Cluster Platform 15K/9960 System

Installation Guide

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Preface

This guide contains an overview of the hardware and software for the Cluster Platform 15K/9960 system and procedures for installing and configuring the hardware and software.

To use this guide, you must have prior experience installing the Solaris™ operating environment and must have Sun™ service training.

How This Book is Organized

This guide is organized in the following manner:

Chapter 1 contains an introduction to the hardware and software in the Cluster Platform 15K/9960 system.

Chapter 2 contains instructions on how to set up the hardware.

Chapter 3 contains procedures on how to access the terminal concentrator, set up the management server, and how to configure the software.

Appendix A covers laptop settings for accessing the terminal concentrator from a laptop.

Appendix B contains descriptions of how the expansion cabinet was cabled at the factory.

Task Map

This section contains a task map for installing and configuring the Cluster Platform 15K/9960 system. You must follow this task map to ensure a successful installation.

1. Read all of the Cluster Platform 15K/9960 documentation, Sun Fire™ 15K documentation, and Sun StorEdge™ 9960 documentation that was sent with the system.

2. Unpack all of the system crates.

3. Obtain domain A Ethernet address for both cluster nodes (look up label on the server frame), and save that information in the *Cluster Platform 15K/9960 System Site Planning Guide*.

4. Verify compliance with all requirements specified in the *Cluster Platform 15K/9960 System Site Planning Guide*.

5. Cable the system components (consoles, disks, network interfaces), and make sure that the power cables are attached to proper power sources.

6. Power on the expansion cabinet.

7. Power on the Sun StorEdge 9960.

8. Create and configure the LUNs

   The LUNs must be bound to the appropriate FCAL links that are attached to the cluster nodes and must be accessible by both cluster nodes (that is, the shared storage).

9. Connect and configure the terminal concentrator by using a Sun workstation or a laptop PC.

10. Start a console session for the system controllers (that is, SC0 and SC1) for both cluster nodes by using the `telnet`(1M) command on specific ports of the terminal concentrator.

    To access the system controller consoles, use one of the following command:

```
# telnet TC 2002 (SC0 on node 1)
# telnet TC 2003 (SC1 on node 1)
# telnet TC 2004 (SC0 on node 2)
# telnet TC 2005 (SC1 on node 2)
```

11. Power on the cluster nodes.

    Refer to the *Sun Fire 15K Installation and De-Installation Guide* for instructions on how to power on the cluster nodes.

12. Use the sys-config(1M) command on the system controllers to configure them by using the configuration information in the *Cluster Platform 15K/9960 System Site Planning Guide.*

13. After the system controllers are booted, verify or re-configure the SMS software on each cluster node.

    The following items are pre-configured at the factory and must remain the same:

- domain-a has been created and allocated hardware resources.

- domain-a user ID has been created with group privileges as dmnaadmn to provide console access to domain-a.

    The password is temporarily set to abc and needs to be reset after the first login.

- net boot alias has been created.

- auto-recovery and auto-boot? OpenBoot™ PROM variables have been disabled.

14. Verify domain-a status and hardware allocation for each cluster node.

15. Connect to the management console using the terminal concentrator (see "To Configure the Terminal Concentrator" on page 30).

16. Invoke the boot(1M) command at the OBP prompt on the management server (see "To Configure the Terminal Concentrator" on page 30).

17. Configure the management server (see "To Configure the Management Server" on page 33).

18. Use the configuration information in the *Cluster Platform 15K/9960 System Site Planning Guide* to configure the cluster environment on the management server (see "To Customize the Cluster Environment" on page 39).

19. Log in to the management server as the superuser, and use the ccp(1M) command to display the node console windows (see "To Install the Cluster Platform 15K/9960 Software on the Cluster Nodes" on page 51).

20. Using the cconsole window, log into SC0 on each cluster node by using the domain-a user ID.

21. Power on domain-a on each cluster node by using the setkeyswitch(1M) command.

22. Using the cconsole window, produce a domain-a console for each cluster node by using the console command.

23. Using the cconsole window, execute the `boot net - install` at the OBP prompt on both cluster nodes.

24. If you chose Solstice DiskSuite™ 4.2.1 the volume manager, you must select a quorum device from shared storage (that is, the LUNs) by using the `scsetup`(1M) command.

25. Configure the NAFO groups using the `pnmset`(1M) command.

26. Install data services using one of the management server data services repositories.

    You can use either of the following repositories:

```
/net/management_server_name-
admin/jumpstart/Packages/SC3.0u1/scdataservices_3_0_u1

/net/management_server_name-
admin/jumpstart/Packages/SC3.0u2/scdataservices_3_0_u2
```

Using UNIX Commands

This document might not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- *Solaris Handbook for Sun Peripherals*
- AnswerBook2™ online documentation for the Solaris operating environment
- Other software documentation that you received with your system

Related Documentation

Note – Before you attempt to install the Cluster Platform 15K/9960 system, you must read the Late-Breaking News document. You should also obtain the latest version of all of Cluster Platform 15K/9960 system documents, which are available at:

```
http://www.sun.com/products-n-solutions
/hardware/docs/Integrated_Platforms/index.html
```

Application	Title	Part Number
Release Notes	*Cluster Platform 15K/9960 System Late-Breaking News*	816-3540
Site Preparation	*Cluster Platform 15K/9960 System Site Planning Guide*	816-3537

Typographic Conventions

Typeface or Symbol	Meaning	Examples
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
`AaBbCc123`	What you type, when contrasted with on-screen computer output	`% `**`su`** `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this.
	Command-line variable; replace with a real name or value	To delete a file, type `rm` *filename*.

Shell Prompts

Shell	Prompt
C shell	*machine_name*%
C shell superuser	*machine_name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Accessing Sun Documentation Online

A broad selection of Sun system documentation is located at:

`http://www.sun.com/products-n-solutions/hardware/docs`

A complete set of Solaris documentation and many other titles are located at:

`http://docs.sun.com`

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Please include the part number (816-3538-10) of your document in the subject line of your email.

Cluster Platform 15K/9960 System Introduction

This chapter contains descriptions of the hardware, software, and documentation for the Cluster Platform 15K/9960 system.

System Overview

The Cluster Platform 15K/9960 system is a platform with shared storage that supports highly available applications. You can use this two-node cluster system for a variety of production services, such as a file server, a Web server, a mail server, or an Oracle database server.

The system is made up of two Sun Fire 15K domains that act as two cluster nodes running independent instances of the Solaris™ operating environment. A set of four Sun StorEdge S1 storage devices act as mirrored boot disks for the cluster nodes. A terminal concentrator provides console access to the management server and the Sun Fire 15K system controllers.

An administration network hub provides access from the management server to the cluster nodes and to the system controllers. Private interconnects provide high-bandwidth access between the cluster nodes. A single Sun StorEdge 9960 storage system provides highly redundant and available data storage for both of the cluster nodes.

The Cluster Platform 15K/9960 system uses Sun Cluster™ 3.0 software to provide global file systems, global devices, and scalable services. These features enable the cluster nodes to run distributed applications, while providing client access through a single IP address.

Cluster Platform 15K/9960 System Components

This section contains general descriptions of the components of the Cluster Platform 15K/9960 system, including the nodes (servers) and the network.

Cluster Nodes

The system includes two Sun Fire 15K servers. Each server is configured with a single domain that acts as the cluster node. Minimally, the servers contain the following components:

- Six system boards
- 24 900-MHz UltraSPARC III+ CPU
- 48 Gbytes of memory

For a fully redundant Cluster Platform 15K/9960 system, the maximum number of system boards is 18, and the maximum number of CPUs is 100. The maximum number of hot-swap PCI slots is 72 (36 66-MHz and 36 33-MHz).

Management Server

The management server is the repository for the operating environment, software, and patches. The management server provides access to the cluster console and functions as a JumpStart™ server (installation server) for the cluster nodes.

The management server contains the following components:

- One Netra™ T1 AC200 system
- 500 MHz UltraSPARC™ IIe CPU
- One Gbyte of memory
- One internal DVD drive
- Two internal 18-Gbyte boot disks that are mirrored

Shared Storage

The Cluster Platform 15K/9960 system includes one Sun StorEdge 9960 system that provides shared storage for the cluster nodes. The array is connected to the cluster nodes by a minimum of two FC-AL host adapters per domain.

The Sun StorEdge 9960 system contains the following components:

- 5.8 Tbytes of FC-AL storage (4.4 Tbytes of usable RAID 5 storage)
- One disk controller cabinet that includes a minimum of eight FC-AL host adapter ports
- One disk array frame unit that includes a minimum of 6.1 Gbytes of cache, and 20 dual-ported fibre channel disks with one and a half Gbytes of cache memory.

You can configure the shared storage by using the Solstice DiskSuite™ software or the VERITAS VxVM software.

Terminal Concentrator

The 8-port terminal concentrator provides serial access to the management server and cluster node consoles. The terminal concentrator is accessible only over 10BASE-T Ethernet.

Boot Devices

The boot devices are mounted in the expansion cabinet and are connected to the two cluster nodes. The devices are Sun StorEdge S1 drives with 18-Gbytes of storage capacity.

Administrative Hub

The administrative hub is a 3com, 12-port, 10/100BASE-T Ethernet hub that is preinstalled in the Sun StorEdge expansion cabinet.

Private Interconnect

The private interconnects connect the cluster nodes. The interconnects use Sun Gigabit Ethernet adapters (ge0 and ge1) on two separate Hot Swap PCI assemblies on separate expanders to avoid a controller or expander single-point-of-failure. FIGURE 1-1 shows the layout of the private interconnect.
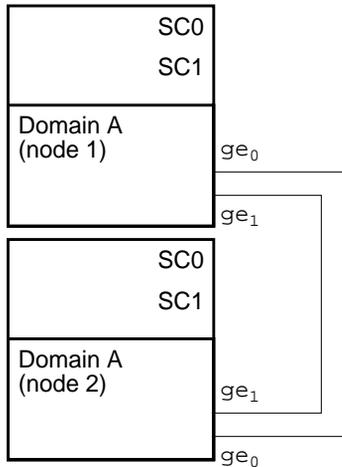
FIGURE 1-1   Private Interconnect

Public Network

The public network uses a Sun Quad FastEthernet™ interface (qfe0) on both cluster nodes. The qfe4 interface on both cluster nodes is reserved to be the network adapter failover (NAFO) interface for qfe0.

Note – A number of additional interfaces are available to expand network services. The qfe1 interface is reserved for the internal administration network. A qualified service technician must configure the network failover (NAFO) interfaces using the pnmset(1M) command.

FIGURE 1-2 shows the layout of the public network.

Note – In the following diagram, the public network hub can be a hub or a switch.
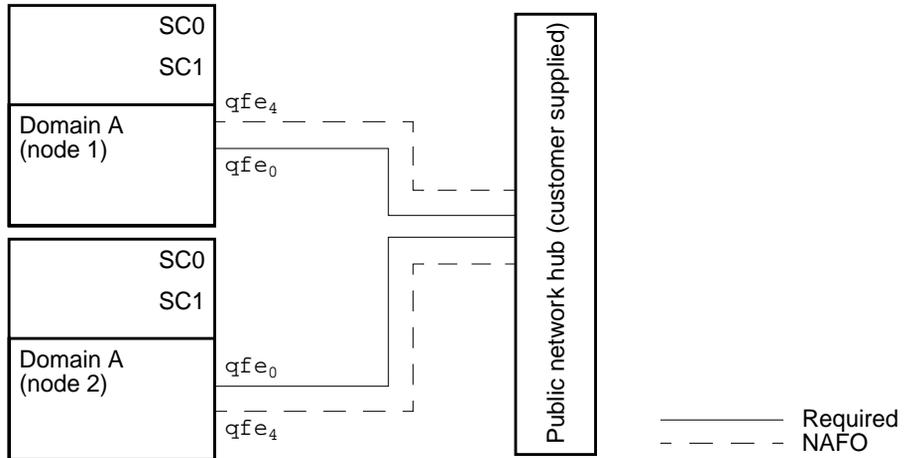
FIGURE 1-2   Public Network

Administration Networks

The Cluster Platform 15K/9960 system can have two administration networks. The internal administration network uses the administration hub that is supplied with the system. The external administration network needs a customer supplied network hub.

Internal Administration Network

The internal administration network helps improve security by isolating the administration and JumpStart server traffic on the Sun Fire 15K system controllers. The administration network hub provides connections to the management server over the `eri1` interface, to the cluster nodes, and to the main (active) and spare (standby) system controllers. FIGURE 1-3 shows the layout of the internal administration network.

Note – In the following diagram, the administration network hub can be a hub or a switch.
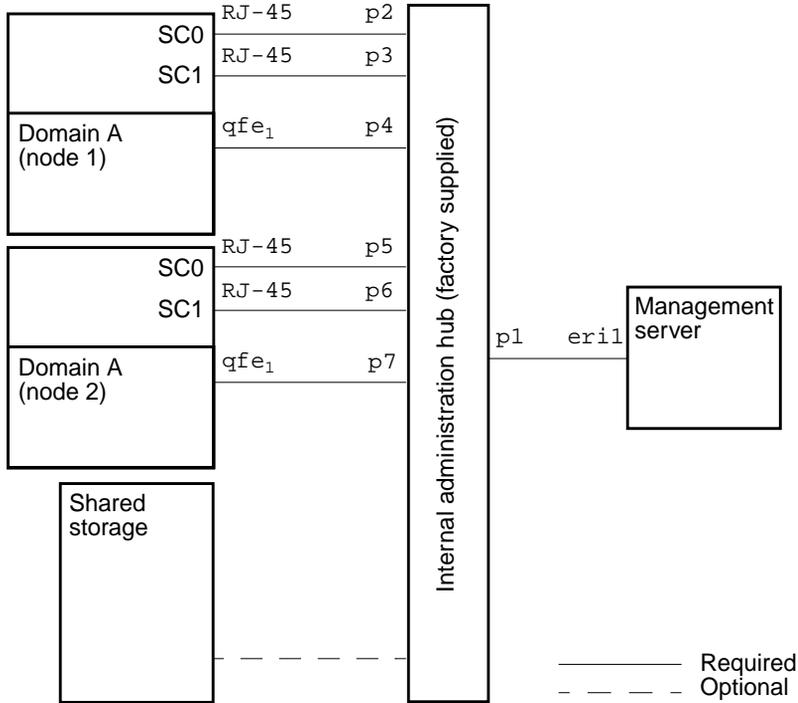
FIGURE 1-3 Internal Administration Network

External Administration Network

The external administration network helps improve security by isolating the network traffic to the management server over the eri0 interface and to the terminal concentrator. FIGURE 1-4 shows the layout of the external administration network.

Note – In the following diagram, the external network hub can be a hub or a switch.
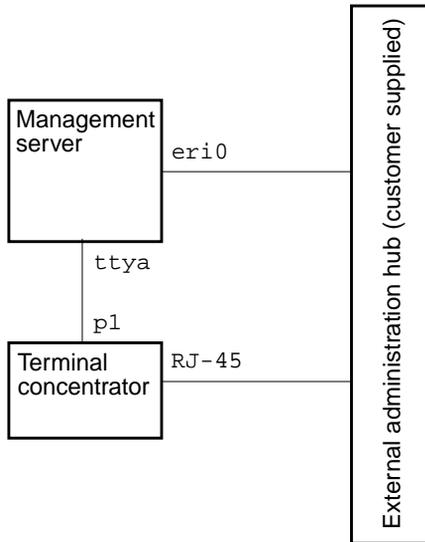
FIGURE 1-4 External Administration Network

Consolidation Expansion Cabinet

The system includes one 72-inch Sun StorEdge expansion cabinet that contains two power sequencers, one front door option, one rear door, and one fan assembly.

Optional Hardware

If the cluster environment requires hardware in addition to the provided components, such hardware must be installed and configured only after the management server configuration has taken place and the cluster nodes have been booted into a cluster environment.

Note – Only after the cluster environment has been established can additional hardware be installed.

Software Components

The Cluster Platform 15K/9960 system includes the following software components that run on the management server:

- Solaris 8 10/01 operating environment
- Sun Cluster 3.0 Update 1 software with patches and data services package
- Solstice DiskSuite 4.2.1 software
- UNIX® File System (UFS)
- Sun Management Center 3.0 Update 3 software
- AnswerBook2 software

The Cluster Platform 15K/9960 system includes the following software components that run on the nodes:

- Solaris 8 10/01 operating environment
- Sun Cluster 3.0 Update 1 software with patches and data services package
- Solstice DiskSuite 4.2.1 software
- UNIX® File System (UFS)
- Sun Management Center 3.0 Update 3 software
- VERITAS Volume Manager 3.1.1 (installation is optional)

Software Patches

A collection of software patches are automatically applied to each cluster node during the recovery. The patches are located in the `/jumpstart/Patches` directory on the management server.

Sun Management Center Software

The Sun Management Center software is included with the Cluster Platform 15K/9960 system. You can use this software to monitor and manage the system. The Sun Management Center software uses Java™ software and simple network management protocol (SNMP) to provide enterprise-wide management of Sun products.

You can use the Sun Management Center software to monitor and manage the entire system, the subsystems, the components, and the peripheral devices. You can also extend and enhance the management capability of the hardware and software. For instance, you can add or remove system boards to or from the Sun Fire 15K servers.

TABLE 1-1 contains descriptions of the features you can use with the Cluster Platform 15K/9960 system:

TABLE 1-1   Sun Management Center Software Capabilities

Feature	Description
System management	Monitors and manages the system at the hardware and operating system levels. Monitored hardware includes boards, tapes, power supplies, and disks.
Operating system management	Monitors and manages operating system parameters including load, resource usage, disk space, and network statistics.
Application and business system management	Provides enabling technology to monitor business applications such as trading systems, accounting systems, inventory systems, and real-time control systems.
Scalability	Provides an open, scalable, and flexible solution to configure and manage multiple management administrative domains (consisting of many systems) spanning across an enterprise. The software can be configured and used in a centralized or distributed fashion by multiple users.

Sun Management Center Software Architecture

Sun Management Center software consists of three component layers: the console layer, the server layer, and the agent layer. The software architecture is based on the manager-agent architecture. The three layers provide the following services:

- The console layer provides the user interface services.
- The server layer provides the management application execution services and the requests services for agents to perform management tasks. The management server hosts the sever layer.
- The agent layer provides access to the management information and monitoring services for local resources on the cluster nodes. The agents can optionally run on the system controllers. The agent layer also provides services for responding to manager requests.

FIGURE 1-5 contains a logical view of the three architecture layers:
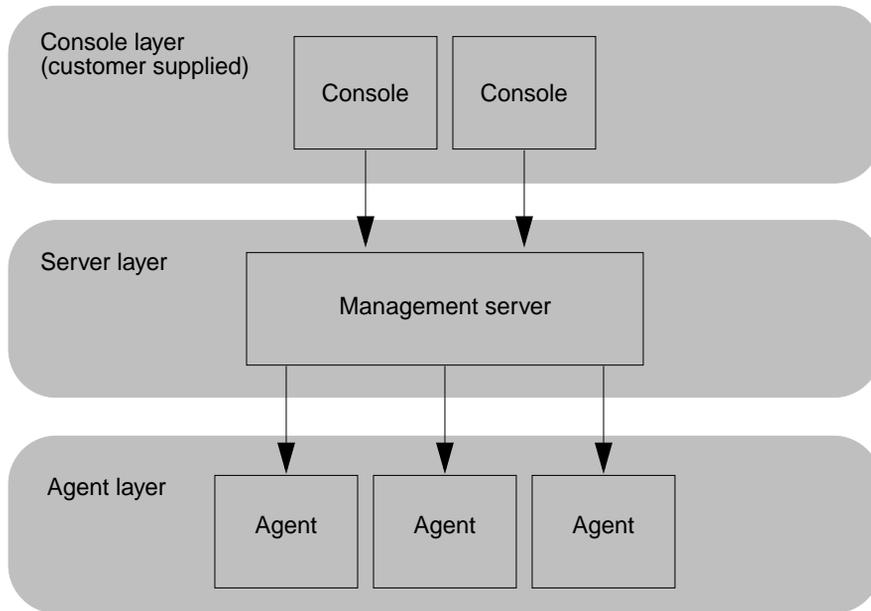
FIGURE 1-5 Sun Management Center Software Architecture Layers

Sun Management Center Software Configuration

The Sun Management Center software is installed and set up automatically as part of the Cluster Platform 15K/9960 system installation. No user interaction is required during this process. The advanced and premier Sun Management Center software options are included in the installation. These additional options require the appropriate licenses.

The resulting configuration is depicted in FIGURE 1-6, which shows where the Sun Management Center Server, Console and Agent components are installed.
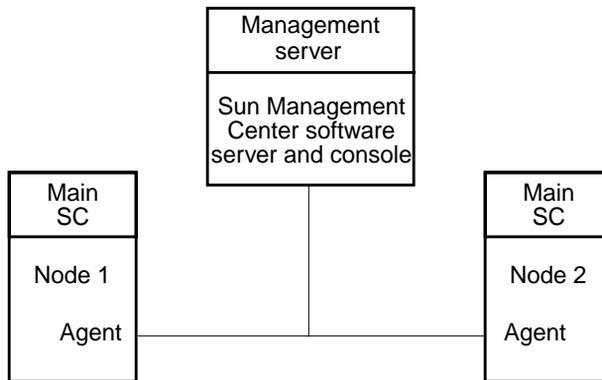
FIGURE 1-6   Sun Management Center Topology

You can install a Sun Management Center software agent on each of the Sun Fire 15K system controllers (SCs). You can find instructions on installing the agent in the *Sun Management Center 3.0 Supplement for Sun Fire 15K Systems.*

The Sun Management Center software image is located on the management server in the `/jumpstart/Packages/SunMC3.0/Update3` directory. This directory has been shared and can be accessed through NFS from the system controllers. Use the following path to locate the software:

`/net/`*management_server_hostname_or_IPaddress*`/jumpstart/\`
`Packages/SunMC3.0/Update3`

Optional Software

The VERITAS VxVM 3.1.1 software is included on the management server in the `/jumpstart/Packages/VM3.1.1` directory. You can use VxVM to configure the shared storage after the management server is configured and the cluster nodes are booted into a cluster environment. A software license is not provided for the installation. You must purchase the license separately before you install the software.

NTP Infrastructure

Synchronized time is an important requirement for a data center. All aspects of managing, securing, planning, or debugging a network involve determining when events happen. Time is the critical element that allows an event on one network node to be mapped to a corresponding event on another. Time synchronization is especially critical on cluster nodes.

The Cluster Platform 15K/9960 System provides automatic set up of the network time protocol (NTP) service to synchronize the time on both cluster nodes. The management server provides NTP service for both nodes. The management server can either synchronize to its own local clock or to other NTP servers.

Synchronizing to the local clock on the management server is inadvisable because the local clock may wander from the *wall-clock* time of the rest of the data center. Ideally, the entire data center should be synchronized to universal coordinated time—the international time standard. The system controllers on the cluster nodes are not synchronized to the management server because the SCs cannot synchronize to an external source. FIGURE 1-7 shows the NTP architecture for the Cluster Platform 15K/9960 cluster.
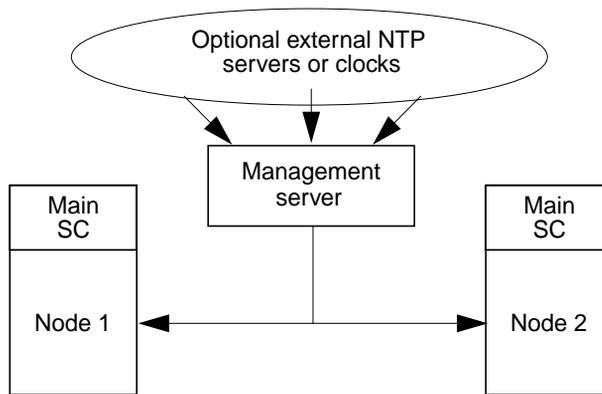
FIGURE 1-7   NTP Architecture

For instructions on how to set up the NTP service, see Section , "Setting Up the NTP Server on the Management Server" on page 3-43.

Management Server Splash Page

The management server splash page is automatically configured on the management server during the initial configuration of the Cluster Platform 15K/9960 system. This Web-based administration interface enables you to access documentation and other features of the Cluster Platform 15K/9960 system.

If the management server is reachable from an outside network, the splash page can be accessed by entering the server name in the URL location text box of a browser running on your workstation or PC, as in the following example:

```
http://management_server_name/
```

Tools and Web-Based Software

You can access the following tools and Web-based software on the management server by using the splash page interface:

■ Sun Management Center, a host-based managing and monitoring application

■ AnswerBook2, a comprehensive set of Sun documentation

■ SunPlex™ Manager, a cluster configuration GUI

Documentation

You can access the following documentation from the management server splash page:

■ SunTone Platforms

■ Solaris operating environment

■ Sun Cluster software

■ Sun Management Center software

■ Solstice DiskSuite software

■ VERTIAS VxVM 3.1.1 software

Support and Information Resources

The management server splash page also contains links to the following topics:

■ Online service and support resources

■ Information resources for system administrators

Documentation

The Cluster Platform 15K/9960 system is shipped with printed and online documentation. The documentation includes printed manuals on the Cluster Platform 15K/9960 system, the individual hardware components, and the Solaris operating environment. The online documentation includes manuals on the hardware components and the software components that contribute to the Cluster Platform 15K/9960 integrated product.

You can access the online documentation by using the management server splash page, the AnswerBook2 environment, or the Acrobat Reader if a PDF version of the document exists.

AnswerBook2 Software

The management server is preconfigured as an AnswerBook2 software server. You can access the AnswerBook2 collections by using your Web browser. The management server must be accessible to the client. If the management server is operating on a secure network, some additional configuration may be needed.

Use the following URL to access the AnswerBook2 server:

```
http://management_server_name:8888/
```

The following AnswerBook2 collections are included with the Cluster Platform 15K/9960 system:

- Solaris 8 System Administrator Collection
- Solaris 8 User Collection
- Solaris 8 10/01 on Sun Hardware Collection
- Solaris 8 Software Developer Collection
- Solaris 8 Reference Manual Collection
- Solaris 8 Common Desktop Environment Developer Collection
- Solaris 8 Installation Collection
- Solaris 8 10/01 Release Documents Collection
- OpenBoot Collection
- Solaris 8 10/01 Update Collection

Answerbook2 software is installed in the `/opt/answerbooks` directory and can be further customized by the server administrator.

Acrobat Reader 4.0

You can view PDF files on the management server by using the Acrobat Reader 4.0 software, installed in the `/opt/Acrobat4` directory.

Hardware Installation and Configuration

This chapter contains instructions on how to install and configure the Cluster Platform 15K/9960 system hardware. It provides the location of the hardware components and descriptions of the cabling needed at the customer site.

Hardware Components

Due to floor tiling requirements and cable lengths, you must lay out the hardware components as shown in FIGURE 2-1. Refer to the *Cluster Platform 15K/9960 System Site Planning Guide* for more information on the arrangement of the floor tiles beneath the Cluster Platform 15K/9960 system.
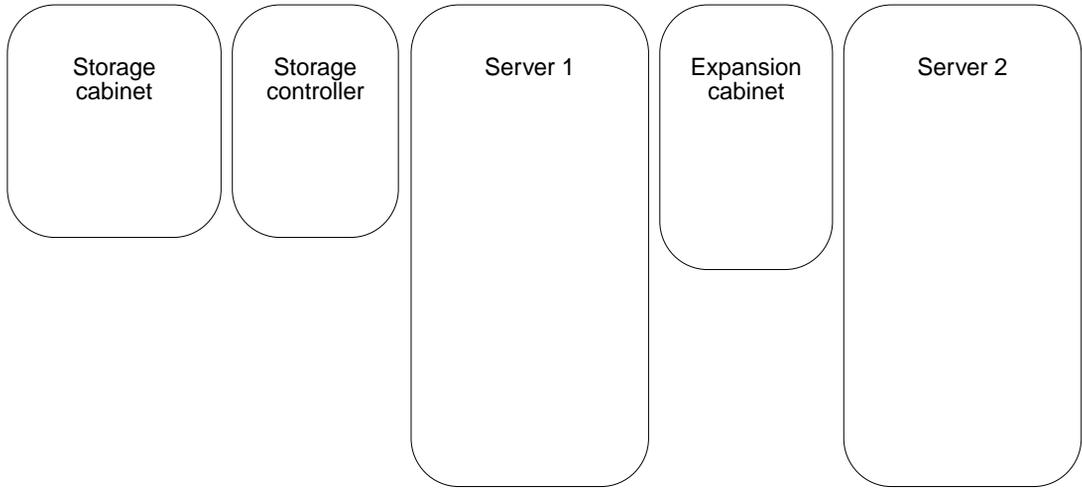
FIGURE 2-1   Hardware Modules Layout

Refer to the appropriate hardware documentation for instructions on how to set up the individual hardware components.

FIGURE 2-2 contains an illustration of the component positions inside of the expansion cabinet.

Terminal concentrator

Administration network hub
Management server
Node 2 mirrored boot disk
Node 2 boot disk
Node 1 mirrored boot disk
Node 1 boot disk
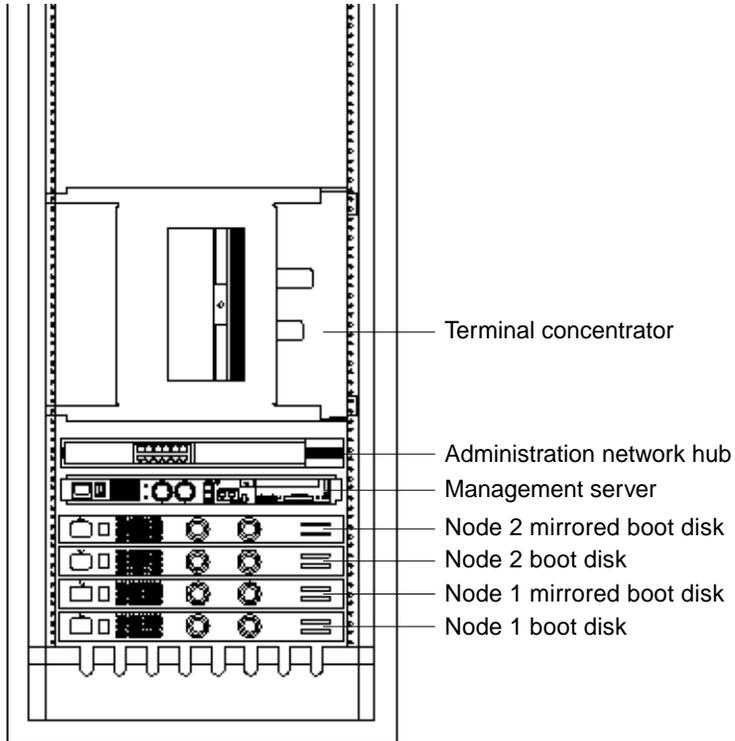
FIGURE 2-2   Expansion Cabinet Component Placement

After you have set up the hardware components, you are ready to install the cabling as described in the following section.

Cluster Platform 15K/9960 System Cabling

Most of the cabling for the Cluster Platform 15K/9960 system is preinstalled at the factory. You must complete the cabling between the Sun Fire 15K servers, the Sun StorEdge 9960 system, and the Sun StorEdge expansion cabinet.

Cluster Platform 15K/9960 Network Topology

The Cluster Platform 15K/9960 system is connected by a combination of Ethernet and fibre channel cables that create several separate networks and links to your networks. See the following figures for the layout of the networks:

- FIGURE 1-1 for the private interconnect
- FIGURE 1-2 for the public network
- FIGURE 1-3 for the internal administration network
- FIGURE 1-4 for the external administration network

Cluster Platform 15K/9960 System Cables

The following list contains the system cables you need to connect the server, storage, and expansion cabinet.

- Four, fifteen-meter, RS-232C (Mini-Din/RJ-45) serial cables

  These cables provide console access to the system controllers.

- Six, fifteen-meter, RJ-45/RJ-45 Ethernet cables

  These cables provide administrative network access to the system controllers.

- Four, RJ-45/RJ-45 Ethernet cables

  These cables provide access to the public network and must be supplied by the customer.

- Two, RJ-45/RJ-45 Ethernet cables

  These cables provide the management server and the terminal concentrator access to the external administration network.

- Six, fifteen-meter fiber optic cables

These cables provide access to the shared storage access from the cluster nodes and implement the two-link point-to-point private cluster interconnect between the cluster nodes.

- Twelve power cables for each Sun Fire 15K server
- Two power cables for the Sun StorEdge expansion cabinet
- Four power cables for the Sun StorEdge 9960 system cabinet
- Four, four-meter, SCSI boot-device cables

Storage Connections

The storage connections enable the domains to have access to the shared storage and to the boot disks in the expansion cabinet. FIGURE 2-3 shows the layout of the storage connections.
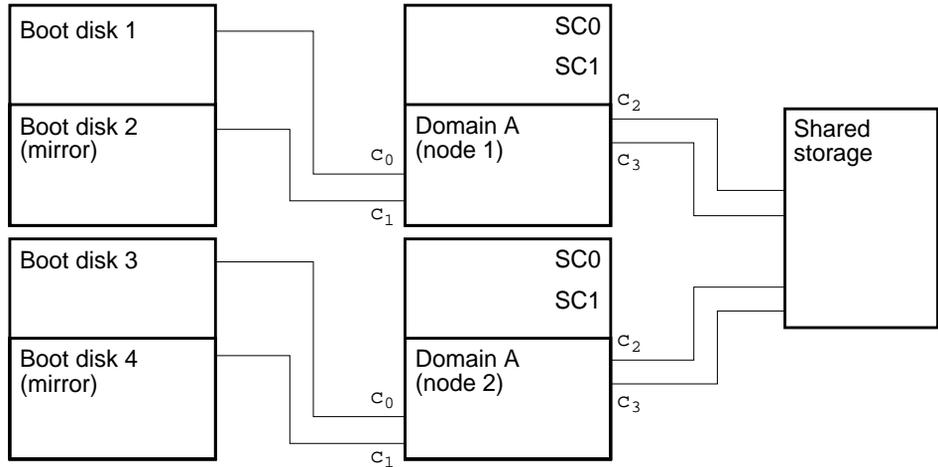
FIGURE 2-3 Storage Connections

Serial Connections

The serial connections enable the terminal concentrator to have access to the system controllers. FIGURE 2-4 shows the layout of the serial connections.
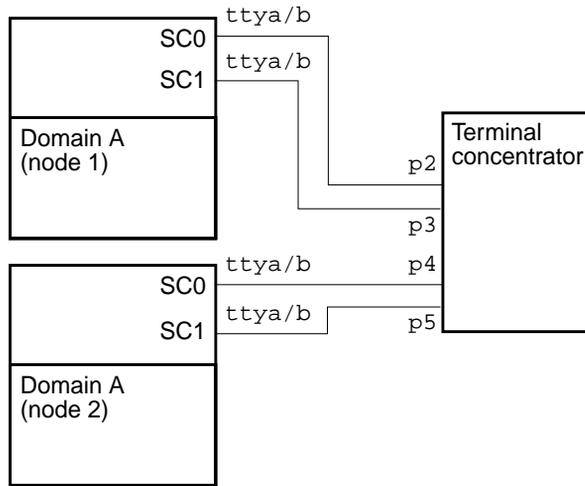
FIGURE 2-4   Serial Connections

Cabling the Cluster Platform 15K/9960 System

To cable the Cluster Platform 15K/9960 system, use the tables and illustrations in this section as a guide.

TABLE 2-1   Expansion Cabinet Cables

Cable	Source	Destination
Boot Disks		
4-meter, SCSI	SCSI in-port on boot disk 1	Slot 0 on server 1
4-meter, SCSI	SCSI in-port on boot disk 2	Slot 1 on server 1
4-meter, SCSI	SCSI in-port on boot disk 3	Slot 0 on server 2
4-meter, SCSI	SCSI in-port on boot disk 4	Slot 1 on server 2
Administration Hub		
15 meter, RJ-45/RJ-45 Ethernet	Port 2	System controller 0 on server 1
15 meter, RJ-45/RJ-45 Ethernet	Port 3	System controller 1 on server 1

TABLE 2-1 Expansion Cabinet Cables *(Continued)*

Cable	Source	Destination
15 meter, RJ-45/RJ-45 Ethernet	Port 4	Slot 0, `qfe1` port on server 1
15 meter, RJ-45/RJ-45 Ethernet	Port 5	System controller 0 on server 2
15 meter, RJ-45/RJ-45 Ethernet	Port 6	System controller 1 on server 2
15 meter, RJ-45/RJ-45 Ethernet	Port 7	Slot 0, `qfe1` port on server 2
Terminal Concentrator		
15 meter, RJ-45/Mini-Din RS-232C	Port 2	System controller 0 on server 1
15 meter, RJ-45/Mini-Din RS-232C	Port 3	System controller 1 on server 1
15 meter, RJ-45/Mini-Din RS-232C	Port 4	System controller 0 on server 2
15 meter, RJ-45/Mini-Din RS-232C	Port 5	System controller 1 on server 2

TABLE 2-2 Server Cabinet Cables

Cable	Source	Destination
Server-to-Server		
15 meter, fiber optic	Slot 2, Sun Gigabit Ethernet port on server 1	Slot 2, Sun Gigabit Ethernet port on server 2
15 meter, fiber optic	Slot 3, Sun Gigabit Ethernet port on server 1	Slot 3, Sun Gigabit Ethernet port on server 2
Server-to-Public-Network		
RJ-45/RJ-45 Ethernet cable	Slot 0, `qfe0` port on server 1	Customer supplied Ethernet hub
RJ-45/RJ-45 Ethernet cable	Slot 1, `qfe0` port on server 1	Customer supplied Ethernet hub
RJ-45/RJ-45 Ethernet cable	Slot 0, `qfe0` port on server 2	Customer supplied Ethernet hub
RJ-45/RJ-45 Ethernet cable	Slot 1, `qfe0` port on server 2	Customer supplied Ethernet hub

TABLE 2-3 Storage Cabinet Cables

Cable	Source	Destination
Storage to Server		
15 meter, fiber optic cable	Storage, board V, port A[1]	Slot 2, fiber optic port on server 1
15 meter, fiber optic cable	Storage, board S, port A	Slot 3, fiber optic port on server 1
15 meter, fiber optic cable	Storage, board V, port C	Slot 2, fiber optic port on server 2
15 meter, fiber optic cable	Storage, board S, port C	Slot 3, fiber optic port on server 2

1. All of these port designations are based on the assumption that the storage boards are installed in slots V and S.

To admin hub, port 2
To terminal concentrator, port 2

To boot disk 2
To boot disk 1

To admin hub, port 4

To storage, system board V, port A
To server 2, I/O board 2, slot 1
To storage, system board S, port A
To server 2, I/O board 3, slot 1
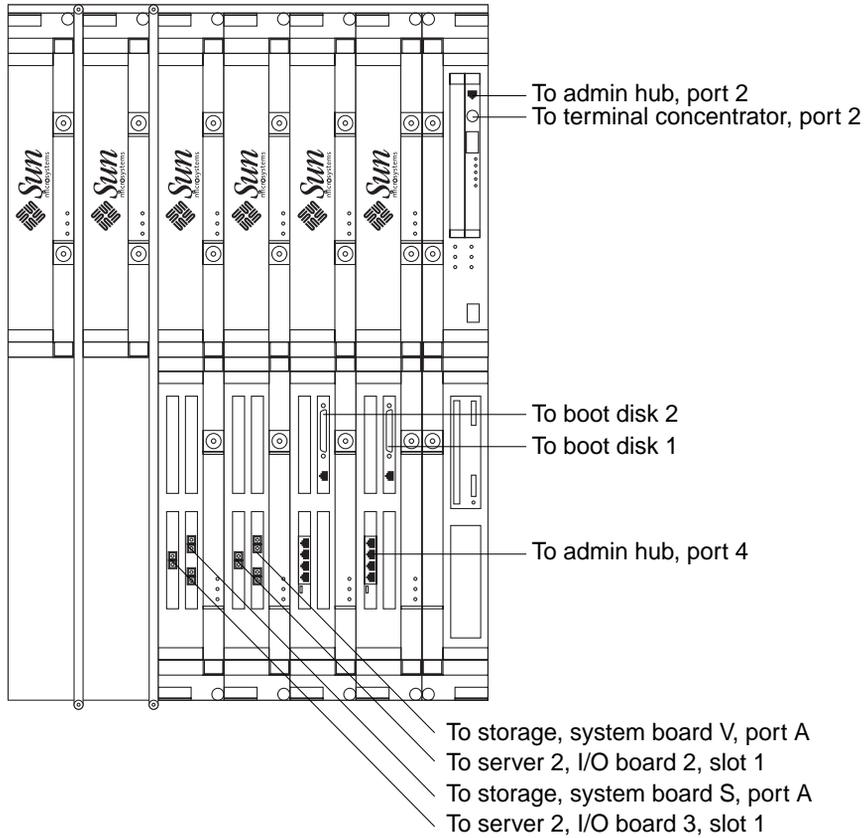
FIGURE 2-5 Server 1 Front Cable Connections
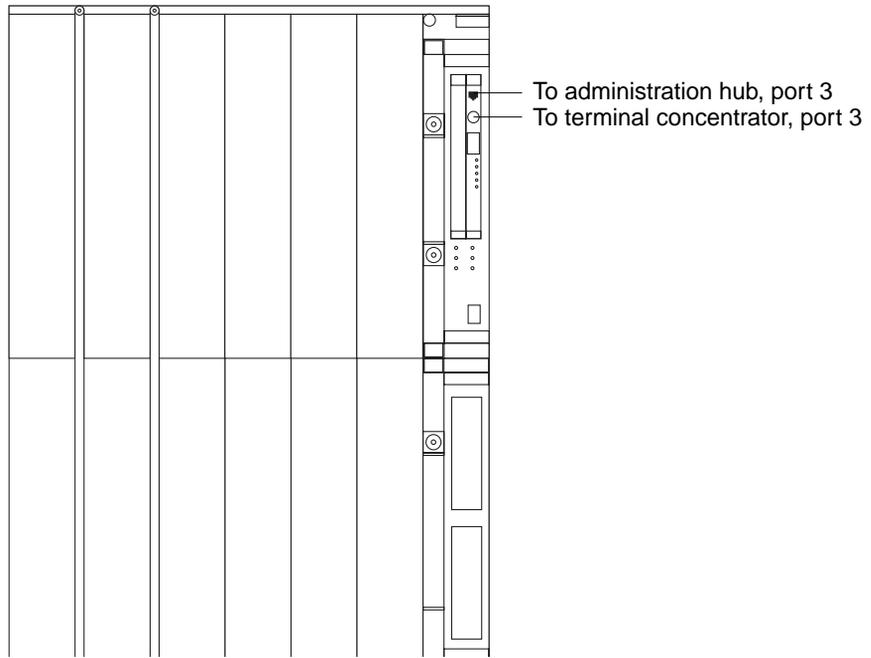
FIGURE 2-6   Server 1 Rear Cable Connections

To admin hub, port 5
To terminal concentrator, port 4

To boot disk 4
To boot disk 3

To admin hub, port 7

To storage, system board V, port C
To server 1, I/O board 2, slot 1
To storage, system board S, port C
To server 1, I/O board 3, slot 1
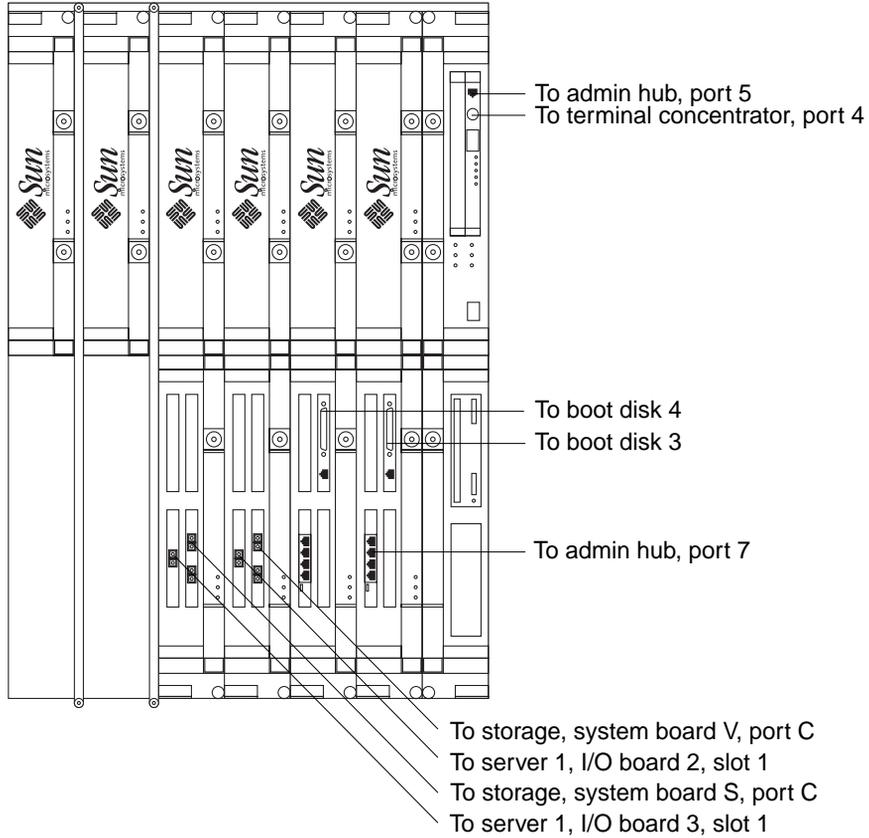
FIGURE 2-7   Server 2 Front Cable Connections

To administration hub, port 6
To terminal concentrator, port 5
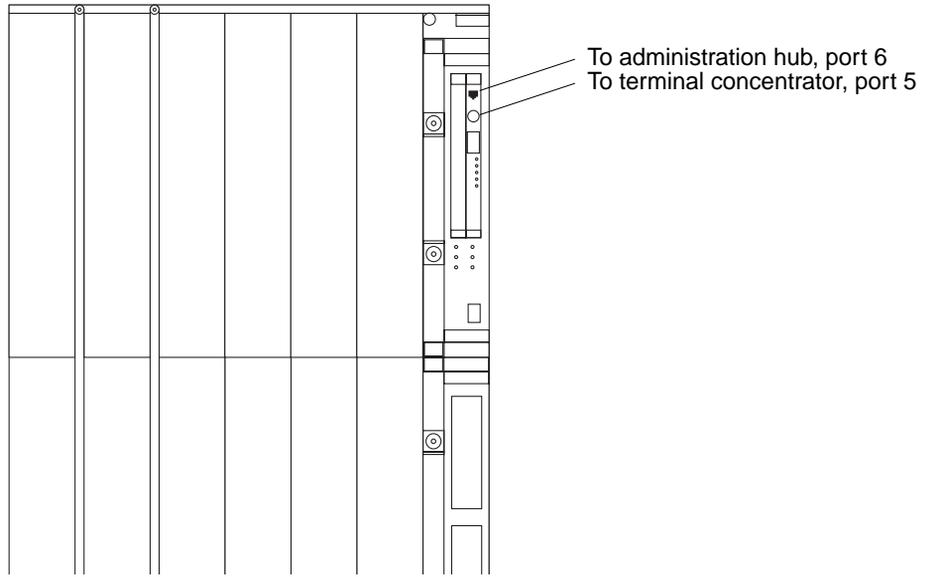
FIGURE 2-8   Server 2 Rear Cable Connections
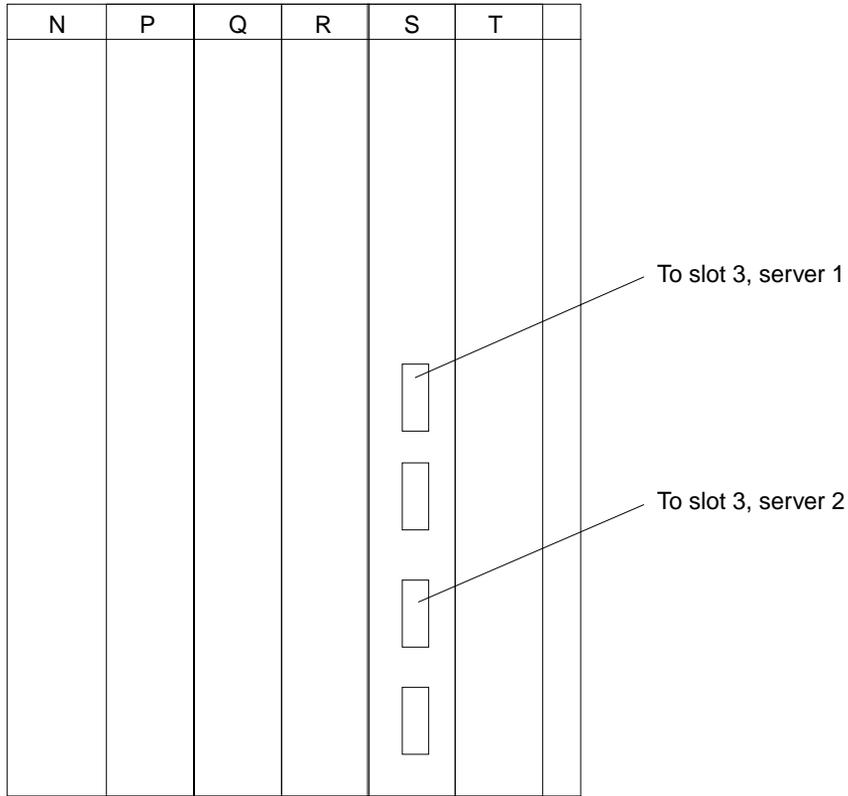
FIGURE 2-9   Storage Cabinet System Board S Connections

To slot 2, server 1

To slot 2, server 2

FIGURE 2-10 Storage Cabinet System Board V Connections

To server 2, SC1
To server 2, SC0
To server 1, SC1
To server 1, SC0

FIGURE 2-11 Terminal Concentrator Cable Connections

To server 1, SC1
To server 1, I/O board 0, slot c3v1
To server 1, SC0
To server 2, SC0
To server 2, SC1

To server 2, I/O board 0, slot c3v1
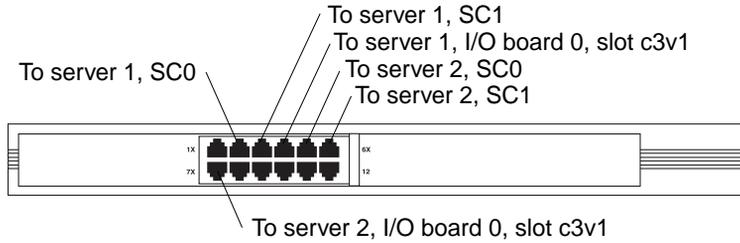
FIGURE 2-12 Administration Hub Cable Connections

AC from right power cables — To server 2, I/O board 1, slot c5v0
STOREDGE S1 H4

AC from left power cables — To server 2, I/O board 0, slot c5v0
STOREDGE S1 H3

AC from right power cables — To server 1, I/O board 1, slot c5v0
STOREDGE S1 H2

AC from left power cables — To server 1, I/O board 0, slot c5v0
STOREDGE S1 H1
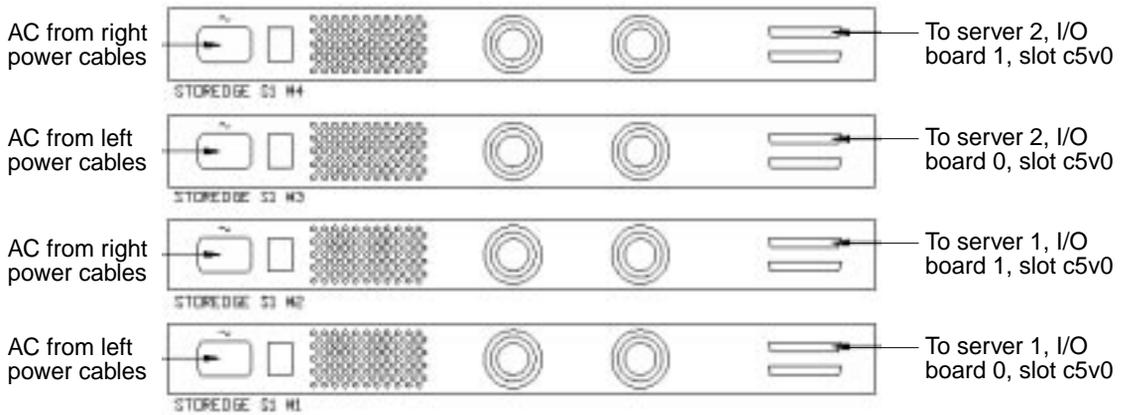
FIGURE 2-13 Boot Disks Cable Connections

Cluster Platform 15K/9960 System Software Configuration

This chapter contains instructions on configuring the Cluster Platform 15K/9960 system software.

Before You Begin

Before you configure the system, you should have already installed the hardware components and cabled the system. If you have not already done so, see Chapter 2 for instructions.

You should also have already completed the site preparation tables in the *Cluster Platform 15K/9960 System Site Planning Guide*. If you do have not that guide, you must obtain it to complete the tables.

Besides the site-specific information you need, you also need to know the superuser password for the management server, which is `abc` by default.

Configuring the Software

This section contains instructions on how to configure and customize the Cluster Platform 15K/9960 system software.

⚠️ **Caution –** You must enter the correct parameters for the initial configuration, or the configuration will not initialize properly.

▼ To Configure the Terminal Concentrator

Note – To produce a console terminal using a laptop computer, see Appendix A.

---

1. **Disconnect the 9524A serial cable from port 1 on the terminal concentrator.**

2. **Connect the RJ-45 end of the 2151A serial cable to port 1 of the terminal concentrator and the DB-25 end to serial port B on a Sun workstation.**

3. **Use the** tip**(1M) command to establish the connection:**

```
% /usr/bin/tip hardwire
```

Note – The tip(1M) command connects the Sun workstation I/O with the terminal concentrator I/O during an interactive session.

---

4. **Power on the main circuit breakers on the StorEdge expansion cabinet.**

5. **Power on all of the individual components (management server, boot disks, terminal concentrator, and administration hub).**

6. **Power cycle the terminal concentrator (power off and then on).**

   Within five seconds after powering on the concentrator, press and release the TEST button.

   The terminal concentrator undergoes a series of diagnostics tests. Following the diagnostics tests, the tip window on the administration workstation should display the following message:

```
System Reset - Entering Monitor Mode
monitor::
```

7. **Use the** `addr` **command to modify the network configuration of the terminal concentrator.**

```
monitor:: addr
 Enter Internet address [0.0.0.0]:: concentrator_IP_address
 Internet address: concentrator_IP_address
 Enter Subnet mask [255.255.0.0]:: concentrator_subnet_mask
 Subnet mask: concentrator_subnet_mask
 Enter Preferred load host Internet address [<any host>]:: 0.0.0.0
 Preferred load host address: <any host>0.0.0.0
 Enter Broadcast address [0.0.0.0]:: concentrator_broadcast_address
 Broadcast address: concentrator_broadcast_address
 Enter Preferred dump address [0.0.0.0]:: 0.0.0.0
 Preferred dump address: 0.0.0.0
 Select type of IP packet encapsulation (ieee802/ethernet)
[<ethernet>]:: ethernet
 Type of IP packet encapsulation: <ethernet> :: ethernet
 Load Broadcast Y/N [Y]:: N
 Load Broadcast: N
```

8. **Use the** `addr -d` **command to verify the network configuration.**

9. **Use the** `sequence` **command to specify the interface sequence:**

```
monitor:: sequence

Enter a list of 1 to 4 interfaces to attempt to use for downloading
code or upline dumping. Enter them in the order they should be tried,
separated by commas or spaces. Possible interfaces are:

 Ethernet: net
 SELF: self

Enter interface sequence [net]:: self
 Interface sequence: self
```

10. **Terminate the** `tip`**(1M) session by typing** ~. **(tilde and period).**

11. **Power-cycle the terminal concentrator to enable the IP address changes and wait at least two minutes for the terminal concentrator to activate its network.**

12. **Verify that the Ethernet hub is connected to the local area network.**

    An RJ-45 cable must connect the Ethernet hub to the administration network.

    a. **Disconnect the RJ-45 serial cable from port 1 of the terminal concentrator and from the Sun workstation.**

b. Reconnect the 9524A serial cable into port 1 of the terminal concentrator.

Note – At this time, the cluster configuration should be cabled as originally shipped from the factory.

---

13. **From the Sun workstation, use the** `ping`**(1M) command to verify that the terminal concentrator responds to the new IP address.**

   In the following example, 10.0.0.2 is used as the concentrator IP address.

   ```
   # /usr/sbin/ping 10.0.0.2
   PING 10.0.0.2: 56 data bytes
   64 bytes from scotch (10.0.0.2): icmp_seq=0. time=1. ms
   64 bytes from scotch (10.0.0.2): icmp_seq=1. time=0. ms
   64 bytes from scotch (10.0.0.2): icmp_seq=2. time=0. ms
   64 bytes from scotch (10.0.0.2): icmp_seq=3. time=0. ms
   ```

   The Sun workstation must be connected to the same subnet to which the terminal concentrator was configured.

14. **Telnet to the terminal concentrator and edit the Annex file.**

   In the following example, 10.0.0.2 is used as the concentrator IP address. The password for the Annex file defaults to the assigned IP address.

   ```
   # telnet 10.0.0.2
   Trying 10.0.0.2...
   Connected to 10.0.0.2.
   Escape character is'^]'.
   cli

   Enter Annex port name or number: cli
   Annex Command Line Interpreter   *   Copyright 1991 Xylogics, Inc.
   annex: su
   Password: 10.0.0.2
   annex# edit config.annex
   ```

   The terminal concentrator opens an editing session for the `config.annex` file.

15. **Type the following information into the** `config.annex` **file.**

```
%gateway
net default gateway gateway_IP_address metric 1 hardwired

Ctrl-W: save and exit Ctrl-X: exit Ctrl-F: page down Ctrl-B: page up
```

16. **Press Ctrl+W to save changes and exit the** `config.annex` **file.**

17. **Enable access to all of the ports, and reboot the terminal concentrator.**

```
annex# admin
Annex administration MICRO-XL-UX R7.0.1, 8 ports
admin: port all
admin: set port mode slave
        You may need to reset the appropriate port, Annex subsystem
     or reboot the Annex for changes to take effect.
admin: quit

annex#: boot
bootfile: Press Return
warning: Press Return
        *** Annex (10.0.0.2) shutdown message from port v1 ***
        Annex (10.0.0.2) going down IMMEDIATELY
```

After the terminal concentrator is rebooted, all of the ports will be accessible from outside the subnet. You can use the `ping`(1M) command with the IP address to determine when the terminal concentrator is ready to be used.

Note – Make sure that all of the network interfaces for node 1 and node 2 are attached to the production network. See TABLE 2-2 in Chapter 2 for connection details.

You are done configuring the terminal concentrator. You must now configure the management server.

▼ To Configure the Management Server

The following steps will assist you in the configuration of the management server; at the conclusion of the steps, the management server will reboot, and you will be asked a series of questions to configure the cluster.

Caution – The following steps provide critical information for configuring the management server. You must ensure that you enter the proper information.

1. **From the Sun workstation, access the terminal concentrator.**

   In the following example, 10.0.0.2 is used as the concentrator IP address.

```
# telnet 10.0.0.2
Trying 10.0.0.2...
Connected to 10.0.0.2.
Escape character is'^]' Return

Rotaries Defined:
    cli

Enter Annex port name or number: 1
```

The following list contains the port designations:

- Port 1 is for the management server.
- Port 2 is for SC0 on server 1.
- Port 3 is for SC1 on server 1.
- Port 4 is for SC0 on server 2.
- Port 5 is for SC1 on server 2.

2. Boot the management server from the OpenBoot PROM™ (OBP) prompt.

The sample parameters in the following examples may not fit your specific environment. You should note the introduction on each code box, and select the best choice for your environment.

```
ok boot disk
Resetting ...
LOM event: +17h48m45s host reset

@
Netra T1 200 (UltraSPARC-IIe 500MHz), No Keyboard
OpenBoot 4.0, 512 MB memory installed, Serial #16641800.
Ethernet address 8:0:20:fd:ef:8, Host ID: 80fdef08.

Executing last command: boot disk
Boot device: /pci@1f,0/pci@1/scsi@8/disk@0,0 File and args:
SunOS Release 5.8 Version Generic_108528-10 64-bit
Copyright 1983-2001 Sun Microsystems, Inc. All rights reserved.
Hostname: unknown
metainit: unknown: there are no existing databases

Configuring /dev and /devices
Configuring the /dev directory (compatibility devices)
The system is coming up. Please wait.
```

Throughout the installation process, you can receive the following warning:

```
Signal 1 has been received...
WARNING: There is no exit allowed out of this configuration script
because the management server might be left in an unconfigured state.
In case you have made an entry error, please continue entering
values. You'll be allowed to make changes at the end of the this
session.
```

Do not try to exit the configuration script.

3. Select a language.

4. Choose a specific locale.

5. **Select the appropriate terminal emulation:**

```
What type of terminal are you using?
 1) ANSI Standard CRT
 2) DEC VT52
 3) DEC VT100
 4) Heathkit 19
 5) Lear Siegler ADM31
 6) PC Console
 7) Sun Command Tool
 8) Sun Workstation
 9) Televideo 910
 10) Televideo 925
 11) Wyse Model 50
 12) X Terminal Emulator (xterms)
 13) Other
Type the number of your choice and press Return: 3
```

6. **Select** `Yes` **to the prompt on network connectivity.**

7. **Select** `No` **to the prompt on DHCP services.**

8. **Select the primary network interface.**

   The management server configuration uses `eri0` as the default primary network interface:

```
On this screen you must specify which of the following network
adapters is the system's primary network interface. Usually the
correct choice is the lowest number. However, do not guess; ask your
system administrator if you're not sure.

To make a selection, use the arrow keys to highlight the option and
press Return to mark it [X].

      Primary network interface
      -------------------------
      [X] eri0
      [ ] eri1
----------------------------------------------------------------
Esc-2_Continue     Esc-5_Cancel     Esc-6_Help
```

9. Enter the name of the management server.

```
- Host Name ------------------------------------------------------

On this screen you must enter your host name, which identifies this
system on the network. The name must be unique within your domain;
creating a duplicate host name will cause problems on the network
after you install Solaris.

A host name must be at least two characters; it can contain letters,
digits, and minus signs (-).


    Host name: management_server_node_name


------------------------------------------------------------------
Esc-2_Continue     Esc-5_Cancel     Esc-6_Help
```

10. Enter the IP address of the management server.

```
- IP Address ------------------------------------------------------

On this screen you must enter the Internet Protocol (IP) address for
this system. It must be unique and follow your site's address
conventions, or a system/network failure could result.

IP addresses contain four sets of numbers separated by periods (for
example 192.0.47.183).

    IP address: management_server_IP_address


------------------------------------------------------------------
Esc-2_Continue     Esc-5_Cancel     Esc-6_Help
```

11. Select `Yes` **to the subnet prompt.**

12. **Enter the netmask of the management server.**

```
- Netmask ------------------------------------------------

On this screen you must specify the netmask of your subnet. A default
netmask is shown; do not accept the default unless you are sure it
is correct for your subnet. A netmask must contain four sets of
numbers separated by periods (for example 255.255.255.0).


    Netmask: management_server_netmask


------------------------------------------------------------
Esc-2_Continue     Esc-5_Cancel     Esc-6_Help
```

13. **Select** No **to the prompt on IPv6 support.**

    Currently, only version 4 of the IP software is supported. Ensure that IPv6 support is disabled.

14. **Confirm the customization information for the management server.**

15. **Select** No **at the Kerberos security prompt.**

    Only standard UNIX security is currently supported. Ensure that Kerberos security is not configured.

16. **Select and confirm a name service.**

    If you choose to use a name service, you must modify the `/etc/nsswitch.conf` file on the management server so that *files* appears before any other name service.

    Note – The two cluster nodes will be automatically configured to *not support* any naming services. This default configuration avoids the need to rely on external services.

    ---

17. **Select the appropriate region.**

18. **Select the appropriate time zone.**

19. **Set the appropriate date and time.**

20. **Confirm the date, time, and time zone information.**

21. Enter a superuser (root) password.

After the system reboots, you will see the following message:

```
                            NOTE

The management server IP address and name must be correct. If they
are not correct, you will have to recover the factory image on the
management server. To avoid an incorrect name and/or IP address, the
configuration script invokes the sys-unconfig(1M) command
immediately and returns the system to the OpenBoot prompt. You must
then reboot the management server to correctly configure the
management server name and/or IP address.

Type Y to unconfigure and halt the system.
```

22. Type N if the management server name and IP address are correct.

If you type N, the cluster environment customization starts.

If you type Y, the configuration script invokes the sys-config(1M) command and returns the management server to the OpenBoot prompt. You must then start the configuration process again at Step 2 on page 35.

▼ To Customize the Cluster Environment

The Cluster Platform 15K/9960 system customization script displays default values within square brackets. You can press Return to accept the default value.

Caution – Exiting the customization process will leave the management server in an unconfigured state; therefore, the customization script will not allow you to exit during the customization process.

Note – The customization script extracts the default values from the /jumpstart/Files/JumpStart.conf file on the management server.

You can edit the existing /jumpstart/Files/JumpStart.conf or copy a pre-defined JumpStart.conf file to the management server. Editing the JumpStart.conf file can reduce the configuration time. The following procedure assumes that you are not editing this file or using a pre-defined file.

Note – During the installation of the Sun Management Center software, you may see Lights-Out Management (LOM) errors. You can safely ignore these errors; however, if they persist after subsequent reboots, you should investigate them.

1. **Press N when prompted to edit the** `JumpStart.conf` **file.**

2. **Specify the settings for the external administration network:**

```
Enter the default router IP address for the external admin network:
        [192.0.47.248]... IP_address
Enter the name for the terminal concentrator:
        [f15kcluster-tc]... terminal_concentrator_name
Enter the IP address for the terminal concentrator:
        [192.0.47.213]... IP_address
```

3. **Specify the settings for the public network:**

```
Enter the cluster environment name:
        [f15kcluster]... cluster_environment_name
Enter the name for the first cluster node:
        [f15kcluster-n0]... node1_name
Enter the IP address for the first cluster node:
        [192.0.48.166]... node1_IP_address
Enter the Ethernet address for the first cluster node:
        [8:0:20:d8:a0:f9]... node1_Ethernet_address
Enter the network netmask for the cluster nodes:
        [255.255.255.0]... netmask
Enter the default router IP address for the cluster nodes:
        [192.0.48.248]... IP_address
Enter the name for the second cluster node:
        [f15kcluster-n1]... node2_name
Enter the IP address for the second cluster node:
        [192.0.48.172]... node2_IP_address
Enter the Ethernet address for the second cluster node:
        [00:03:ba:08:e7:ae]... node2_Ethernet_address
```

4. Specify the settings for the cluster interconnect:

```
>>> Network Address for the Cluster Interconnect Transport <<<

    The private cluster transport uses a default network address of
    172.16.0.0. If this network address is already in use, you must use
    another address from the range of recommended private addresses
    (see RFC 1918 for details). Note that the Sun Cluster 3.0 software
    requires that the last two octets are always zero.

    The default netmask is 255.255.0.0; you can select another netmask,
    as long as it masks all bits in the network address.

Enter the network address for the cluster interconnect:
        [172.16.0.0]... network_address
Enter the network netmask for the cluster interconnect:
        [255.255.0.0]... netmask
```

5. Press Y to confirm the settings for the external administration network, the public network, and the cluster interconnect.

If any of the settings are incorrect, press N and the number of the setting.

6. Enter the settings for the internal administration network:

```
>>> Network Address for the Internal Admin Network <<<

    The internal admin network uses the default address of 10.1.0.0.
    If this network address is already in use elsewhere within your enterprise,
    you must use another address from the range of recommended private
    addresses (see RFC 1918 for details).

    If you do select another network address, note that the last octet
    must be zero to reflect a network.

    The default netmask is 255.255.255.0; you can select another netmask,
    as long as it masks all of the bits in the network address.

Enter the internal admin network address:
        [10.1.0.0]... IP_address
Enter the internal admin network mask:
        [255.255.255.0]... netmask
Enter the admin network IP address for the management server:
        [10.1.0.1]... IP_address
    NOTE: the assigned admin network hostname will be steve-admin
Enter the admin network IP address for the first cluster node:
        [10.1.0.2]... IP_address
    NOTE: the assigned admin network hostname will be f15kcluster-n0-admin
Enter the admin network IP address for the second cluster node:
        [10.1.0.3]... IP_address
    NOTE: the assigned admin network hostname will be f15kcluster-n1-admin
Enter the name for SC0 on the first F15K:
        [f15k01-sc0]... sc0_name
Enter the admin network IP address for SC0 on the first F15K:
        [10.1.0.4]... IP_address
Enter the name for SC1 on the first F15K:
        [f15k01-sc1]... sc1_name
Enter the admin network IP address for SC1 on the first F15K:
        [10.1.0.5]... IP_address
Enter the name for SC0 on the second F15K:
        [f15k02-sc0]... sc0_name
Enter the admin network IP address for SC0 on the second F15K:
        [10.1.0.6]... IP_address
Enter the name for SC1 on the second F15K:
        [f15k02-sc1]... sc1_name
Enter the admin network IP address for SC1 on the second F15K:
        [10.1.0.7]... IP_address
```

7. **Press Y to confirm the settings for the internal administration network.**

   If any of the settings are incorrect, press N and the number of the setting, then correct the setting.

8. **Specify the volume manager for the cluster nodes.**

   In the following example, VERITAS VxVM 3.1.1 is installed to manage the nodes.

⚠ **Caution –** You must have the VERITAS license key before you answer N to the volume manager prompt.

```
> Cluster Nodes Volume Manager Configuration <

The Cluster nodes are defaulted to be configured with
the Solstice DiskSuite 4.2.1 volume manager. There is
an option of automatically installing and configuring
the Veritas VxVM 3.1.1 software on each cluster node if
license keys are available (license keys are provided by Sun
or Veritas after the VxVM 3.1.1 software is purchased).

When the Veritas VxVM 3.1.1 product is selected, the boot disk
and swap partitions are automatically encapsulated. A separate
Veritas license is required for each cluster node and and you will
be required to enter the license key text. Please have the
license keys available.

Do you want Solstice DiskSuite 4.2.1 installed on each cluster node
(y/n)? n

VxVM 3.1.1 will be installed and configured on each node...
```

The customization script customizes the cluster and reboots the management server. You are now ready to set up the NTP server.

Setting Up the NTP Server on the Management Server

During the installation of the system, the configuration script scans the local networks for NTP servers. You must answer configuration questions to set up the NTP configuration.

If the script finds NTP servers, it displays a list of the IP address, as shown in the example below. You can use these servers or specify your own list of servers.

```
The following NTP servers have been detected on local subnets and appear to
be synchronized to legal reference clocks. Unless authentication or access
restrictions are in place, it should be possible to synchronize to these
servers.

Do you want to use the following NTP servers for synchronization?

192.168.42.12
192.168.31.6
192.168.12.1

Yes or No [y,n,?]
```

If you do not use the specified servers, you can enter a space-separated list of IP addresses of available NTP servers.

In either case, the management server attempts to synchronize with the listed servers. The scanning process does not verify if authentication and access control on the specified servers are appropriate for the management server. The scanning process also fails to detect NTP on broadcast and multicast addresses, although you can specify them manually.

If the scanning process fails to find an NTP server, the management server prompts you to choose between synchronizing to the local clock or synchronizing to a list of servers. The example below shows a user specified list being used:

```
No legal NTP servers were found. You can either use the local clock as a
synchronization source or enter a list of servers to use. It is best to use
another NTP server if one is available.

Do you want to use the server's local clock?

Yes or No [y,n,?] n

The management server will be configured to synchronize to any of the servers
listed below. The word 'local' can be used by itself to have the server use
its own local clock.

Please enter a space-separated list of servers to use for NTP synchronization:
192.168.23.1 192.168.24.6 192.168.10.24
```

Customizing the Apache Web Server Configuration

The management server splash page uses the Apache Web server software included in the Solaris 8 10/01 operating environment. The Apache Web server is configured automatically during the installation process. The `/etc/apache/httpd.conf` file is installed and configured by the configuration process. You can customize this file to fit your data center needs. The server is configured to run as the `webserver` user in the `webserver` group.

If you need to disable the Web server, remove or rename the `/etc/apache/httpd.conf` file and stop the Apache Web server process, as shown below:

```
# mv /etc/apache/httpd.conf /etc/apache/httpd.conf.old
# /etc/rc2.d/K16apache stop
```

The source for the management server splash page and other Web pages on the management server is in the `/suntone/html` directory. You can modify the pages in this directory to customize the management server splash page.

Setting Up the Sun Management Center Software on the Management Server

The Sun Management Center software is installed and set up automatically as part of the Cluster Platform 15K/9960 system installation. No user interaction is required during this process. The advanced and premier Sun Management Center software options are included in the installation. These additional options require the appropriate licenses.

You must complete the following operations to use the Sun Management Center software:

■ Start up the Sun Management Center software.

■ Start up the Console Component to allow administrative and monitoring operations to be performed by the user.

■ Log in to the Sun Management Center software.

■ Set up a home domain for administration.

■ Add the nodes to be monitored to the administration domain.

The instructions in this section are intended as a quick start to the Sun Management Center software. Refer to the *Sun Management Center 3.0 Software User's Guide* and the *Sun Management Center 3.0 Supplement for Sun Fire 15K Systems* for instructions on how to customize the software further.

Sun Management Center Licensing

If you have purchased the optional Sun Management Center advanced and/or premier products, you received license keys for these products. You must register the keys by following the procedure in this section. No license is necessary for basic functionality. For more information on the Sun Management Center licensing model, contact your Sun service representative or authorized Sun service provider.

Note – Your particular license may not provide access to all the features documented in the *Sun Management Center Software User's Guide.*

For information on purchasing a license, contact your Sun service representative or authorized Sun service provider and refer to the following web site:

    http://www.sun.com/sunmanagementcenter

If you should exceed the time period allowed for your demonstration license, a message is displayed during login to alert you that you have exceeded the limits of your license.

```
License expired
Please purchase your license!
```

If you do not have a license and attempt to access the Sun Management Center software, you may see the following message:

```
Missing License!!
Please purchase your license!!
```

During the installation of the server component, you are given the opportunity to specify a license token.

■ If you have a license token, you may enter it during the install process.

- If you do not have a license token, you may run the software without one as described above. When you get a license token, you can install it using the `es-lic` script for advanced functionality. For example:

```
# cd /opt/SUNWsymon/sbin
# ./es-lic advanced_system_monitoring
-------------------------------
Sun Management Center License Program
-------------------------------
<Enter license key:>
```

Starting the Sun Management Center Software

The server and agent components of Sun Management Center are started automatically during the boot process by the `S82es_server` and `S81es_agent` scripts located in the `/etc/rc3.d` directory. No other configuration is required.

To disable Sun Management Center server or agent, rename these scripts to `s82es_server` and `s81es_agent` respectively.

Starting the Sun Management Center Software Console

The Sun Management Center Console component is the user interface you will use for management tasks and monitoring. You should be logged into the management server to start the Console.

The Console component of Sun Management Center is an X-Windows application, but the management server has no graphical display.

If you need to log in to the management server, you must redirect the X-Windows display by setting the DISPLAY environment variable. The value should be directed to the workstation on which you are working.

Ensure that the workstation you are working from has access to the X-client applications running on the management server by using the following command on the workstation:

```
% xhost management_server_hostname
```

In the Bourne or Korn shell, set the DISPLAY environment variable on the management server as follows:

```
$ DISPLAY=workstation_hostname_or_IP_address:0.0
$ export DISPLAY
```

In the C shell, set the DISPLAY environment variable as follows:

```
$ setenv DISPLAY workstation_hostname_or_IP_address:0.0
```

▼ To Start the Sun Management Center Software

● **Use the following command to start the Sun Management Center software:**

```
$ /opt/SUNWsymon/sbin/es-start -c &
```

Logging in to the Sun Management Center Software

After the console starts, the Login window is displayed (FIGURE 3-1). You are prompted to enter a login ID, password, and server host.

FIGURE 3-1   Sun Management Center Software Login Window

▼ To Log in to the Sun Management Center Software

1. Type `root` **as the login ID.**

2. Type in the root password on the management server

3. Type in the management server hostname.

Note – You can safely ignore the "Please acquire the license for the following: Advanced Systems Monitoring" warning.

Setting the Home Domain

The first time you start the Sun Management Center software, it displays the Set Home Domain window (FIGURE 3-2).

FIGURE 3-2   Set Home Domain Window

▼ To Set the Home Domain

1. Highlight the default domain.

2. Click on the Set Home button.

3. Click the Close button.

Further information about creating and configuring administrative domains can be found in the *Sun Management Center 3.0 Software User's Guide.*

Adding nodes

Initially, the Sun Management Center software console displays only one node—the management server. You must add each node by using the Create Topology Object window (FIGURE 3-3).
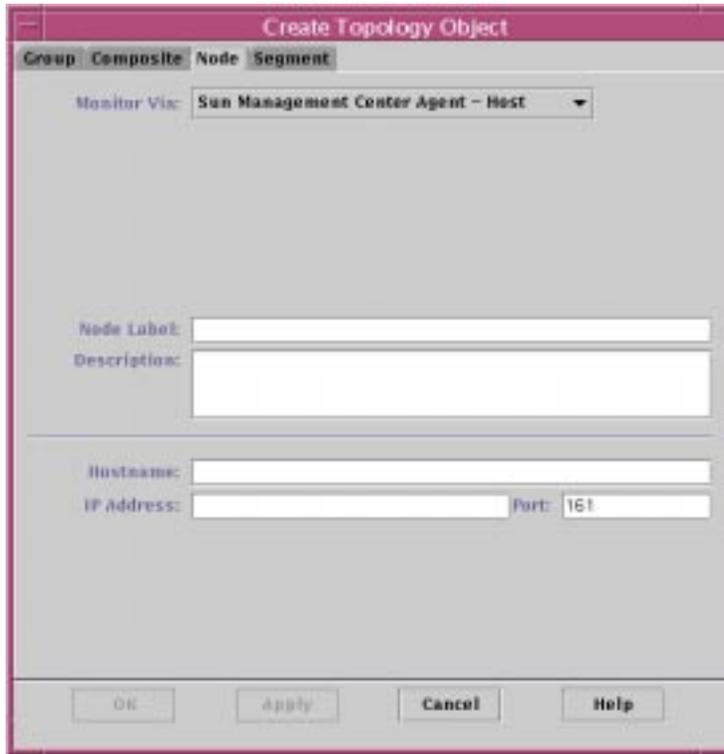

FIGURE 3-3 Create Topology Object Window

▼ To Add a Cluster Node

At a minimum, you must provide the node label and the hostname.

1. **Select Create an Object from the Edit menu.**

2. **In the Node Label box, type an appropriate name.**
   You can use the hostname

3. **In the Hostname box, type in the hostname.**

You should use *hostname*-admin so that the software uses the administration network. This ensures that the management server is connected to a private network. You can leave the IP address blank, or you can type in the IP address in the IP Address box instead of using the hostname.

You can add nodes only through the console interface. You cannot use the Web browser that is described in the next section.

4. **Repeat Step 1 through 3 for the second node.**

For more information on creating objects with the Sun Management Center software, refer to the *Sun Management Center 3.0 Software User's Guide*.

After you have added the Cluster Platform 15K/9960 system nodes, you can use the Sun Management Center software to maintain or monitor the cluster.

Web Interface

You can access the Sun Management Center software by using a Web browser. The Web browser interface provides a sub-set of the Console functions. To access the Sun Management Center software, point the Web browser to the following URL:

`http://`*management_server_hostname_or_IP_address*`:8002`

This URL is also posted as a link on the management server splash page that can be found at the following URL:

`http://`*management_server_hostname_or_IP_address*`/`

By default, use root as your login ID and the superuser (root) password for the management server as the password.

Note – You cannot use the Web browser to create nodes or objects.

To Install the Cluster Platform 15K/9960 Software on the Cluster Nodes

---

Note – When executing the `ccp`(1M) command remotely, ensure that the `DISPLAY` shell environment variable is set to the local hostname.

---

1. **Use the following command to start the Cluster Console Panel from the management server:**

```
# /opt/SUNWcluster/bin/ccp cluster_name &
```

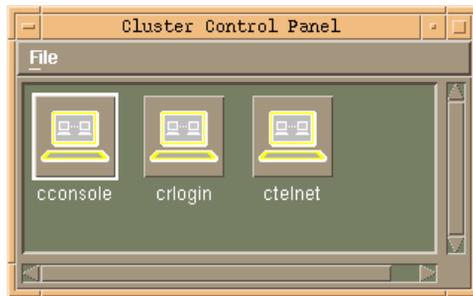The ccp(1M) command displays the Cluster Control Panel, as in FIGURE 3-4.

FIGURE 3-4   Cluster Control Panel

2. **In the Cluster Control Panel, double-click on the cconsole icon to display a Cluster Console window for each cluster node (see FIGURE 3-5).**

Note – Before you use an editor in a Cluster Console window, verify that the TERM shell environment value is set and exported to a value of vt220.

---

3. **Position the cursor in the cconsole window, and use the** domain-a **user ID to log into both cluster nodes.**

   The password is temporarily set to abc. You must change the password after the first login session.

4. **Use the** setkeyswitch -d **command to power on** domain-a **on both cluster nodes**

   At this point, the POST (Power On SelfTest) is executed on both domains.

5. **Use the** console -d **a command to display** domain-a **consoles for both cluster nodes.**

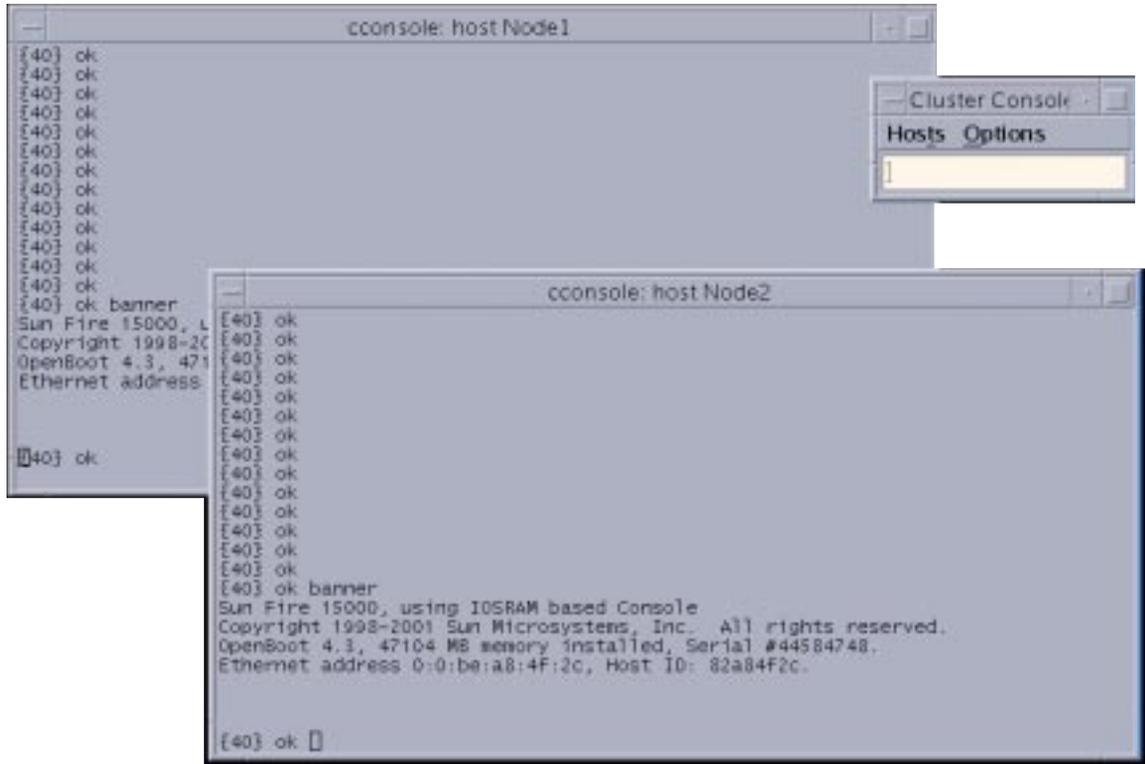6. **Use the** ~# **key sequence to drop both domains to the OBP prompt.**

FIGURE 3-5 Cluster Console Windows

Note – The console windows for both cluster nodes are grouped (the three windows move in unison—FIGURE 3-5). To ungroup the Cluster Console window from the cluster node console windows, deselect the Group Term Windows checkbox in the Options menu (FIGURE 3-6).

FIGURE 3-6 Cluster Console Window

7. **Enter the following commands into the Cluster Console window to start the installation process:**

```
{0} ok setenv boot-device /ssm@0,0/pci@18,700000/pci@1/SUNW,isptwo@4/sd@0,0:a
{0} ok setenv auto-boot? true
{0} ok nvalias net /ssm@0,0/pci@18,700000/pci@3/SUNW,qfe@0,1
{0} ok setenv local-mac-address? false
{0} ok setenv use-nvramrc? true
{0} ok nvstore
{0} ok boot net - install
```

Note – You must use spaces before and after the dash (-) character in the `boot net - install` command string.

The following software is automatically installed on both cluster nodes:

- Solaris 8 10/01 operating environment
- Solaris DiskSuite 4.2.1 or VERITAS VxVM 3.1.1, depending on customer choice
- Sun Management Center 3.0 agents
- Sun Cluster 3.0 update 1 and recommended patches

All patches are applied and system files are configured to produce a basic cluster environment.

During the installation, the preinstallation script displays the following messages:

```
Killed
Killed
Warning: Failed to register application "DiskSuite Tool" with
solstice launcher.
```

You can safely ignore these messages.

8. **Log into each cluster node as superuser.**

The default superuser password is abc.

9. **Change the default password to a secure password:**

```
# passwd
passwd: Changing password for root
New password: password
Re-enter new password: password
```

10. **Configure the shared storage.**

    Refer to the Solstice DiskSuite software documentation or the VERITAS VxVM software documentation to configure the shared storage (see "Documentation" on page 13). You must create the disk sets, the metadevices, and the file systems.

    You are done configuring and customizing the Cluster Platform 15K/9960 system. You can now install applications in the cluster environment.

    For instructions on how to install an application, refer to the documentation that accompanied the application. You will need to establish resource groups, logical hosts, and data services in the Sun Cluster 3.0 software for the application. For instructions, refer to the Sun Cluster 3.0 documentation.

    The cluster nodes can access the data services from the following path:

```
/net/management_server_name/jumpstart/Packages/SC3.0u1/scdataservices_3_0_u1
```

Accessing the System by Using a Laptop Computer

This appendix contains the settings you must use to access the Cluster Platform 15K/9960 system by using a laptop computer that is running the Microsoft Windows 98 operating system.

Connecting a Laptop Computer

Before you can use a laptop computer to access the Cluster Platform 15K/9960 system, you must attach it to the terminal concentrator.

▼ To Connect the Laptop Computer

1. **Attach a DB-9 to DB-25 (female-female) adapter into the serial** `COM1` **port of the laptop computer.**

2. **Connect the RJ-45 end of the serial cable (P/N 5121A) to port 1 on the terminal concentrator.**

3. **Connect the other end to the DB-25 to DB-9 adapter.**

Using the Laptop Computer

After you have connected the laptop computer to the terminal concentrator, you can start the HyperTerminal software to access the terminal concentrator console.

▼ To Start the HyperTerminal Software

1. **Click Start ➤ Programs ➤ Accessories ➤ Communications ➤ HyperTerminal to open the HyperTerminal folder.**

2. **In the HyperTerminal folder, double-click on the HyperTerm icon to display the Connection Description window.**

3. **In the Connection Description window, enter `StandardConfig` in the Name field, and click on the OK button to display the Connect To window.**

4. **In the Connect To window, select the Direct to Com1 option in the Connect Using field.**

5. **Click on the OK button to open the Connect To window and to display the COM1 Properties window.**

6. **In the COM1 Properties window, select the following options:**

    ```
    Bits per second: 9600
    Data bits: 8
    Parity: None
    Flow Control: None
    ```

7. **Click on the OK button to open the StandardConfig—HyperTerminal application window.**

8. **In the StandardConfig—HyperTerminal window, select File ➤ Properties to open the StandardConfig Properties window.**

9. **In the StandardConfig Properties window, click on the Settings option, and select VT100 for the Emulation option.**

   At this point, the HyperTerminal window provides monitor mode access to the terminal concentrator.

Connections Within the Expansion Cabinet

This appendix describes the preinstalled arrangement of some cables within the expansion cabinet. This information is provided to assist in restoring the hardware to its original configuration after service.

Use the following tables and illustrations as a guide for reinstalling the cables within the expansion cabinet.

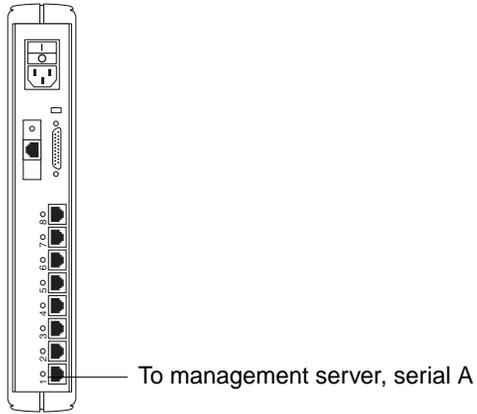**TABLE B-1**   Management Server Cable Connections

Cable	Source	Destination
Serial	Serial A	Terminal concentrator, port 1
RJ-45, CAT	Port 1	Administration hub, port 1
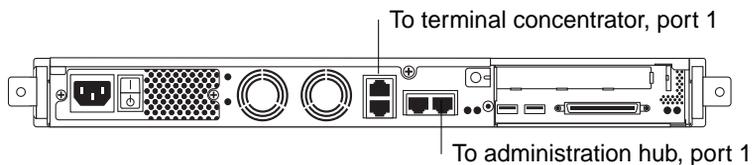
FIGURE B-1   Management Server Cable Connections

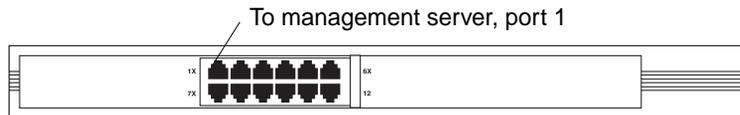**TABLE B-2**   Terminal Concentrator Cable Connections

Cable	Source	Destination
Serial	Port 1	Management sever, serial A

To management server, serial A

FIGURE B-2   Terminal Concentrator Cable Connections

TABLE B-3   Administration Hub Cable Connections

Cable	Source	Destination
RJ-45, CAT	Port 1	Management server, port 1

To management server, port 1

FIGURE B-3   Administration Hub Cable Connections