printer A physical device that takes electronic signals, interprets them, and prints them on paper.

Private Branch Exchange (PBX) A private switch system providing voice-only or voice and data communications services (including access to public and private networks) for a group of terminals within a customer’s premises. Also see Switch.

Processor Interface (PI) A hardware device on the Generic 3i switches that prepares and sends architecture messages to other switches or application adjuncts.

Queue A holding area for calls waiting to be answered in the order in which they were received. Calls in a queue may have different priority levels, in which case, calls with a higher priority are answered first.

Read Permission A mode that allows a CMS user to access and view data (for example, run reports or view the Dictionary subsystem). Read permission is granted from the User Permissions subsystem.

Real-Time Database A database that consists of the current and previous intrahour data on each CMS-measured agent, split or skill, trunk, trunk group, vector, and Vector Directory Number (VDN).

Real-Time Reports Reports that display current ACD call activity on agents, splits or skills, trunks, trunk groups, vectors, and VDNs for the current or previous intrahour interval. Current intrahour interval real-time reports are constantly updated as data changes during the interval. Previous intrahour interval real-time reports show data totals for activity that occurred in the previous intra-hour interval.

Recommended Standard (RS) Any one of several Electronic Industries Association (EIA) standards commonly used in U.S. electronic applications.

Refresh Rate The number of seconds CMS should wait for each update of the real-time report data. A user's fastest allowable refresh rate is defined in the User Permissions — User Data window as a minimum refresh rate. The default refresh rate when a user brings up the report input window is the administered minimum refresh rate plus 15 seconds.

RS-232 An electrical interface standard, normally using a 25-pin (DB-25) physical connector. The electrical portion of the interface is unbalanced (for example, RS-232 has a positive voltage and a ground). This standard was officially renamed TIA/EIA-232-E in 1984, but the RS-232 designation is still most commonly used.

RS-422 A balanced electrical interface (for example, RS-422 has a positive and a negative voltage). This interface is used by the HSI/S card.

RS-423 An unbalanced electrical interface (for example, RS-423 has a positive voltage and a ground).

RS-449 A 37-pin physical interface used by the HSI/S card.

SBus The Input/Output bus for the *Sun SPARCserver* computer. Provides slots for additional cards (for example, HSI Controller Card).

SBus Expansion Subsystem A peripheral device attached to a computer system. The SBus expansion subsystem provides three additional SBus slots and space for two optional SCSI hard disk drives. The SBus expansion subsystem consists of the following: the SBus expansion chassis, the expansion adapter card (in the computer system), and the SBus expansion subsystem cable.

Screen Labeled Key (SLK) The first eight function keys at the top of the keyboard that correspond to the screen labels at the bottom of the terminal screen. The screen labels indicate the function each key performs.

Scroll Cursor *INFORMIX* provides two kinds of cursors when traversing select results. A scroll cursor allows relative movement backward or forward within the query results while a non-scroll cursor allows only forward movement, one record at a time.

SCSI See Small Computer System Interface.

SCSI Bus An industry standard peripheral bus that is used to connect intelligent peripherals to a computer. It uses a daisy-chained cabling arrangement that originates at the Host Adapter to interconnect up to seven intelligent

peripheral controllers on the bus. The *Sun SPARCserver* computer uses a fast SCSI-2 implementation.

SCSI ID — Each tap on the SCSI bus is required to have a unique identification or address, which is the SCSI ID. The ID is set by a switch located on each controller. In a Lucent Technologies' implementation, the Host Adapter card (with a SCSI ID of 7) is preset. The remainder can be set with external devices "push buttons." Users never have to open a chassis or touch a circuit-board switch.

SCSI Single-Ended Bus — A version of the SCSI bus designed to minimize cost and space. Cable lengths up to 6 meters are supported. It is not compatible with the differential version of the SCSI bus.

Secondary Skill — An agent will handle secondary skill calls after primary skill calls. See "Agent Skill" in this Glossary.

Secondary Window — A user window that is generated from a primary window. Secondary windows can be moved, sized, or scrolled and do not count in the user window count.

Serial Interface Y-Cable — A cable that attaches to the A/B port on the back of the *Sun SPARCserver* 10/20 computer. The Desktop *Sun SPARCserver* 10/20 computer system has two serial ports located on the two terminations of its optional serial interface Y-cable.

Shortcut — A series of tasks which are run immediately on the screen. Shortcut is a fast, easy way to select windows that the customer might look at every day.

Single-User Mode — A CMS mode in which only one person can log into CMS. Data collection continues if data collection is "on." This mode is required to change some CMS administration.

Skill — In relationship to the call center, think of skill as a specific customer need or requirement, or perhaps a business need of the call center.

Slot — An electronic connection designed to receive a module or a printed circuit board (such as a Single In-line Memory Module [SIMM] or a frame buffer board).

Small Computer System Interface (SCSI) — A hardware interface that allows the connection of peripheral devices (such as hard disks, tape drives and CD-ROM drives) to a computer system.

Solaris The operating system package on the *Sun SPARCserver* computer. *Solaris* is a version of the *UNIX* System V Release 4. CMS requires *Solaris* to run on the *Sun SPARCserver* computer or *Sun Enterprise 3000* computer.

Split A group of extensions that receive special-purpose calls in an efficient, cost-effective manner. Normally, calls to a split arrive over one or a few trunk groups.

Storage Device A hardware device that can receive data and retain it for subsequent retrieval. Such devices cover a wide range of capacities and speeds of access.

Structured Query Language (SQL) A language used to interrogate and process data in a relational database. SQL commands can be used to interactively work with a database or can be embedded within a programming language to interface to a database.

Submenu A menu that appears as a result of a menu selection. All menu selections followed by a ‘‘>’’ have submenus.

Subsystem Each CMS main menu selection (for example, Reports, Dictionary, System Setup, Exceptions, and so on), along with Timetable and Shortcut, is referred to as a subsystem of the Call Management System throughout this document.

Sun Enterprise **System** A series of host computer systems manufactured by Sun Microsystems Inc. The *Sun Enterprise 3000* computer is a platform used to support *CentreVu*® CMS R3V6 and later versions as a replacement for the discontinued *Sun SPARCserver* 10/20 platforms.

Sun SPARCserver **Computer** A host computer that is attached to a network and provides services other than simply acting as a store-and-forward processor or communication switch. For CMS R3V6, the *Sun SPARCserver* 5 is available for new installations. See *Sun Enterprise* systems above for replacement information.

Super-user A user with full access privileges on a system, unlike a regular user whose access to files and accounts is limited.

Switch A private switch system providing voice-only or voice and data communications services (including access to public and private networks) for a group of terminals within a customer’s premises.
Also see PBX.

Syntax The format of a command line.

System A general term for a computer and its software and data.

Tap A tap is any intelligent (microprocessor-based) controller connected to the SCSI bus.

Tape Cartridge A magnetic piece of hardware that is used as a storage unit for data. The SCSI QIC-150, SCSI QIC 2.5-GB, SCSI 4-8 SLR, 8mm 5-GB, and 8mm 14-GB tape cartridges are used to back up and copy data for the platform.

Task Used with Timetables and Shortcuts. A task is a combination of inputs on a user window (like a report input window) and the completed action list selection (Add, Modify, and so on) which, when executed, performs an operation (for example, running a report).

Transmission Control Protocol/Internet Protocol (TCP/IP) A communications protocol that provides interworking between dissimilar systems. It is the de facto standard for *UNIX* systems.

Terminal A device that consists of a video display and keyboard that you use to type and display information. A terminal is connected to a serial port on the NTS. This is not the same thing as a monitor.

Timetable An activity task or group of activities tasks (like reports) scheduled for completion at a time that is convenient and nondisruptive for the call center's operation.

Trunk A telephone line that carries calls between two switches, between a Central Office (CO) and a switch, or between a CO and a phone.

Trunk Group A group of trunks that are assigned the same dialing digits — either a phone number or a Direct Inward Dialing (DID) prefix.

***UNIX* System** The operating system on the computer on which CMS runs. A user can access the *UNIX* system from the "Commands" SLK. *SUN* uses *Solaris* as its *UNIX* operating system.

User ID The login ID for a CMS user.

User Name A combination of letters, and possibly numbers, that identifies a user to the system.

User Window A window the user can move, size, or scroll. It may contain input fields, reports, or help information.

Vector A list of steps that process calls in a user-defined manner. The steps in a vector can send calls to splits, play announcements and/or music, disconnect calls, give calls a busy signal, or route calls to other destinations. Calls enter vector processing by way of VDNs, which may have received calls from assigned trunk groups, from other vectors, or from extensions connected to the switch.

Vector Command The keyword in a vector step that describes the action to be executed on an incoming call (for example, “Queue to main,” “check backup,” “disconnect”).

Vector Directory Number (VDN) An extension number that is used in ACD software to permit calls to connect to a vector for processing. A VDN is not assigned an equipment location; it is assigned to a vector. A VDN can connect calls to a vector when the calls arrive over an assigned automatic-in trunk group or when calls arrive over a dial-repeating (DID) trunk group, and the final digits match the VDN. The VDN by itself may be dialed to access the vector from any extension connected to the switch.

Vector Step One processing step listed in a vector. A vector step consists of a command and one or more conditions or parameters.

Voice Terminal A telephone set, usually with buttons, that gives an agent some control over the way calls are handled.

Weekly/Monthly Data Daily data that has been converted to a weekly or monthly summary.

Window Any rectangle on the CMS screen that encloses a menu, data entry fields, reports, or messages.

Window Count The number of primary windows that can be open at any one time.

Write Permission A mode of CMS that allows the CMS user to add, modify, or delete data and execute processes. Write permission is granted from the User Permissions subsystem.

X.25 An ITU communications protocol standard for packet switching networks that typically operates at 56 Kbps or less. An add-on software package that allows CMS to communicate with the switch using X.25 protocol.

Acronyms

ACD — Automatic Call Distribution

ADU — Asynchronous Data Unit

ANSI — American National Standards Institute

CLI — Call Level Interface

CMS — Call Management System

CMSADM — Call Management System Administration

CMSSVC — Call Management System Services

DCE — Data Communications Equipment

DCIU — Data Communications Interface Unit

DIP — Dual In-Line Package

DSIMM — Dynamic Random Access Memory Single In-line Memory Module

DTE — Data Terminal Equipment

EAD — Expert Agent Distribution

EAS — Expert Agent Selection

ECC — Error Correction Codes

EIA — Electronic Industries Association

ESQL/C — Embedded SQL within ‘C’ language

HSI/S — High Speed Serial Interface/SBus

IDI — Isolating Data Interface

ILS — International Language Supplement

IP — Internet Protocol

IPC — Intelligent Ports Card

ITU — International Telecommunication Union

LAPB — Link Access Procedure Balanced

NTS — Network Terminal Server

NVRAM — Non-Volatile Random Access Memory

PBX — Private Branch Exchange

PEC — Price Element Code

QPPCN — Quality Protection Plan Change Notice

RAM — Random Access Memory

RISC — Reduced Instruction Set Computer

RS—Recommended Standard

SCSI — Small Computer System Interface

SIMM—Single In-line Memory Module

SLK — Screen-labeled Key

SLR— Single-channel Linear Recording

SQL — Structured Query Language

TCP/IP—Transmission Control Protocol/Internet Protocol

TIA — Telecommunication Industry Association

TSC — Technical Service Center

UPS — Uninterrupted (or Uninterruptable) Power Supply

VDN — Vector Directory Number

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