



Sun Fire™ V60x Compute Grid Rack System Installation Guide

Sun Microsystems, Inc.
www.sun.com

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Preface

This guide contains instructions for installing the Sun Fire™ V60x Compute Grid rack system hardware and for setting up and deploying the system software. This guide also provides overview information about the system and references to more detailed documentation for the system hardware and software components.

How This Book Is Organized

The information in this guide is organized into the following chapters and appendixes:

- Chapter 1 provides hardware overview and installation instructions, including diagrams of the system cabling and components.
- Chapter 2 provides software overview information, and instructions for deploying and setting up software.
- Appendix A provides product specifications, including environmental requirements, for reference.

Typographic Conventions

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

* The settings on your browser might differ from these settings.

Related Documentation

The following table lists the documentation set that is shipped with your Sun Fire V60x Compute Grid rack system. Documentation that contains detailed information about using and servicing the system hardware and software components *after* installation are included with the system as a supplement to this installation guide.

| Component | Title | Part Number |
|--|---|-------------|
| Sun Fire V60x Compute Grid rack system | <i>Sun Fire V60x Compute Grid Rack System Installation Guide</i> | 801-3072 |
| Sun Fire V60x Compute Grid rack system | <i>Sun Fire V60x Compute Grid Rack System Release Notes</i> | 801-3074 |
| Sun Rack 900 | <i>Sun Rack Unpacking Instructions</i> | 816-6385 |
| Sun Rack 900 | <i>Sun Rack Installation Guide</i> | 816-6386 |
| Sun Rack 900 | <i>Sun Rack Service Manual</i> | 816-6387 |
| Sun Rack 900 | <i>Sun Rack safety and Regulatory Compliance Information</i> | 816-7885 |
| Sun Fire V60x | <i>Sun Fire V60x and Sun Fire V65x Server Operating System Installation Guide</i> | 817-1956 |

| Component | Title | Part Number |
|------------------------------|--|--------------------|
| Sun Fire V60x | <i>Sun Fire V60x and Sun Fire V65x Server Release Notes</i> | 817-2026 |
| Sun Fire V60x | <i>Important Safety Information for Sun Hardware Systems</i> | 816-7190 |
| Sun Fire V60x | <i>Sun Fire V60x and Sun Fire V65x Server Warranty Card</i> | 817-2027 |
| Sun Fire V60x | <i>Sun Fire V60x and Sun Fire V65x Server Registration Card</i> | 817-2294 |
| Sun Fire V60x | <i>Sun Fire V60x and Sun Fire V65x Server Binary Code License</i> | 817-2029 |
| Sun Fire V60x | <i>Sun Fire V60x and Sun Fire V65x Server Safety and Compliance Guide</i> | 817-2028 |
| Sun Fire V60x | Sun Fire V60x and Sun Fire V65x Server Documentation CD, includes the following: | 705-0561 |
| Sun Fire V60x | <i>Sun Fire V60x and Sun Fire V65x Server User Guide</i> | 817-2023 |
| Sun Fire V60x | <i>Sun Fire V60x and Sun Fire V65x Server Troubleshooting Guide</i> | 817-2024 |
| Sun Fire V60x | <i>Sun Fire V60x and Sun Fire V65x Server Server Management Guide</i> | 817-2025 |
| Sun Control Station software | Sun Control Station 2.0 Software CD, includes the following documentation: | 798-4889 |
| Sun Control Station software | <i>Sun Control Station 2.0 Administration Manual</i> | 817-3603 |
| Sun Control Station software | <i>Sun Control Station 2.0, Software Management Module</i> | 817-3611 |
| Sun Control Station software | <i>Sun Control Station 2.0, Health Monitoring Module</i> | 817-3607 |
| Sun Control Station software | <i>Sun Control Station 2.0, Performance Monitoring Module</i> | 817-3610 |
| Sun Control Station software | <i>Sun Control Station 2.0, Inventory Module</i> | 817-3608 |
| Sun Control Station software | <i>Sun Control Station 2.0, Lights-Out Management Module</i> | 817-3609 |
| Sun Control Station software | <i>Sun Control Station 2.0, AllStart Module</i> | 817-3605 |
| Sun Control Station software | <i>Sun Control Station 2.0, Grid Engine Module</i> | 817-3606 |

| Component | Title | Part Number |
|--|---|--------------------|
| Sun ONE Grid Engine, Enterprise Edition software | <i>Sun Grid Engine, Enterprise Edition 5.3 Administration and User's Guide</i> | 816-4739 |
| Sun ONE Grid Engine, Enterprise Edition software | <i>Sun Grid Engine 5.3 and Sun Grid Engine, Enterprise Edition 5.3 Reference Manual</i> | 816-4767 |
| Sun ONE Grid Engine, Enterprise Edition software | <i>Sun Grid Engine, Enterprise Edition 5.3 Release Notes</i> | 816-5078 |
| Sun ONE Grid Engine, Enterprise Edition software | <i>Sun Grid Engine, Enterprise Edition 5.3 Basics of Administration</i> | 816-7409 |
| Third-party network switches | Documents supplied from network switch vendor | various |
| Third-party terminal server | Documents supplied from terminal server vendor | various |
| Third party keyboard, video, mouse (KVM) unit | Documents supplied from KVM unit vendor | various |

Accessing Sun Documentation

In addition to the hard-copies and CDs that are shipped with your system, you can view, print, or purchase a broad selection of Sun documentation, including localized versions, at:

<http://www.sun.com/documentation>

You can search for the documentation by the titles or part numbers listed in “Related Documentation” on page vi.

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Please include the title and part number of your document with your feedback:

Sun Fire V60x Compute Grid Rack System Installation Guide, part number 817-3072-10

Sun Fire V60x Compute Grid Rack System Hardware Overview and Installation

The Sun Fire™ V60x Compute Grid rack system is shipped to your site fully assembled and cabled. This chapter is intended to familiarize you with the hardware in your Sun Fire V60x Compute Grid, and to provide installation and power-on instructions for the hardware.

The information in this chapter is organized into the following sections.

- “Installation Quick Path” on page 1
- “Hardware Components Overview” on page 3
- “Cabling Information” on page 7
- “Installing the System Hardware” on page 10
- “Powering On the System” on page 12
- “Adding or Replacing Hardware Components” on page 13

Installation Quick Path

This guide provides important overview and reference information, as well as procedures for an initial installation. The following diagram indicates the high-level steps for installing the system and provides pointers to that information in this guide.

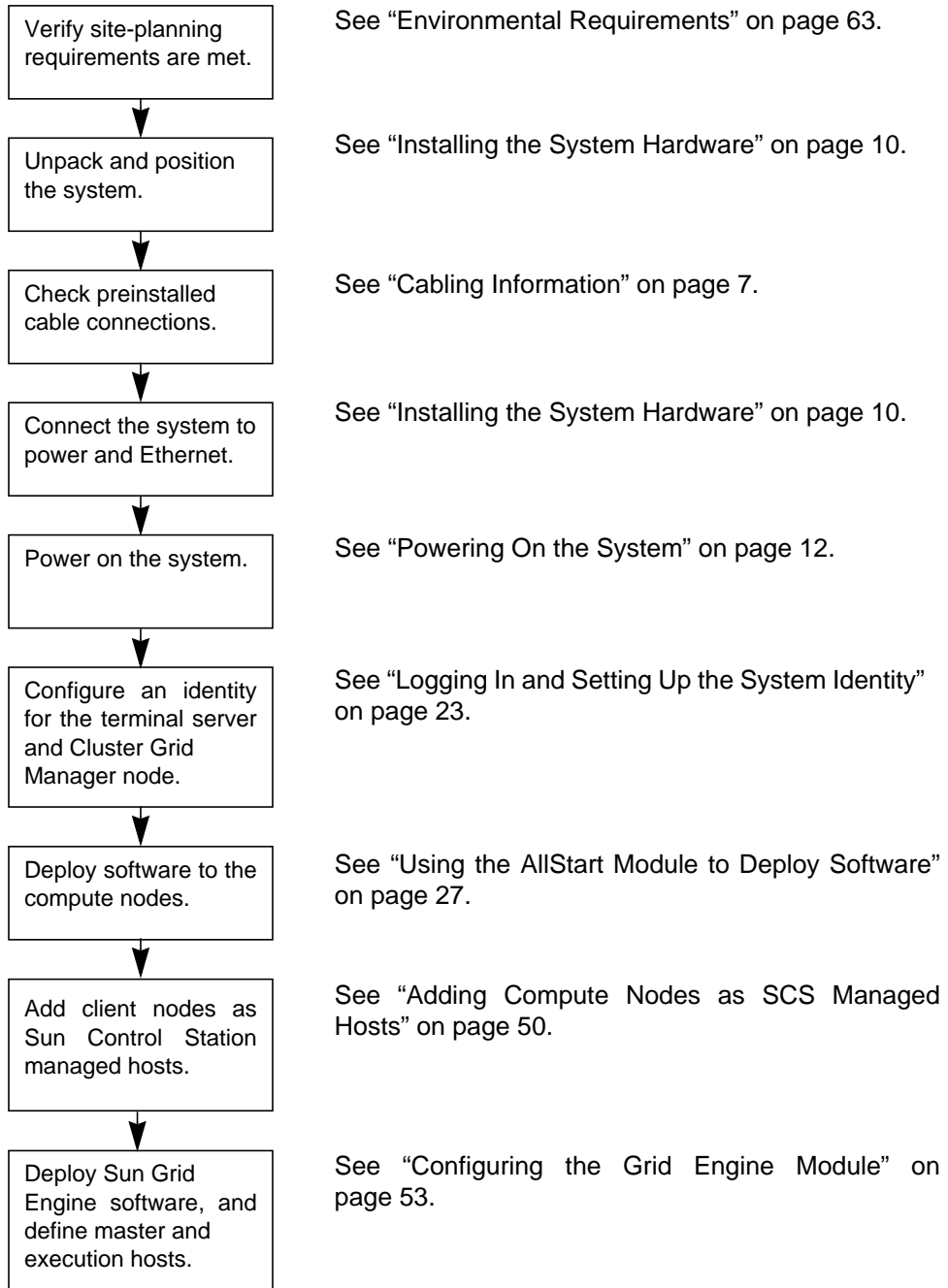


FIGURE 1-1 Installation Quick Path Flowchart

Hardware Components Overview

FIGURE 1-2 shows the Sun Fire V60x Compute Grid front and rear views. The front and rear doors are not shown. Components of the system are described in the sections that follow. For a cabling diagram, see “Cabling Information” on page 7.

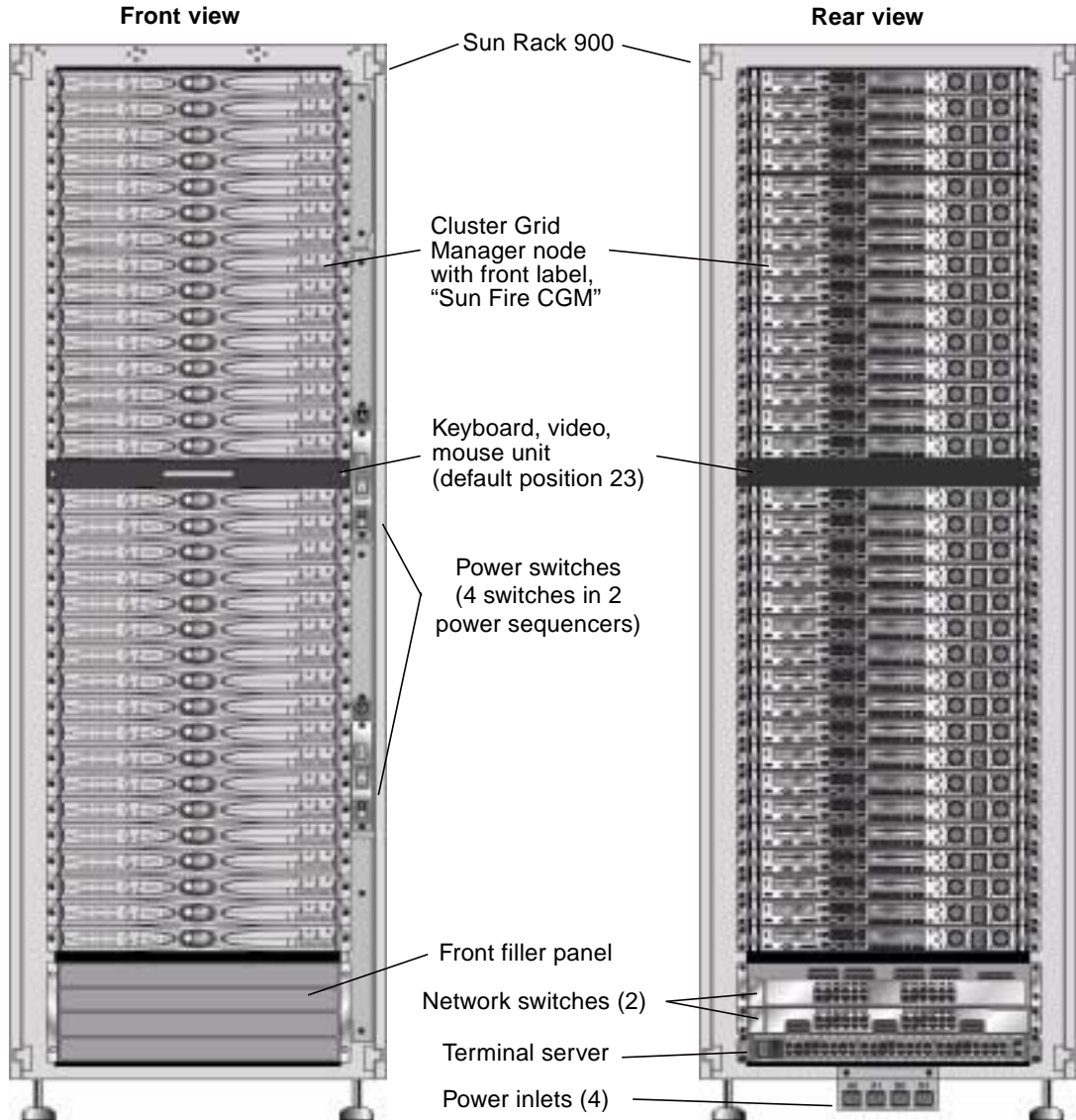


FIGURE 1-2 Sun Fire V60x Compute Grid Front and Rear Views

Sun Rack 900

All of the Sun Fire V60x Compute Grid components and cabling are preinstalled in a Sun™ Rack 900. This rack is equipped with front and rear doors, and side covers.

All Sun Fire V60x Compute Grid cables are precut, routed, and terminated in locations that provide minimal excess cable without impeding component access or replacement.

The Sun Fire V60x Compute Grid is equipped with a full configuration of power distribution units and power sequencer units, which provide sufficient power outlets to cable all installed nodes. Each node has a separate 110/220 VAC power cord. The power cords are routed from the rear, with side-mounted outlet strips to minimize the impact on rear access to the components in the rack. There is minimal increase in load during rack power-on because all nodes are sequenced on in turn, minimizing the amplitude of power-on current spikes.

Note – The four power cords that connect each rack to the AC outlets at your site must be ordered separately so that the correct connectors for your location are defined.

For more detailed information about the Sun Rack 900, refer to the Sun Rack documentation set that is shipped with your Sun Fire V60x Compute Grid.

Network Switches

The Sun Fire V60x Compute Grid uses two 24-port Gigabit Ethernet switches to communicate with the network. Each of the Sun Fire V60x nodes is connected from its Eth1 port to a switch port using a Cat 5 Ethernet cable. You can optionally dedicate up to four of each switch's ports to fiber-optic gigabit interface converters (GBICs).

The two network switches in each rack are interconnected with preinstalled, 1.8-foot (.5-meter), 32-Gbps stacking cables connected to their stacking ports. Each network switch has two stacking ports on its rear panel (the rear panel of the network switch faces the front of the system rack). When you order a system with multiple racks, the network switches must be interconnected across the racks. You can order 9.8-foot (3-meter) stacking cables for this purpose. See “Multiple-Rack System” on page 9 for more information.

For more detailed information about the network switches, refer to the third-party switch documentation that is shipped with your Sun Fire V60x Compute Grid.

Terminal Server

All nodes in the rack and the network switches are connected via their serial console ports to a 48-port terminal server. The terminal server ports use consistent RJ-45 serial port wiring standards.

The terminal server can then be used to perform individual configuration functions remotely, if this is necessary. The terminal server provides normal Telnet access to a serial port using the `telnet IP-address port-number` protocol.

For more detailed information about the terminal server, refer to the third-party terminal server documentation that is shipped with your Sun Fire V60x Compute Grid.

The terminal server ports are assigned Telnet port numbers at the factory. TABLE 1-1 describes the port allocations.

TABLE 1-1 Terminal Server Port Allocations

| Port Number | Device | Telnet Port Number |
|-------------|---------------------------|--------------------|
| 34 | Network switch console | 7034 |
| 33 | Cluster Grid Manager node | 7033 |
| 32 to 1 | Compute nodes | 7032 to 7001 |

Cluster Grid Manager Node

One node in the system, called the Cluster Grid Manager (CGM) node, acts as a deployment and management host. After it is configured and given an identity by your system administrator, the CGM node deploys software and monitors system activities for the entire compute grid. In addition, it monitors the status of the grid jobs by communicating with the grid master node.

The CGM node is pre-installed with the operating system and Cluster Grid Manager software modules that enable the CGM node to act as the management host. For more detailed information about the system software components, see “Sun Fire V60x Compute Grid Software Components Overview” on page 16.

Note – The CGM node is identifiable by a label on the front bezel that is marked, “Sun Fire CGM.”

Grid Master Node

Your system administrator designates one node in the system to be the grid master node. This can be any node in the system other than the CGM node, because it is a dedicated management node rather than a managed host. All grid processes interact through this node, which typically acts as the queue master responsible for distributing jobs to the grid compute nodes.

If you install multiple rack configurations, no additional grid master nodes are needed; the grid master node of the first rack manages all subsequent racks.

Compute Nodes

The grid compute nodes act as slave nodes to the grid master node. The compute nodes accept tasks from the grid master node, process them to completion, then pass the results back to the grid master node for accumulation.

The number of compute nodes in the rack can be configured when the system is ordered. A fully configured rack can contain 32 compute nodes, including the grid master node. The minimum number of grid compute nodes that are supported is 2 and the maximum number is 128 (in 4 racks).

Keyboard, Video, Mouse Unit

A keyboard, video monitor, and mouse (KVM) unit is included in the rack system and is precabled to the CGM node. This KVM is used for the initial configuration process by which the CGM node is configured with an IP address. After the initial configuration, the CGM node can be accessed through a remote serial connection to the terminal server.

Cabling Information

The Sun Fire V60x Compute Grid is shipped with all required cables already installed, routed, and connected in a cable harness assembly.

The cables are labelled to make it easy to reconnect them if any come loose during shipping, or if components are subsequently replaced. Each cable-end is labeled with the device and port that it should connect to. For example, an Ethernet cable that connects Sun Fire V60x node #1 to network switch number one would have one end labeled, "V60x_1 eth0," and the other end labeled, "Switch1 1."

Serial cables used for terminal server connections are RJ-45 to RJ-45 rollover cables (8-core, Cat 5 type Ethernet). Network cables used for network switch connections are RJ-45 to RJ-45 straight cables (8-core, Cat 5/5e type Ethernet). See TABLE 1-2 for the wiring specifications for the two types of cables.

TABLE 1-2 Cable Wiring Specifications

| Serial Cable Pins (Rollover) | | Network Cable Pins (Straight) | |
|------------------------------|-----------|-------------------------------|-----------|
| End A Pin | End B Pin | End A Pin | End B Pin |
| 1 | 8 | 1 | 1 |
| 2 | 7 | 2 | 2 |
| 3 | 6 | 3 | 3 |
| 4 | 5 | 4 | 4 |
| 5 | 4 | 5 | 5 |
| 6 | 3 | 6 | 6 |
| 7 | 2 | 7 | 7 |
| 8 | 1 | 8 | 8 |

Single-Rack System

The diagram in FIGURE 1-3 shows how the components of a system are interconnected.

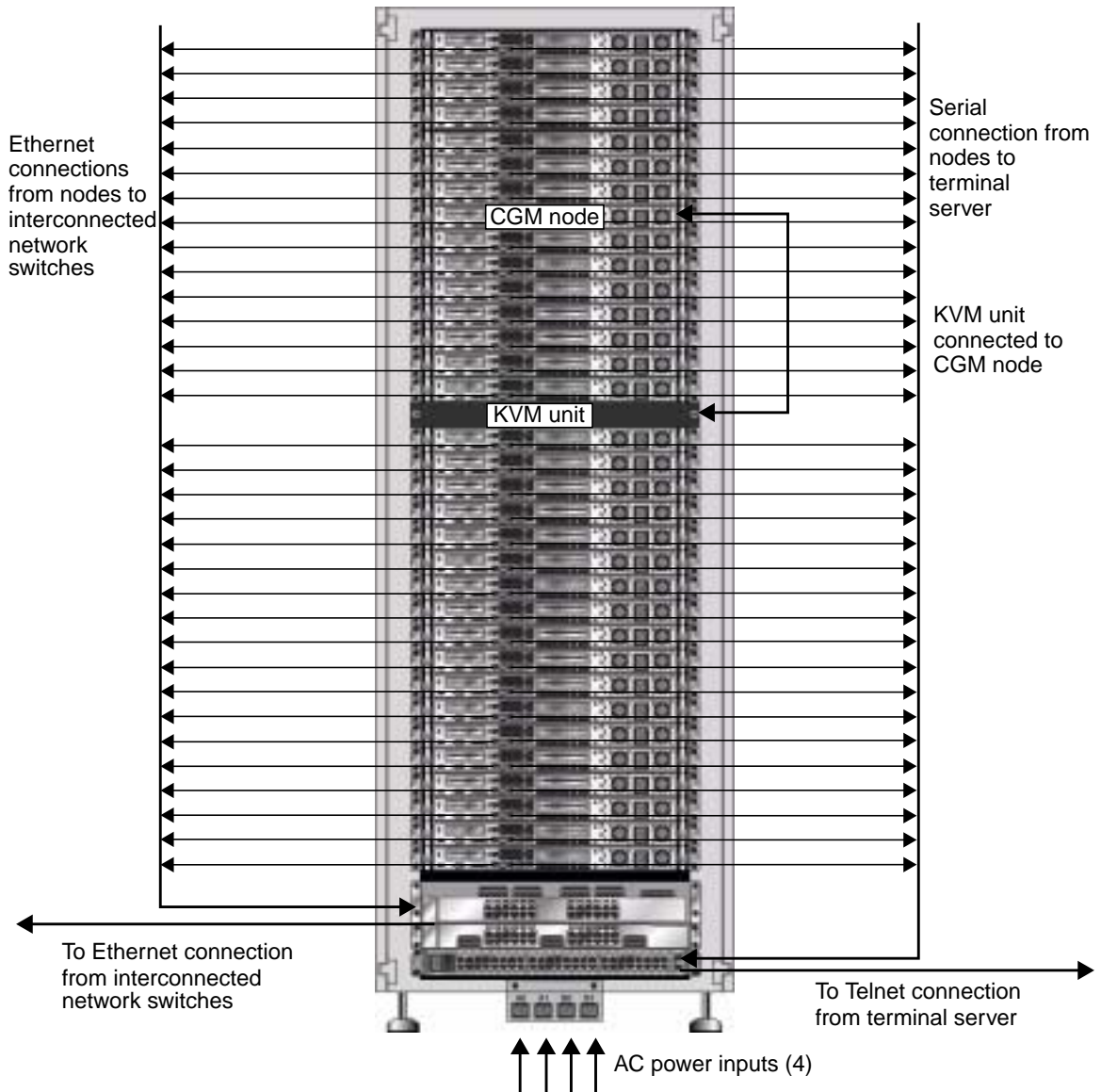


FIGURE 1-3 Single-Rack Cabling Diagram, Rear View

Multiple-Rack System

The two network switches in each rack are interconnected with preinstalled, 1.8-foot (.5-meter), 32-Gbps stacking cables connected to their stacking ports. Each network switch has two stacking ports on its rear panel (the rear panel of the network switch faces the front of the system rack). Refer to the network switch documentation that is shipped with your system for more information about switch stacking.

When you order a system with multiple racks, the network switches must be interconnected across the racks. You can order 9.8-foot (3-meter) stacking cables for this purpose.

The diagram in FIGURE 1-4 represents a system with four fully-populated racks and a suggested stacking-cable configuration. The network switches and their stacking ports are represented. This configuration would enable interconnection of the data in all racks and enable an aggregated uplink to the network from the base rack.

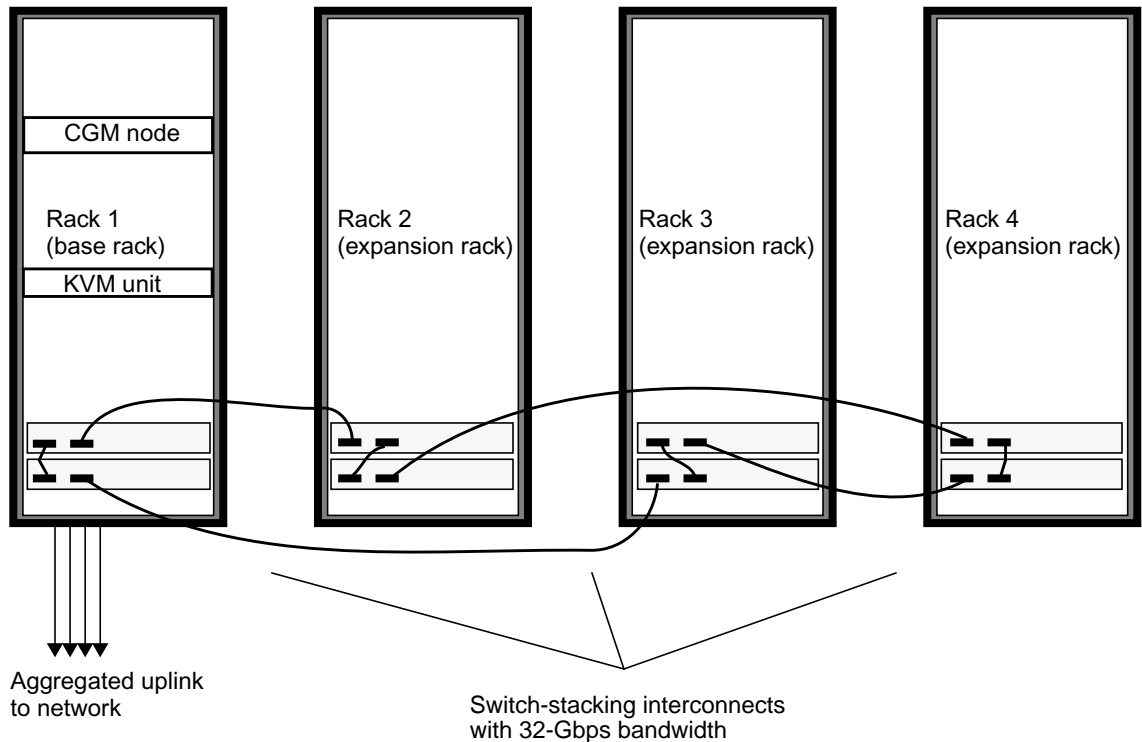


FIGURE 1-4 Multiple-Rack Cabling Diagram

Installing the System Hardware

The installation site must meet specified requirements, which are described during the sales process with your organization. For reference, the environmental requirements are described in Appendix A.

1. Verify that your installation site complies with the environmental specifications as described in Appendix A.

Site-planning specifications are discussed as a part of the sales process, but are included in this guide for reference and verification.

2. Unpack each system rack from its shipping carton and position it at the installation location.

Refer to the “Sun Rack Unpacking Instructions” (816-6385), which is shipped with your system.

3. Mount each system rack, level the rack feet, and install the anti-tilt bar to the rack as desired.

Refer to the “Sun Rack Installation Guide” (816-6386), which is shipped with your system.

4. Check that all preinstalled cable connections between system components are firmly connected.

The cables are labelled to make it easy to reconnect them if any come loose during shipping, or if components are subsequently replaced. Each cable-end is labeled with the device and port that it should connect to. For example, an Ethernet cable that connects Sun Fire V60x node #1 to network switch number one would have one end labeled, “V60x_1 eth0,” and the other end labeled, “Switch1 1.”

5. Connect each system rack to four power outlets at your installation site, as follows.

The system rack’s power distribution system consists of four inputs (two sets of two: AC_Grid_0 and AC_Grid_1), two power sequencers (A and B), two power strips, and connecting cables. See FIGURE 1-5 for a diagram.

Each power input to the rack should be connected to a dedicated 20 Amp (North America) or 16 Amp (International) branch circuit. Individual outlets are grouped into sets of four.

Each individual rack outlet has a maximum current rating of 10 Amps. However, each outlet group has a maximum current rating of 10 Amps also. In other words, the total current for a group of four outlets cannot exceed 10 Amps.

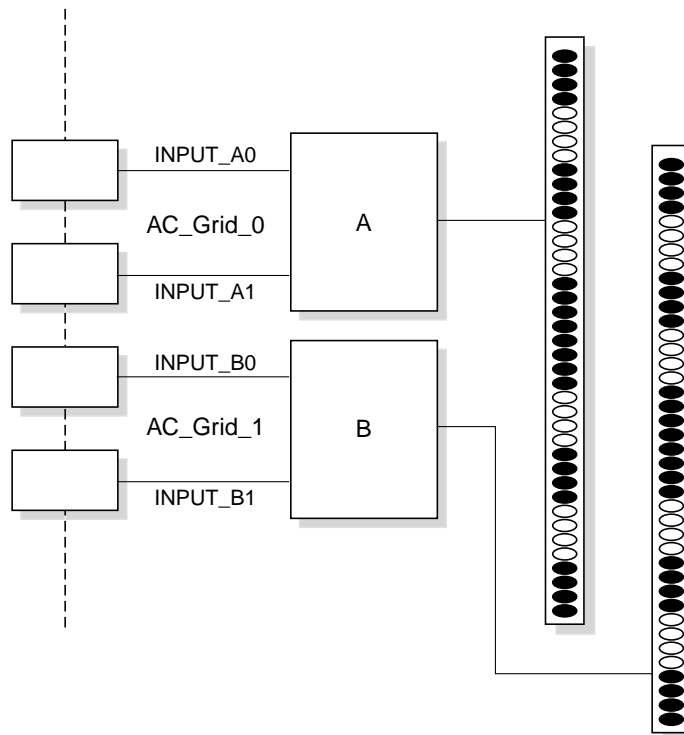


FIGURE 1-5 Sun Rack 900 Power Distribution System Diagram

- a. Turn off the power to the branch circuits that will supply power to the system.
 - b. Make sure both power sequencers in the rack are switched off.
 - c. Connect one end of each of the provided power cables to a branch circuit.
 - d. Connect the other end of each power cable to the rack's power input panel.
6. Connect the system to the network by connecting an Ethernet cable at your site to the system's network switch.

Note – If you are installing expansion racks in addition to the base system rack, connect the base system (the rack with the CGM node) to the network and connect the expansion racks to the base system rack as shown in FIGURE 1-4.

Powering On the System

1. Power on the system rack as follows.
 - a. Turn on power to the rack by switching on your site's branch circuits.
 - b. Turn on the four power sequencer switches on the front-right side of the rack.
 - The Power On indicator lights on both power sequencers should light.
 - The Power On indicator lights on both power strips should light.Power is automatically applied to the terminal server, network switch, and KVM unit.
2. Verify that the power is on in the network switches, terminal server, and KVM unit.

It can take about a minute for the power indicator LEDs on the components to light.
3. Power on the CGM node, which is identifiable by its "Sun Fire CGM" label.
 - a. If the front bezel is attached to the node, remove it by grasping the finger-hole at the left side of the bezel and swinging it open to the right until it disengages.
 - b. Press and release the power button on the right-front of the node. See FIGURE 1-6 for the location of the power button.

Note – If you are performing an initial installation, do *not* power on the other nodes of the system at this time.

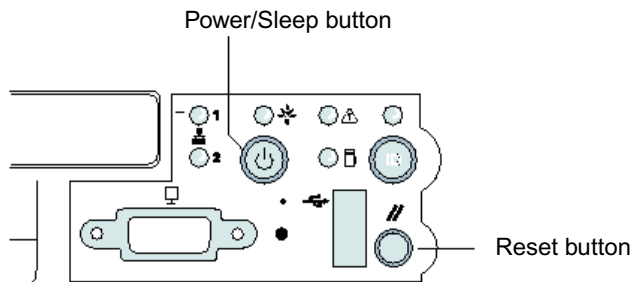


FIGURE 1-6 Sun Fire V60x Server Power and Reset Button Locations

4. Power on any expansion racks by repeating Step 1 and Step 3 for each expansion rack.

Note – If you are performing an initial installation, do *not* power on the other nodes in the expansion racks at this time.

5. To continue with installation, go to “Setting Up the Sun Fire V60x Compute Grid Software” on page 21.

Adding or Replacing Hardware Components

You can order the following hardware component options and add them to the system after the initial installation:

- Sun Fire V60x node
- Network switches

Tools Required

The tools that are needed to add or replace Sun Fire V60x Compute Grid components in the rack are listed here:

- Phillips-head screwdriver #1, used for attaching rack-mount kits
- Phillips-head screwdriver #2, used for slide-rail securing screws

Replacing Sun Rack Parts

The *Sun Rack Service Manual* (816-6387) contains troubleshooting procedures, and removal and replacement procedures for the following rack parts:

- Power sequencers
- Power strips
- Cable harnesses
- Top panel

The *Sun Rack Service Manual* is shipped with your system and is also available online at the following URL:

<http://docs.sun.com>

Adding or Replacing a Sun Fire V60x Node

The software configuration tasks required when adding or replacing a node differ, depending on how the node will be used in the system. Use the procedure listed here that is appropriate.

- “Replacing a CGM Node” on page 14
- “Replacing a Grid Master Node or Compute Node” on page 14

Replacing a CGM Node

If you replace a CGM node, you must reload all of the software that was preloaded on the original node at the factory.

If you need to replace a Sun Fire V60x node or a component inside the Sun Fire V60x node that acts as your CGM node, refer to the *Sun Fire V60x and Sun Fire V65x Server Troubleshooting Guide* and the *Sun Fire V60x and Sun Fire V65x Server User Guide*, which are included on the Sun Fire V60x and Sun Fire V65x Documentation CD (shipped with your system). These guides include instructions for removing and replacing Sun Fire V60x nodes in a Sun Rack 900, and for replacing internal node components.

After you have replaced the node or node component, reload the operating system and Cluster Grid Manager software using the procedures in the *Sun Fire V60x Compute Grid Rack System Release Notes* (817-3074).

Replacing a Grid Master Node or Compute Node

If you need to replace a Sun Fire V60x node or a component inside the Sun Fire V60x node that acts as your grid master node, refer to the *Sun Fire V60x and Sun Fire V65x Server Troubleshooting Guide* and the *Sun Fire V60x and Sun Fire V65x Server User Guide*, which are included on the Sun Fire V60x and Sun Fire V65x Documentation CD (shipped with your system).

After you have replaced the node or node component, you must use the Sun Control Station software on the CGM node to redefine the replacement node as a managed host, and as either the grid engine master host or as an execution host. Refer to the *Sun Control Station 2.0 Administration Manual*, which is included on the Sun Control Station 2.0 Software CD (shipped with your system), and “Configuring the Grid Engine Module” on page 53.

Adding or Replacing a Network Switch

If you need to replace a network switch, refer to the instructions that are shipped with the replacement switch for installation and configuration instructions.

Sun Fire V60x Compute Grid Rack System Software Overview and Installation

The Sun Fire V60x Compute Grid rack system is shipped with operating system and grid management software preinstalled to the Cluster Grid Manager (CGM) node. The grid master node and compute nodes are not shipped with preinstalled software.

This chapter contains overview information and procedures for performing an initial setup and basic configuration of the system software components. The procedure for deploying the operating system to the grid master node and grid compute nodes is also included.

The information in this chapter is organized into the following sections.

- “Sun Fire V60x Compute Grid Software Components Overview” on page 16
- “Setting Up the Sun Fire V60x Compute Grid Software” on page 21
 - “Information Required For Software Setup” on page 21
 - “Logging In and Setting Up the System Identity” on page 23
 - “Using the AllStart Module to Deploy Software” on page 27
 - “Adding Compute Nodes as SCS Managed Hosts” on page 50
 - “Configuring the Grid Engine Module” on page 53

Sun Fire V60x Compute Grid Software Components Overview

The following diagram represents the software components that are preinstalled on the CGM node and how they are related. The sections that follow give brief descriptions of the components that are labeled in the diagram.

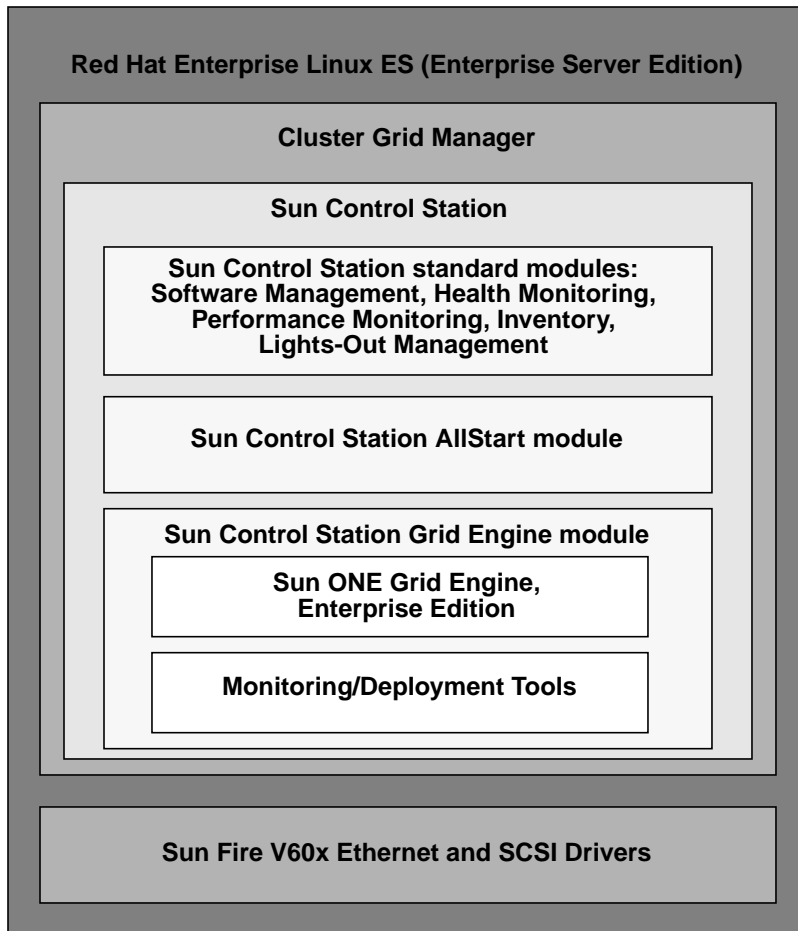


FIGURE 2-1 Sun Fire V60x Compute Grid Software Components

Red Hat Enterprise Linux Operating System

Red Hat Enterprise Linux (Enterprise Server Edition) is the Linux operating system that is preinstalled on the CGM node of the system.

For detailed information about administering and customizing Linux operating system software, refer to the manual that was shipped with your Red Hat Enterprise Linux 2.1 media kit.

Cluster Grid Manager Software

As shown in FIGURE 2-1, the Cluster Grid Manager software is comprised of several components that supplement each other to enable you to install, set up, and monitor activities on your Sun Fire V60x Compute Grid.

Sun Control Station and its standard control modules, plus the AllStart module and the Grid Engine module, comprise the Cluster Grid Manager interface that you use to administer your Sun Fire V60x Compute Grid. See FIGURE 2-2 for a sample Cluster Grid Manager main window.

You access the Cluster Grid manager main window by using a browser to go to the IP address of your CGM node (for example, `http://n.n.n.n`, where `n.n.n.n` is the IP address of your CGM node). Instructions for setting up the CGM node so that it can be correctly accessed are described in “Logging In and Setting Up the System Identity” on page 23.

Documentation for the Cluster Grid manager software components can be accessed with the Help button, which is the button with the question mark (?), in the upper-right corner (see FIGURE 2-2).

Sun Control Station Software

Sun Control Station (SCS) is a server management and monitoring tool. Software control modules that are included with your system are easily accessed and controlled through the Cluster Grid Manager main window.

There is both a server-side component and a client-side component for SCS.

- The server-side component consists of two parts: A core framework that is the engine for executing control modules, and the built-in control modules themselves. This server-side component can be installed on any x86-based server running a qualified Linux operating system.
- The client-side component, known as an *agent*, can run on both Linux and Solaris platforms.

The standard control modules that are shipped with Sun Control Station are listed and described briefly here. All modules are accessed from the left-side panel in the Cluster Grid Manager main window (see an example in FIGURE 2-2).

For detailed information about SCS software and the standard control modules that are integrated with it, refer to the *Sun Control Station Administration Manual*, (817-3603). This manual and those for the control modules are accessed by clicking the Help button on the Cluster Grid Manager main window.

- Software Management module

This module enables you to manage software package files on your system. For example, you can view, download, and upload package files, view lists of required package files, and install and publish package files. See *Sun Control Station Software Management Module* (817-3611), which you can access with the Cluster Grid Manager Help button.

- Health Monitoring module

This module enables you to monitor the health status of your managed hosts according to parameters that you define. You can retrieve and view health-status data, verify network communication, and configure the parameters for health monitoring, including email alerts for critical system events. See *Sun Control Station Health Monitoring Module* (817-3607), which you can access with the Cluster Grid Manager Help button.

- Performance Monitoring module

This module enables you to view the performance of your managed hosts according to various parameters. You can view and update performance data for a host or group of hosts. See *Sun Control Station Performance Monitoring Module* (817-3610), which you can access with the Cluster Grid Manager Help button.

- Inventory Module

This module enables you to keep track of the hardware components in your system. You can view and update a summary inventory of the hardware components in a host or group of hosts. See *Sun Control Station Inventory Module* (817-3608), which you can access with the Cluster Grid Manager Help button.

- Lights-Out Management module

This module enables you to remotely perform certain management functions. For example, this module enables you to remotely power on and power off a host, perform a hardware reset, illuminate an LED for host identification, and view sensor data and the system event log. See *Sun Control Station Lights-Out Management Module* (817-3609), which you can access with the Cluster Grid Manager Help button.

Note – Refer to the *Sun Fire V60x Compute Grid Rack System Release Notes* for a list of supported browsers and Java™ plug-ins for viewing SCS software.

AllStart Module

The AllStart module facilitates the installation of operating system software to the system nodes. This module integrates the KickStart utility of Linux. You can access the AllStart module through the Cluster Grid Manager main window.

See *Sun Control Station AllStart Module (817-3605)*, which you can access with the Cluster Grid Manager Help button.

The AllStart control module provides a common user interface for creating operating system software payloads, defining client profiles, and deploying the software payloads to the clients.

This module enables you to:

- Select the distributions of operating systems to load onto a host
- Select driver files to load onto a host
- Create customized payloads made up of files and OS distributions
- Create profiles containing client configuration information
- Add client hosts on which the payloads and profiles are loaded, by using the Media Access Layer (MAC) address of the host

Note – You can determine the MAC address for any node in the system by referring to the file, `/usr/mgmt/diag/check.out`, which is installed on your CGM node. The MAC addresses are listed by the node numbers that are assigned at the factory. The node numbers can be determined by the labels that are affixed to each node.

Grid Engine Module

The Grid Engine module is integrated with Sun ONE Grid Engine, Enterprise Edition (S1GEEE) software. The Grid Engine module deploys the S1GEEE software to the grid master node, which you can designate as the S1GEEE master host, and to the grid compute nodes, which you can designate as S1GEEE execution hosts.

You can access the Grid Engine module and its functions through the Cluster Grid Manager main window. For basic instructions on using the Grid Engine module, refer to “Configuring the Grid Engine Module” on page 53. For more detailed information about the Grid Engine module, you can access the document, *Sun Control Station Grid Engine Module (817-3606)* with the Cluster Grid Manager Help button.

S1GEEE documentation can also be accessed with the Cluster Grid Manager Help button.

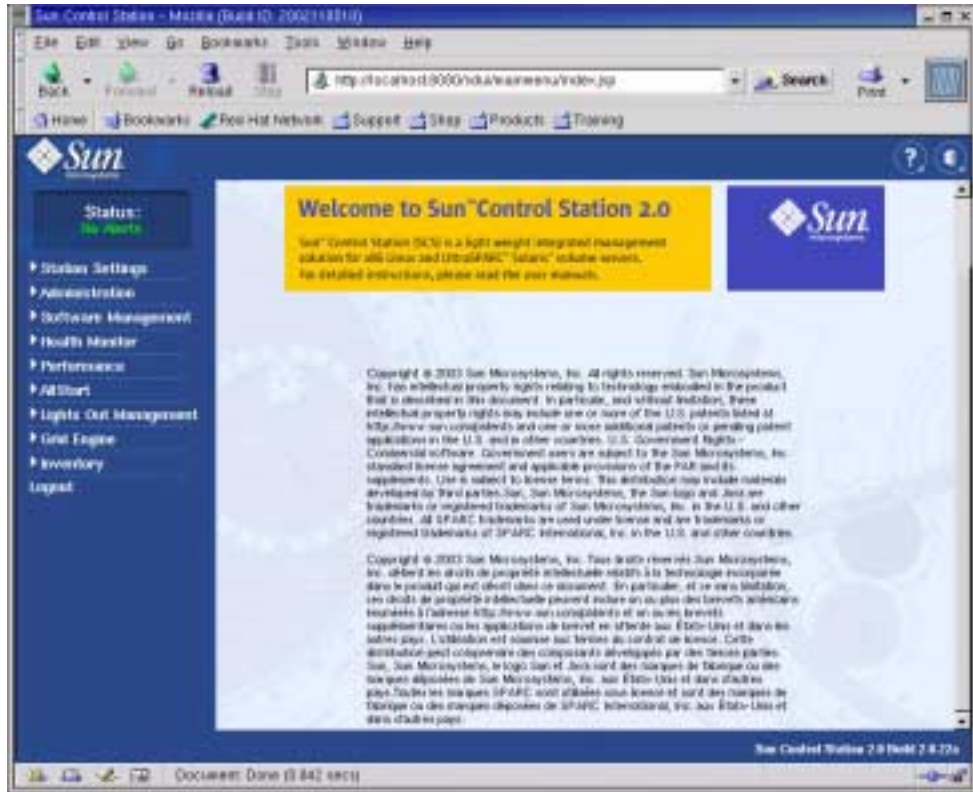


FIGURE 2-2 Sample Cluster Grid Manager Main Window

Setting Up the Sun Fire V60x Compute Grid Software

The procedures in this section describe how to get the system software up and running during initial installation and login. For detailed information about customizing and administering your system after your installation, references to software documentation are provided.

Information Required For Software Setup

TABLE 2-1 shows the information that you will need to obtain from your site's system administrator to complete the software setup for your system. Default settings are listed if they exist. The right-hand column is supplied for you to write down the settings that you will use for your site.

Note – You can determine the MAC address for any node in the system by referring to the file, `/usr/mgmt/diag/check.out`, which is installed on your CGM node. The MAC addresses are listed by the node numbers that are assigned at the factory. The node numbers can be determined by the labels that are affixed to each node.

TABLE 2-1 Software Setup Required Information

| System Setting Name | Default Setting | Setting For Your Site |
|----------------------------|------------------------|------------------------------|
| Terminal server IP address | 192.168.160.10 | |
| Netmask | 255.255.255.0 | |
| Gateway | n/a | |
| CGM node IP address | 192.168.160.5 | |
| Compute node 32 IP address | n/a | |
| Compute node 31 IP address | n/a | |
| Compute node 30 IP address | n/a | |
| Compute node 29 IP address | n/a | |
| Compute node 28 IP address | n/a | |
| Compute node 27 IP address | n/a | |
| Compute node 26 IP address | n/a | |
| Compute node 25 IP address | n/a | |
| Compute node 24 IP address | n/a | |
| Compute node 23 IP address | n/a | |
| Compute node 22 IP address | n/a | |
| Compute node 21 IP address | n/a | |
| Compute node 20 IP address | n/a | |
| Compute node 19 IP address | n/a | |
| Compute node 18 IP address | n/a | |
| Compute node 17 IP address | n/a | |
| Compute node 16 IP address | n/a | |
| Compute node 15 IP address | n/a | |
| Compute node 14 IP address | n/a | |
| Compute node 13 IP address | n/a | |
| Compute node 12 IP address | n/a | |
| Compute node 11 IP address | n/a | |
| Compute node 10 IP address | n/a | |
| Compute node 9 IP address | n/a | |
| Compute node 8 IP address | n/a | |
| Compute node 7 IP address | n/a | |
| Compute node 6 IP address | n/a | |
| Compute node 5 IP address | n/a | |
| Compute node 4 IP address | n/a | |
| Compute node 3 IP address | n/a | |
| Compute node 2 IP address | n/a | |
| Compute node 1 IP address | n/a | |

Logging In and Setting Up the System Identity

Note – Begin this procedure after you have powered on the system as described in “Powering On the System” on page 12.

1. **Slide the KVM unit out from the rack until the video screen can be opened.**

The KVM is precabled directly to the CGM node. You should see the Red Hat Linux login display on the video screen.

2. **Log in as root user at the Red Hat Linux login screen, using the default entries shown below.**

```
user: root
password: admin
```

3. **Open a terminal window and change the default Linux root password to a password of your choosing.**

Use the `passwd` command to change the root password on the system.

4. **Configure an IP address for the system’s terminal server as follows:**

Note – No changes to routing tables are required if you leave the terminal server on the same subnet as the rest of the system components. If you put the terminal server on another subnet, you will have to update routing tables.

- a. **Make a Telnet connection to the default IP address of the terminal server in your first rack.**

The default IP address of the terminal server is 192.168.160.10. The system has been preconfigured so that no changes to routing tables are required.

```
telnet 192.168.160.10
Login: InReach
Password: access
```

- b. **At the InReach prompt, enter the `enable` command.**

```
InReach:0> enable
```

- c. **Enter the following password when you are prompted.**

```
Password: system
```

- d. **When the InReach prompt appears again, enter the `config` command.**

```
InReach:0>> config
```

- e. **At the prompts, enter the following commands to configure the terminal server IP address.**

```
Config:0>> interface 1
Intf1-1:0>> address n.n.n.n
```

Where *n.n.n.n* is an IP address compatible with your local network.

You can safely ignore the message, `Warning, interface active`, which appears because you are about to change the interface.

- f. **At the prompts, enter the following commands to configure the terminal server netmask setting.**

```
Intf1-1:0>> mask n.n.n.n
Intf1-1:0>> exit
```

Where *n.n.n.n* represents a netmask setting that is compatible with your local network.

- g. **At the prompts, enter the following commands to configure the terminal server gateway setting.**

```
Config:0>> gateway n.n.n.n
Config:0>> exit
```

Where *n.n.n.n* represents a gateway setting that is compatible with your local network. It might take several seconds for the gateway setting to take effect.

- h. **When the `InReach` prompt appears, save the changes with the following command.**

```
InReach:0>> save configuration flash
```

- i. **At the `InReach` prompts, enter the `exit` command twice to return to the system's root prompt.**

```
InReach:0>> exit
InReach:0> exit
```

5. Configure an IP address for the CGM node as follows.

- a. **Change to the `network-scripts` directory.**

```
# cd /etc/sysconfig/network-scripts/
```

- b. **Delete the `ifcfg-eth0` file.**

```
# rm ifcfg-eth0
```

You can confirm the deletion by typing `Y` when prompted.

- c. **Edit the `ifcfg-eth1` file to read as follows, substituting your IP address, netmask, and gateway information.**

```
DEVICE=eth1
ONBOOT=yes
BOOTPROTO=static
IPADDR=n.n.n.n
NETMASK=n.n.n.n
GATEWAY=n.n.n.n
```

Where *n.n.n.n* represents the respective settings that are compatible with your local network. Use `vi` or another file-editing tool, such as Gedit, which is supplied with your Gnome desktop (start Gedit by typing `gedit` at a command line).

- d. **At the command line, use the following command to apply your changes.**

```
# service network restart
```

6. **Verify that the IP addresses for the terminal server and CGM node are set correctly by pinging the address of the terminal server from the CGM node:**

```
ping n.n.n.n
```

Where *n.n.n.n* represents the IP address of the terminal server.

7. **After you have verified that the CGM node is visible on your network, start a browser and type the following URL.**

```
http://n.n.n.n
```

Where *n.n.n.n* is the IP address that you assigned to the CGM node.

Refer to The Sun Fire V60x Compute Grid Rack System Release Notes for a list of supported browsers and Java plug-ins for viewing SCS software.

8. **Read the Sun Control Station license agreement that appears and accept the license agreement if you agree with the terms.**

A Sun Control Station Welcome page appears.

9. **Go to the Sun Control Station login page for your CGM node by entering the URL in the format that is shown on the Welcome page:**

```
https://n.n.n.n:8443/sdui
```

Where *n.n.n.n* is the IP address that you assigned to the CGM node.

Note – The URL uses the `https` format.

10. At the Sun Control Station login page (see FIGURE 2-3), log in as the SCS administrator using the default entries shown below, then click the Login button.

User Name: **admin**

Password: **admin**



FIGURE 2-3 Sample Cluster Grid Manager Login Page

11. After the SCS main window opens (see FIGURE 2-2), change the default SCS admin password to a password of your choosing, as follows:

- a. In the left-side panel, click on Station Settings > Password.

- b. Enter the new password in the supplied fields, then click the Save button.

The message, “Password changed successfully,” appears when the change is complete.

Using the AllStart Module to Deploy Software

The AllStart module deploys the software to the Sun Fire V60x clients. The following procedure provides a quick path through AllStart to accomplish this specific software deployment. For a complete description of the module, and instructions for using AllStart, refer to *Sun Control Station 2.0 AllStart Module* (817-3605) documentation provided with the AllStart module.

Using the AllStart module to load software to system nodes consists of the following actions:

1. Creating the AllStart distributions. See “Creating AllStart Distributions” on page 28.
2. Creating a payload(s) from files and distributions. See “Creating AllStart Payloads” on page 30.
3. Creating a profile(s) containing configuration information. See “Creating AllStart Profiles” on page 33.
4. Creating and enabling clients to which you will load the payload. See “Creating and Enabling Clients” on page 41.
5. Defining network service settings for the network that your system is on. See “Defining Network Service Settings” on page 47.
6. Powering on or rebooting client nodes so that they network-boot and pull the payload from the Sun Control Station. See “Deploying Software Payloads to Compute Nodes” on page 49.

The following sections walk you through each of these steps.

Creating AllStart Distributions

You must first define the software distributions that you will later load to the compute nodes.

1. **In the Cluster Grid Manager main window, select AllStart > Distributions from the left-side panel.**

The AllStart Distributions window appears on the right side of the screen.

2. **Click on Add at the bottom of the AllStart Distributions window.**

The Upload Distribution From CDROM window appears on the right side of the screen.

3. **In the Upload Distribution From CDROM window, fill in the fields to create a unique description for the distribution. See FIGURE 2-4 for an example.**

The CDROM Device field should contain `/dev/cdrom` as the default entry.

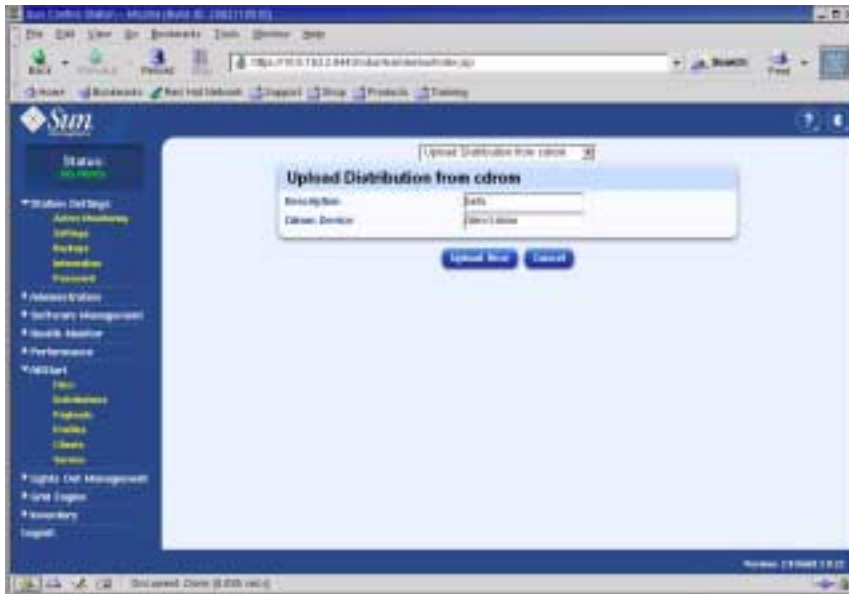


FIGURE 2-4 Upload Distribution From CDROM Window

4. **Insert the Linux CD 1 into the CGM node, then click Upload Now.**

A progress bar indicates the progress of the upload. If a file manager window opens when you insert the CD, you can close the file manager.

5. **After the progress bar indicates that progress is 100%, click Done and remove the Linux CD 1 from the CGM node.**

You are prompted to insert the next CD.

6. Insert the next CD in your Linux distribution, then click Continue.
7. Continue loading CDs when prompted until you have loaded the last CD in your Linux distribution, then click Done.

When uploading is complete, the distribution that you created appears in the list in the AllStart Distributions window. See FIGURE 2-5 for an example.

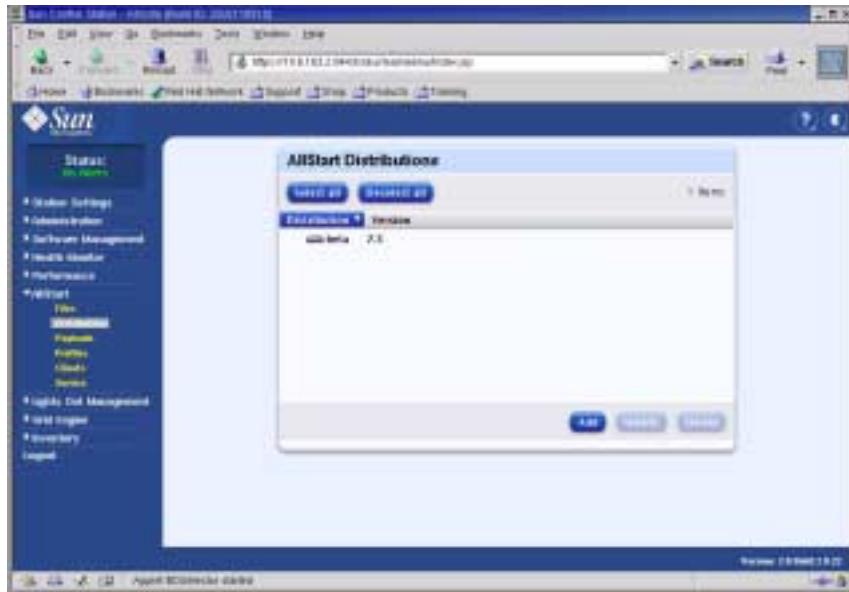


FIGURE 2-5 AllStart Distributions Window

8. Continue with “Creating AllStart Payloads” on page 30.

Creating AllStart Payloads

After the required distributions are available, use AllStart to create payloads that will be deployed to the compute nodes.

1. **In the Cluster Grid Manager main window, select AllStart > Payloads in the left-side panel.**

The AllStart Payloads window appears on the right side of the screen.

2. **In the AllStart Payloads window, click Add.**

The Create AllStart Payload window appears on the right side of the screen. See FIGURE 2-6 for an example.

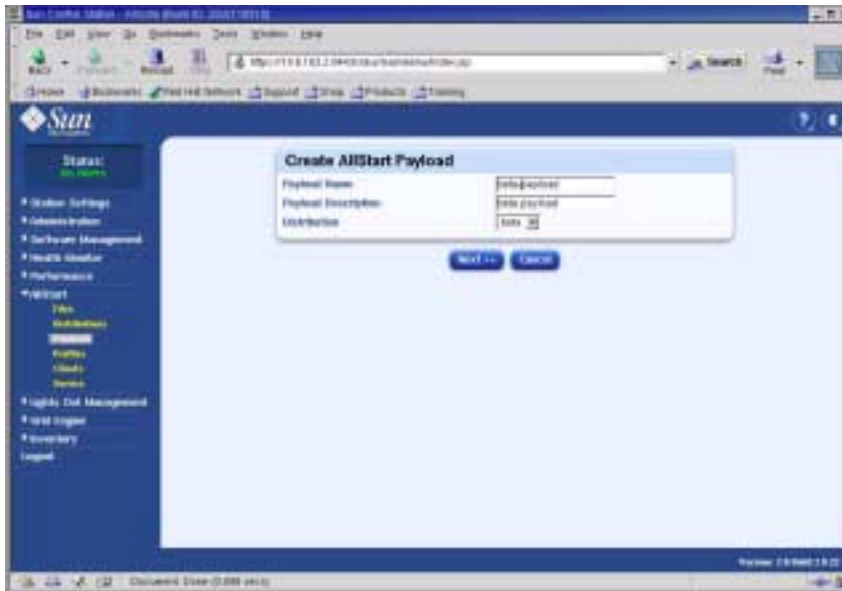


FIGURE 2-6 Create AllStart Payload Window

3. **In the Create AllStart Payload window, create the payload by filling in the fields and selecting the Linux distribution that you created.**
4. **When you are finished, click Next.**

The AllStart Payload Distribution Specific Options window appears on the right side of the screen. See FIGURE 2-7 for an example.

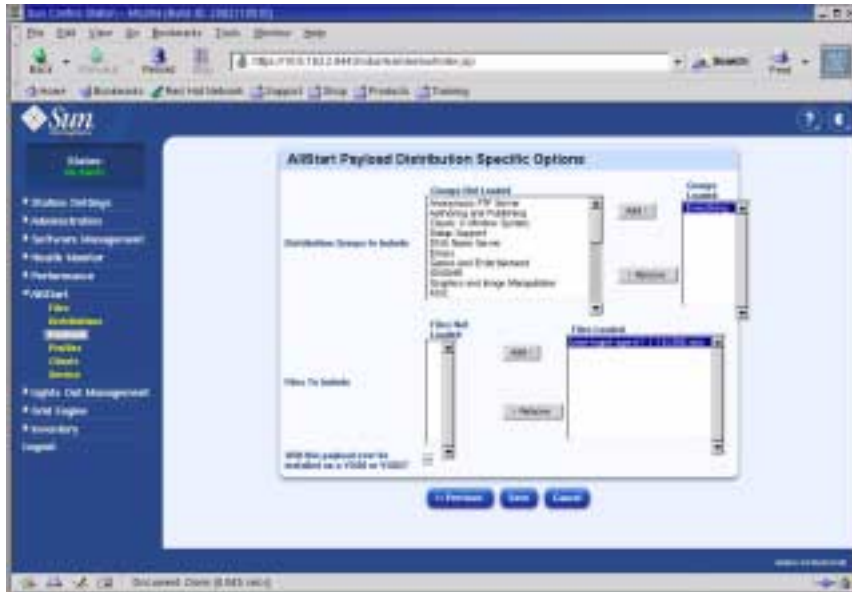


FIGURE 2-7 AllStart Payload Distribution Specific Options Window

5. **In the Distribution Groups To Include list, select the groups that you require for the applications that you will use and move them to the Groups Loaded column.**
You can select all groups by selecting the “Everything” option and moving it to the Groups Loaded column.
6. **In the Files to Include list, verify that the Files Loaded selection list includes the base-mgmt-agent RPM file.**
If this file is not included, select it from the Files Not Loaded column and move it to the Files Loaded column.
7. **Verify that the check-box for Sun Fire V60x/V65x server installation is selected.**
This selection ensures that the required drivers for the Sun Fire V60x server are included.
8. **When you are finished, click Save.**
The payload is created, with the name you gave it.
9. **Wait until the progress bar indicates 100%, then click Done.**
When payload creation is complete, the payload that you created appears in the list in the AllStart Payloads window. See FIGURE 2-8 for an example.

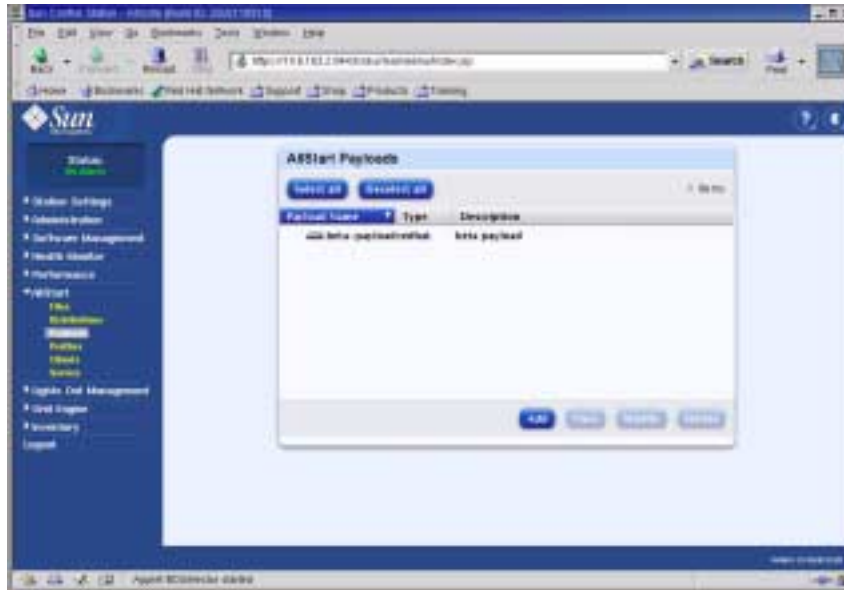


FIGURE 2-8 AllStart Payloads Window

10. Continue with “Creating AllStart Profiles” on page 33.

Creating AllStart Profiles

After the payloads have been defined, use AllStart to create installation profiles for the compute nodes.

- 1. From the left-hand menu click on AllStart > Profiles.**

The AllStart Profiles window appears.

- 2. Click on Add at the bottom of the AllStart Profiles window.**

The Add AllStart Profile window appears on the right side of the screen.

- 3. Create the AllStart profile by defining the options in the series of windows that appear.**

Note – As you work through the series of windows to create the profile, you can accept the defaults or customize your system *except for* any required entries and selections listed in the following steps.

- a. In the Add AllStart Profile window, select the settings that are appropriate for your site (see FIGURE 2-9 for an example). Click Next when you are finished.**

Note – If you use the KVM unit that is provided with the system, you must select “U.S. English” as the Keyboard type.

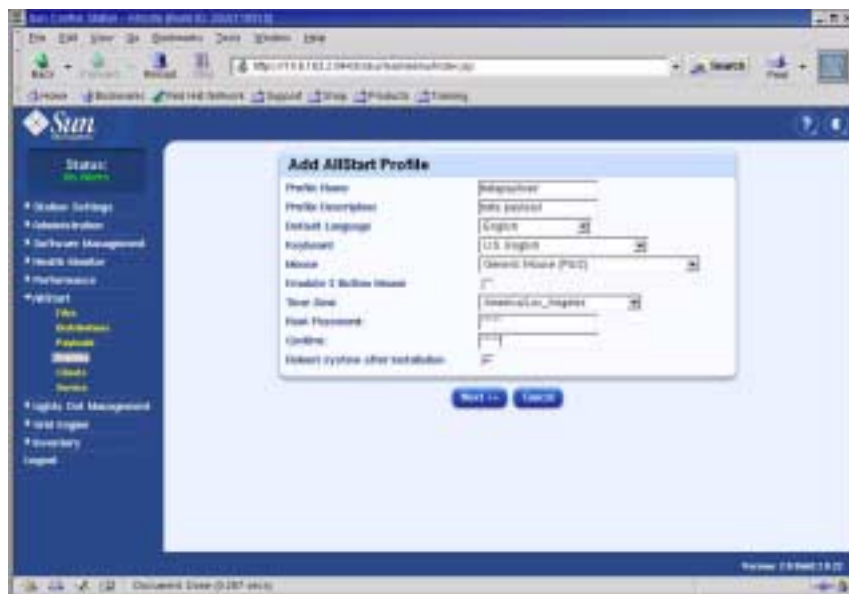


FIGURE 2-9 Add AllStart Profile Window

b. In the Edit Boot Loader Options window, verify that the following required entries are selected (see FIGURE 2-10 for an example). Click Next when you are finished.

- Install Boot Loader: Select
- Choose Boot Loader: LILO
- LILO Option, Use Linear Mode: Do not select
- LILO Option, Force Use of Iba32 Mode: Select

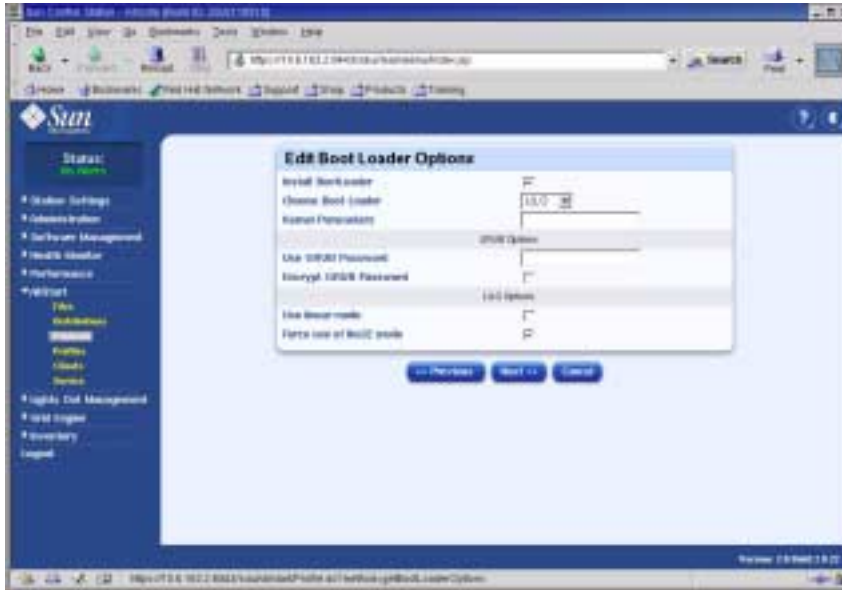


FIGURE 2-10 Edit Boot Loader Options Window (AllStart Profiles)

- c. In the Partition Options window, verify that the following required options are selected (see FIGURE 2-11 for an example). Click Next when you are finished.
- Master Boot Record: Clear Master Boot Record
 - What Do You Want Done With Existing Partitions?: Remove All Existing Partitions
 - What Do You Want Done With Disk Label?: Initialize the Disk Label

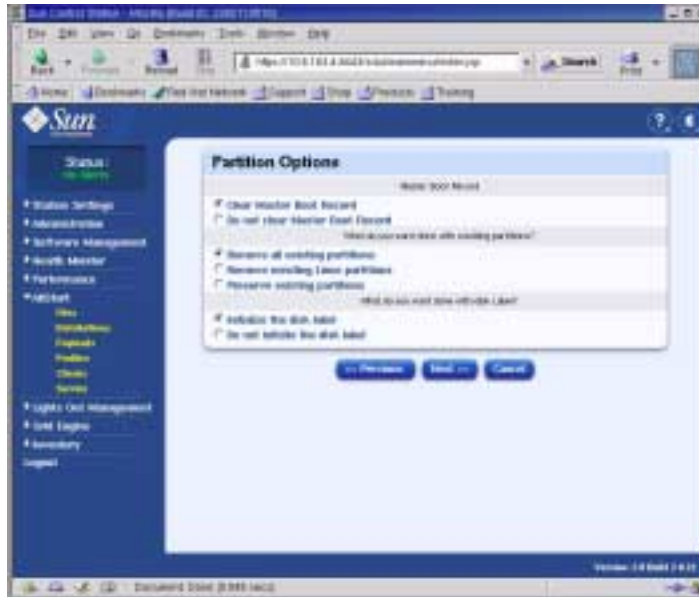


FIGURE 2-11 Partition Options Window (AllStart Profiles)

- d. Use the Disk Partition Information window to create the partitions you require on the client node that you are installing to, as follows:
- i. In the Disk Partition Information window, click Add.

The Partition Options window appears, where you define the parameters for one disk partition.
 - ii. Create your first disk partition by defining the partition parameters, then click Save when you are done. See FIGURE 2-12 for an example.

After you click save, you are returned to the Disk partition Information window, where the partition you created appears in the list (see FIGURE 2-13).
 - iii. To create another partition, click Add again in the Disk Partition Information window and define another partition as in Step ii.

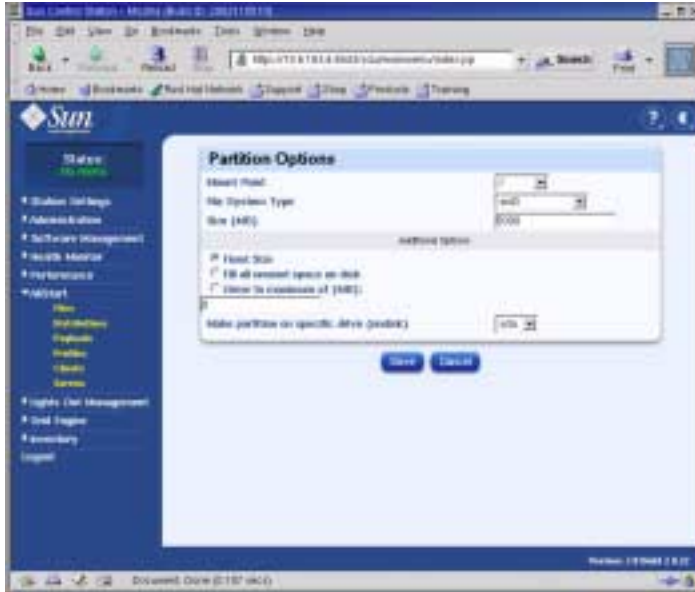


FIGURE 2-12 Partition Options Definition Window (AllStart Profiles)

Three different example partition configurations are listed as follows:

- Partition example 1:
 - Mount Point: /
 - File System Type: ext3
 - Size MB: 5000
 - Fixed Size: Select
 - Make Partition On Specific Drive: sda
- Partition example 2:
 - Mount point: /boot
 - File System type: ext3
 - SizeMB: 100
 - Fixed Size: Select
 - Make Partition On Specific Drive: sda
- Partition example 3:
 - Mount point: swap
 - File System type: swap
 - Size MB: 2048
 - Fixed Size: Select
 - Make Partition On Specific Drive: sda

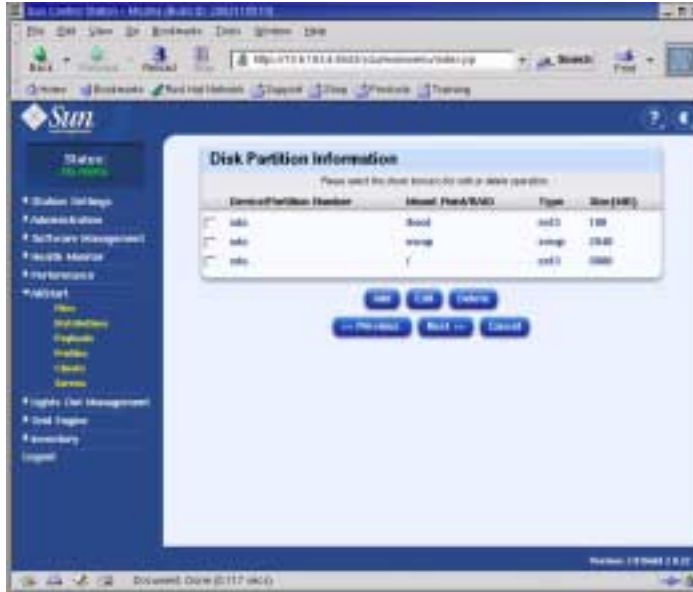


FIGURE 2-13 Disk Partition Information Window (AllStart Profiles)

- iv. After you have created all your partitions, click Next on the Disk Partition Information window.
- e. In the Edit Authentication Information window, verify that the following required options are selected (see FIGURE 2-14 for an example). Click Next when you are finished.
 - Enable shadow passwords: Y
 - Enable MD5: Select

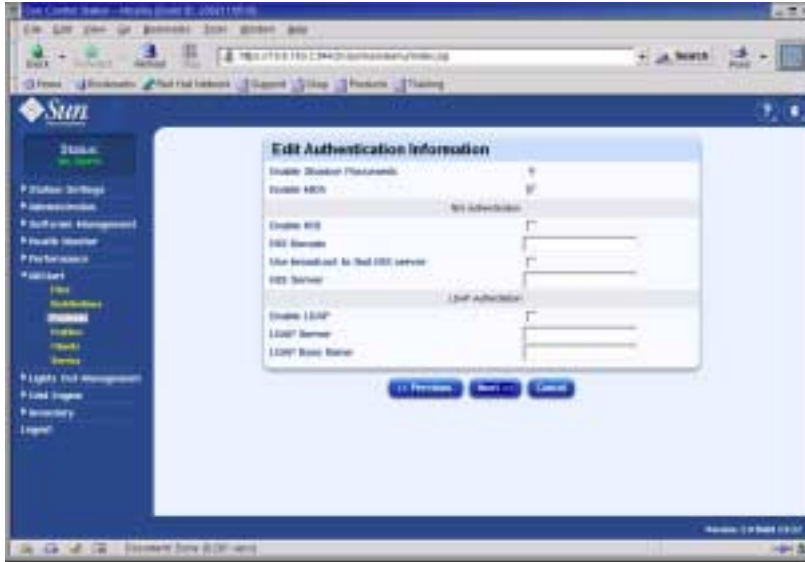


FIGURE 2-14 Edit Authentication Information Window (AllStart Profiles)

- f. In the X Config Options window, make the selection that you require (see FIGURE 2-15 for an example). Click Next when you are finished.

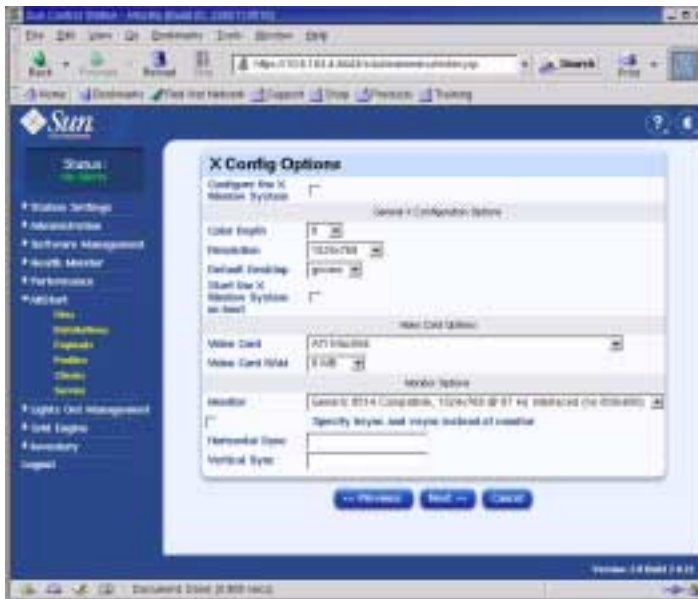


FIGURE 2-15 X Config Options Window (AllStart Profiles)

- g. In the Edit Custom Script Options window, verify that the following required options are selected (see FIGURE 2-16 for an example). Click Save when you are finished.**

These scripts enable serial redirection.

- `lilo_remove_boot_msg.sh`: Select
- `lilo_add_console.sh`: Select

The profile is created.



FIGURE 2-16 Edit Custom Script Options Window (AllStart Profiles)

- 4. Wait until the progress bar indicates 100%, then click Done.**

When profile creation is complete, the profile that you created appears in the list in the AllStart Profiles window. See FIGURE 2-17 for an example.

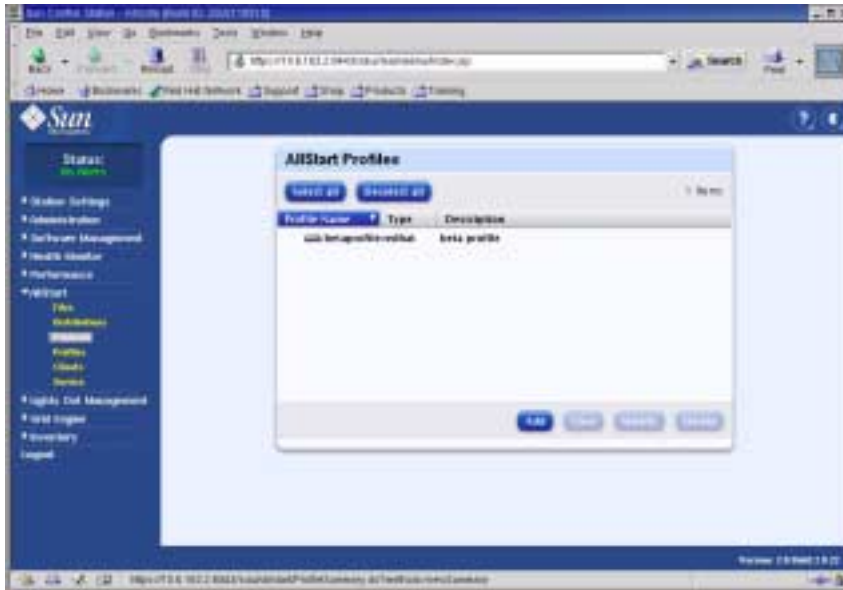


FIGURE 2-17 AllStart Profiles Window

5. Continue with “Creating and Enabling Clients” on page 41.

Creating and Enabling Clients

After the installation profiles have been defined, use AllStart to create and enable clients to which the payload will be deployed.

- 1. From the left-hand menu click AllStart > Clients.**

The AllStart Clients window opens.

- 2. Click on Add at the bottom of the window.**

The Create AllStart Client window appears in the right side of the screen.

- 3. In the Create AllStart Client window, create the client by defining the information for the node to which you will be loading the payload (see FIGURE 2-18 for an example). Verify that the following required options are selected:**

- Install Type: http
- Console: ttyS1
- Serial Console Baud: 9600
- Install Network Device: eth1
- Payload: Select the payload you created for this installation
- Profile: Select the profile you created for this installation

Note – You can get the MAC address for any node in the system by referring to the file, `/usr/mgmt/diag/check.out`, which is installed on your CGM node. The MAC addresses are listed by the node numbers that are assigned at the factory. The node numbers can be determined by the labels that are affixed to each node.

Note – The Install IP Address field allows you to define an IP address for the client node that is temporary and that can be used for the AllStart installation only. To give you flexibility, this address can be the same or different than the permanent IP address that the node receives for normal use.

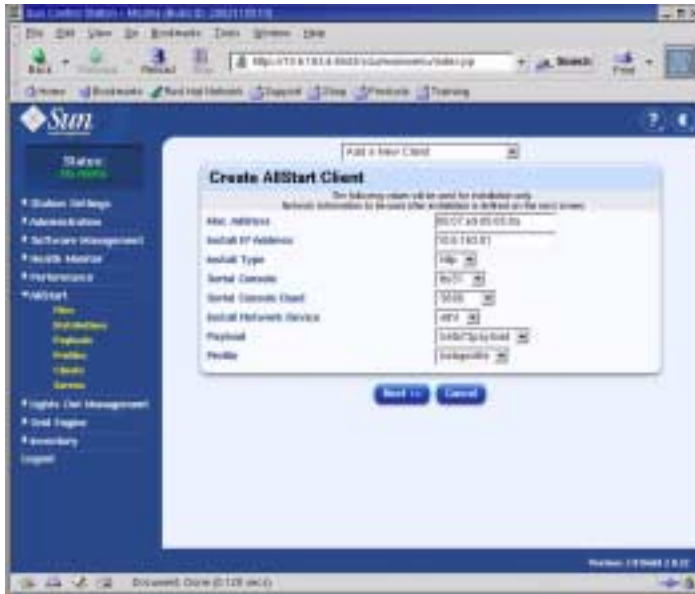


FIGURE 2-18 Create AllStart Client Window

4. When you are finished defining the Client options, click **Next**.
The Network Interfaces window appears.
5. In the **Network Interfaces** window, click **Add**.
The Enter Network Interface Information window appears.

- In the Enter Network Interface Information window, create the network interface by defining the information for the node to which you will be loading the payload (see FIGURE 2-19 for an example).**

Verify that the following required options are selected:

- Network device: eth1
- Network Type: Static IP

Note – When you enter a host name, use the short host name format, not the full host name format that would include the domain name.

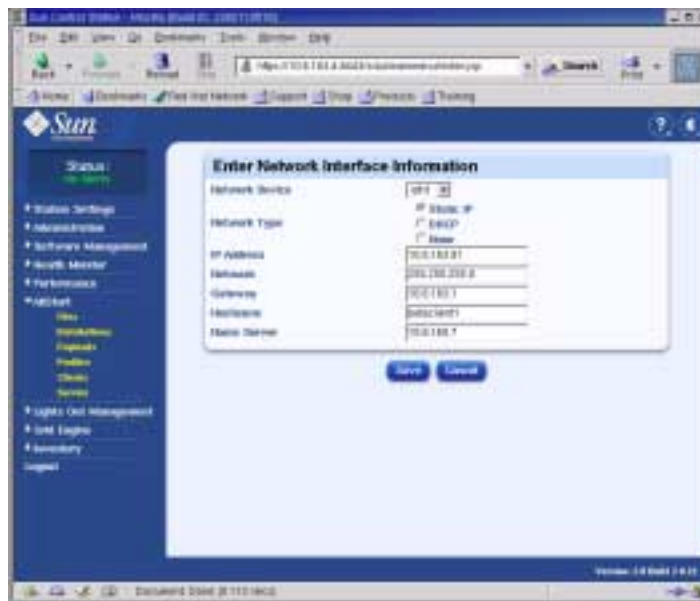


FIGURE 2-19 Enter Network Interface Information Window (AllStart Clients)

- When you are finished defining the network interface, click Save.**

You are returned to the Network Interfaces window. The network interface that you created is listed (see FIGURE 2-20 for an example).

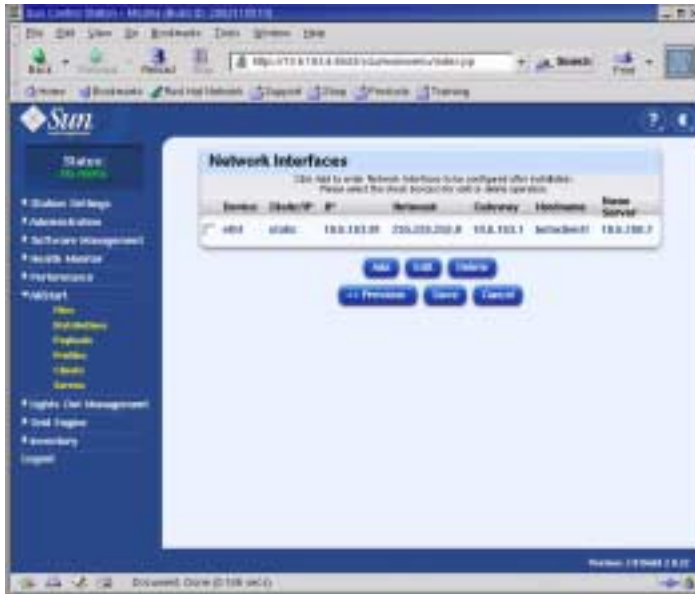


FIGURE 2-20 Network Interfaces Window (AllStart Clients)

8. In the Network Interfaces window, click Save.

A progress bar indicates the progress of the network interface creation.

9. When the progress bar indicates 100%, click Done.

You are returned to the AllStart Clients page. The client that you created is listed (see FIGURE 2-21 for an example).

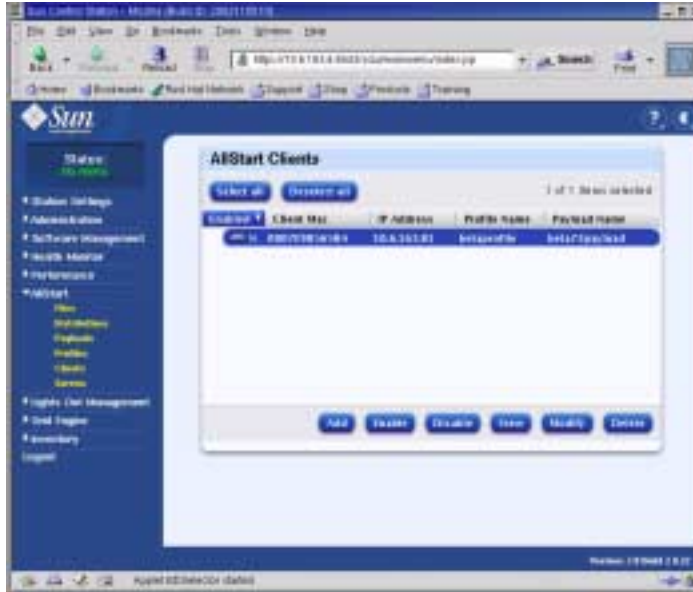


FIGURE 2-21 AllStart Clients Window

10. In the AllStart Clients window, select the clients that you want to enable, then click Enable.

A progress bar indicates the progress of the client enabling.

11. When the progress bar indicates 100%, click Done.

The client entry is enabled so that it is visible to that node in the system. Enabled clients are indicated by a Y character under the Enabled heading on the AllStart Clients window. See FIGURE 2-22 for an example.

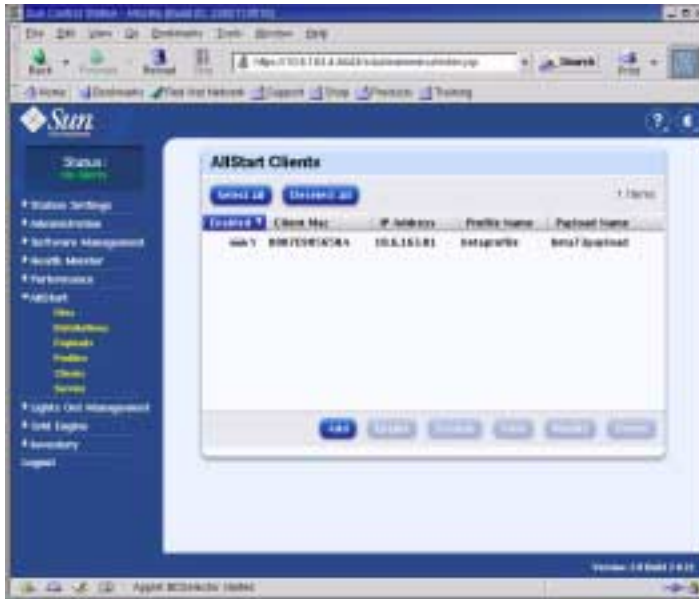


FIGURE 2-22 AllStart Clients Window With Enabled Client

12. Repeat Step 3 through Step 11 for all nodes in your system.
13. Continue with “Defining Network Service Settings” on page 47.

Defining Network Service Settings

1. In the Cluster Grid Manager main window, select **AllStart > Service** from the left-side panel.

The AllStart Current Service Settings window appears on the right side of the screen.

2. Click **Modify**.

The Modify Service Settings window appears.

3. In the **Modify Service Settings** window, make the following required settings (see FIGURE 2-23 for an example):

- DHCP Enabled: Select
- DHCP Interface: eth1

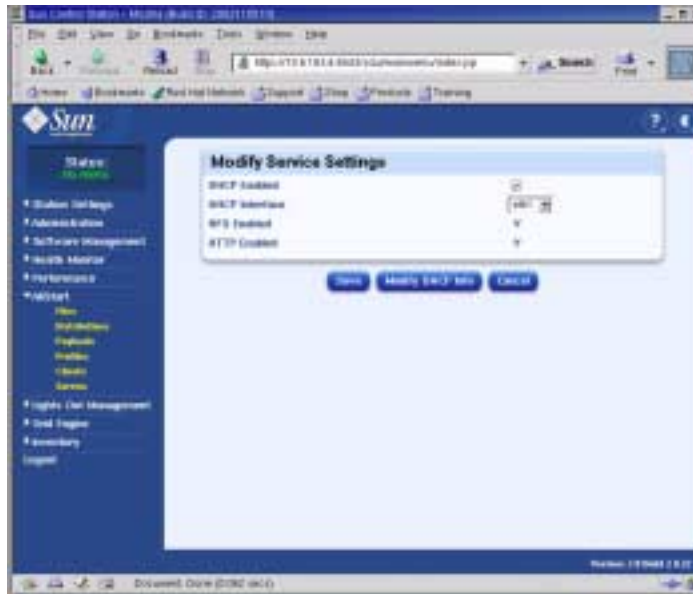


FIGURE 2-23 Modify Service Settings Window

4. When you are finished with the settings, click **Save**.

A progress bar indicates the progress of the service setting.

5. When the progress bar indicates **100%**, click **Done**.

The settings that you made are shown in the AllStart Current Service Settings window (see for an example).

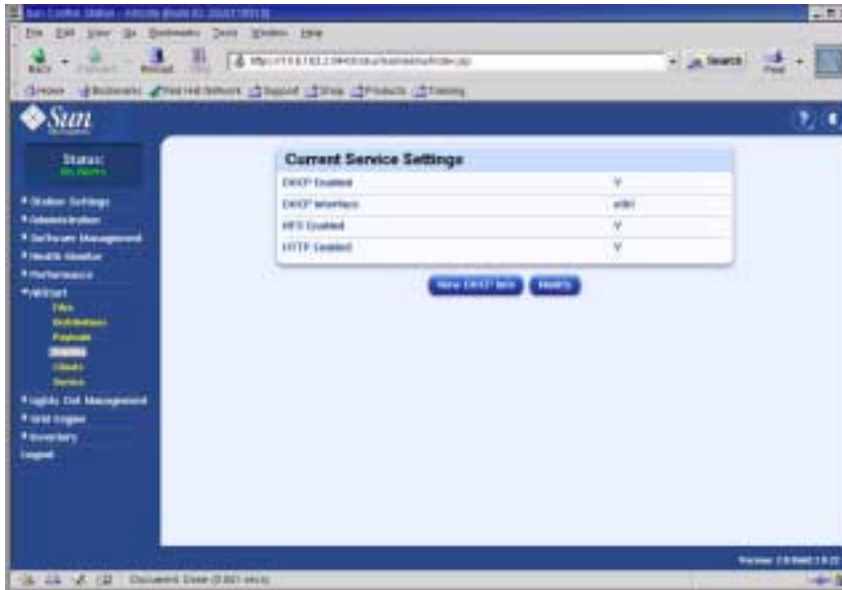


FIGURE 2-24 AllStart Current Service Settings Window

6. Continue with “Deploying Software Payloads to Compute Nodes” on page 49.

Deploying Software Payloads to Compute Nodes

After you have created clients to which you will deploy payloads, you start the deployment by powering on or resetting the client nodes.

- 1. In a terminal window, telnet to the terminal server IP address and port that corresponds to the node to which you are deploying software.**

```
# telnet n.n.n.n 70xx
```

Where *n.n.n.n* is the IP address of the terminal server and *xx* is the two-digit number that corresponds to the number of the node to which you are deploying software (see the following note).

Note – The nodes of the system are assigned a number in the factory and this number is indicated by a label on each node. The ports of the terminal server are assigned a four-digit number that always starts with 70 and ends with the two-digit number that corresponds to the node the port is attached to at the factory. For example, node #2 is attached to port 7002 and node #30 is attached to port 7030.

- 2. Power on or reset the client node to start the deployment of the payload that was selected in the client profile.**

- If the node contains no OS yet, power on the node by pressing the Power button. The node automatically boots from the network and pulls the payload from the CGM node.

- If an OS was previously installed on the node, perform the following steps:

a. Press the Reset button on the node (see FIGURE 2-25).

b. When a prompt appears with the option to press F2 to enter setup, press Escape to initiate a network boot.

c. When you are prompted to select the boot device, select

IBA 1.1.08 slot 0338 **and press Return.**

The client node pulls the payload from the CGM node.

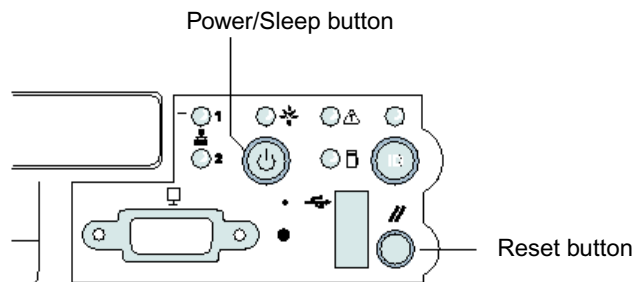


FIGURE 2-25 Sun Fire V60x Server Power and Reset Button Locations

3. Wait until the deployment progress indicator messages are finished and the terminal window returns to a login prompt.
4. When you are finished downloading the payload to the client node, reboot the client node (if it does not reboot automatically).

Repeat this procedure for each client node to which you are deploying software.

Adding Compute Nodes as SCS Managed Hosts

Use the following procedure to define the compute nodes of your system as SCS managed hosts.

Note – Before you can deploy the Sun ONE Grid Engine, Enterprise Edition software to the system compute nodes so that they can be managed as a grid, you must first add the nodes as Sun Control Station managed hosts.

Note – You cannot add the CGM node as an SCS managed host because it is the dedicated management node of the system, from which SCS managed hosts are managed.

1. In the Cluster Grid Manager main window, select **Administration > Hosts** from the left-side panel.

The Managed Hosts window appears on the right side of the screen.

2. In the Managed Hosts window, click **Add**.

The Add Host window appears.

3. In the Add Host window, define the settings for the node that you are defining as an SCS managed host. See [FIGURE 2-26](#) for an example.

4. Verify that the **Install All Possible Modules** box is selected.

This ensures that all of the SCS agents are installed on the newly managed host.

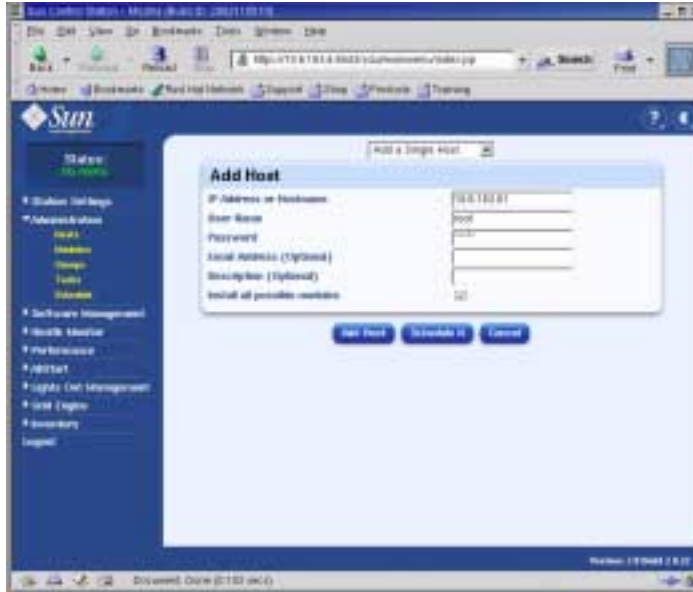


FIGURE 2-26 Add Host Window

5. When you are finished with the settings, click Add Host.

A progress bar indicates the progress of the managed host addition.

6. When the progress bar indicates 100%, click Done.

You are returned to the Managed Hosts window. The managed host you added is listed (see FIGURE 2-27 for an example).

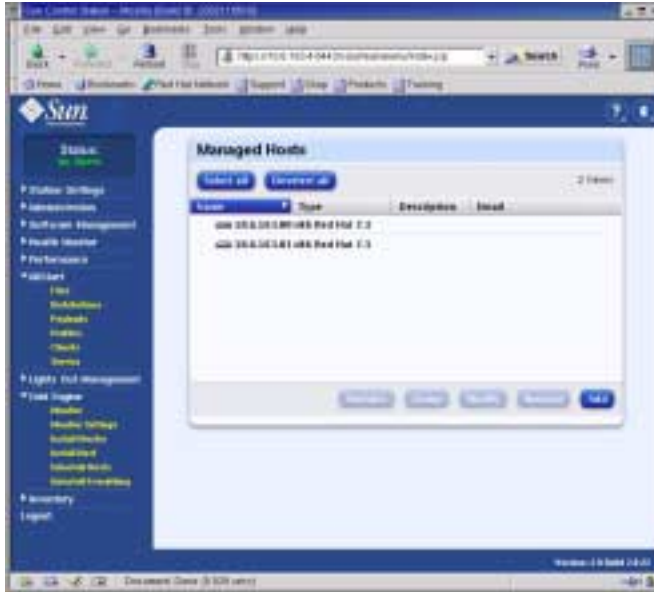


FIGURE 2-27 Managed Hosts Window

7. Repeat this procedure for all compute nodes in your system.

Configuring the Grid Engine Module

The Compute Grid software module provides the following main functions.

- Deployment of the Sun™ ONE Grid Engine, Enterprise Edition (S1GEEE)
- High-level monitoring of system tasks
- Uninstall of the S1GEEE software

Note – Before you can manage the compute nodes of your system with S1GEEE software, you must add the nodes as SCS managed hosts. See “Adding Compute Nodes as SCS Managed Hosts” on page 50.

Deploying the Sun ONE Grid Engine Software

The Grid Engine module automatically deploys S1GEEE to any number of selected nodes on the compute grid. It deploys the S1GEEE master host onto a grid master node of your choosing (see “Grid Master Node” on page 6), and then deploys S1GEEE execution hosts onto specified compute nodes (see “Compute Nodes” on page 6). You can also choose to uninstall an execution host at a later time, or uninstall all hosts, including the master host. You can then later reinstall a host on any systems.

Note – The Grid Engine module deploys only a *dedicated* S1GEEE master host system. Unless you plan to have relatively low job throughput on your grid, it is not recommended to use the S1GEEE master host system also as an execution host. However, if you would like to make use of the CPUs on the grid master node to perform compute tasks, you can manually deploy S1GEEE execution host software onto the grid master node.

If you wish to remove this functionality at a later point, this must also be done manually. (However, if you choose to uninstall all systems, it is not necessary to remove the execution host functionality from the grid master node before uninstalling all systems.) These procedures are recommend only for experienced S1GEEE users. For more information, S1GEEE documentation can be accessed with the Cluster Grid Manager help button.

Defining the Sun ONE Grid Engine Master Host

To use the Grid Engine module to deploy a S1GEEE master host (grid master node), perform the following steps.

1. **In the Cluster Grid Manager main window, click on the Grid Engine menu item in the left-hand menu.**

A drop-down menu of choices for the Grid Engine module appears.

2. **Click on Install Master.**

If this is an initial installation, a license agreement appears.

3. **Read any license agreement that appears and accept it if you agree with the terms.**

Note – You are instructed on-screen to click on Install Master again after accepting the license agreement.

The Install Sun ONE Grid Engine Master window appears.

4. **In the Install Sun ONE Grid Engine Master window, select one node from the list of managed hosts to act as the S1GEEE master host (grid master node). See FIGURE 2-28 for an example.**

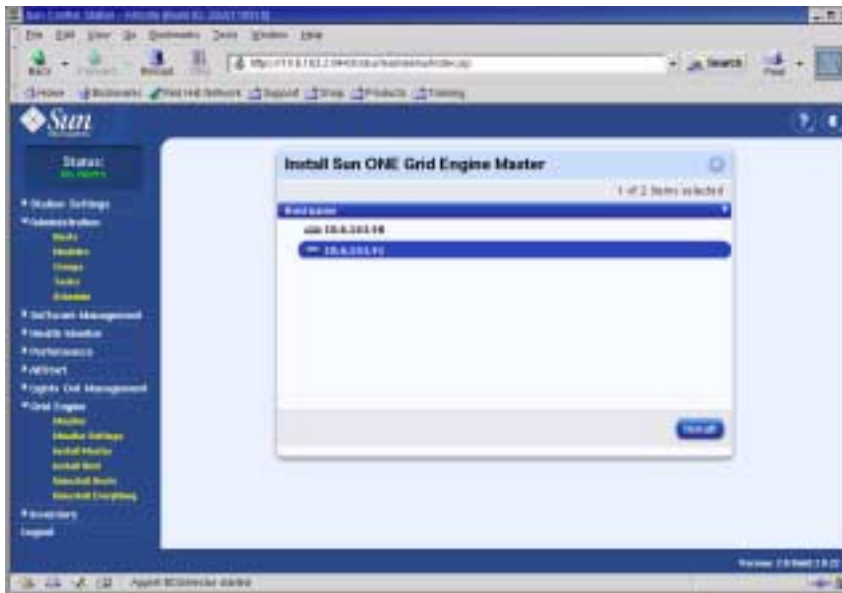


FIGURE 2-28 Install Sun ONE Grid Engine Master Window

5. Click on Install.

A progress bar indicates the progress of the S1GEEE software deployment to the node.

Note – You can define only one grid master node for each system (including expansion racks with up to 128 nodes). If you try to install a second grid master node, the system instructs you to first uninstall the current grid master node.

6. When the progress bar indicates 100%, click Done.

The browser is directed to the Install Sun ONE Grid Engine Compute Hosts window.

Defining the Sun ONE Grid Engine Compute Hosts

To use the Grid Engine module to define S1GEEE compute hosts (compute nodes), perform the following steps.

Note – You can only install execution hosts after installing a master host. If you try to install execution hosts without first defining a master host, the system instructs you to first install the master host.

1. In the Cluster Grid Manager main window, click on the Grid Engine menu item in the left-hand menu.

A drop-down menu of choices for the Grid Engine module appears.

2. Click on Install Host.

The Install Sun ONE Grid Engine Compute Hosts window appears.

3. Select the nodes that you want to include in the S1GEEE grid.

Unless you want to dedicate a system for non-grid tasks, select all systems by clicking Select All. See FIGURE 2-29 for an example.

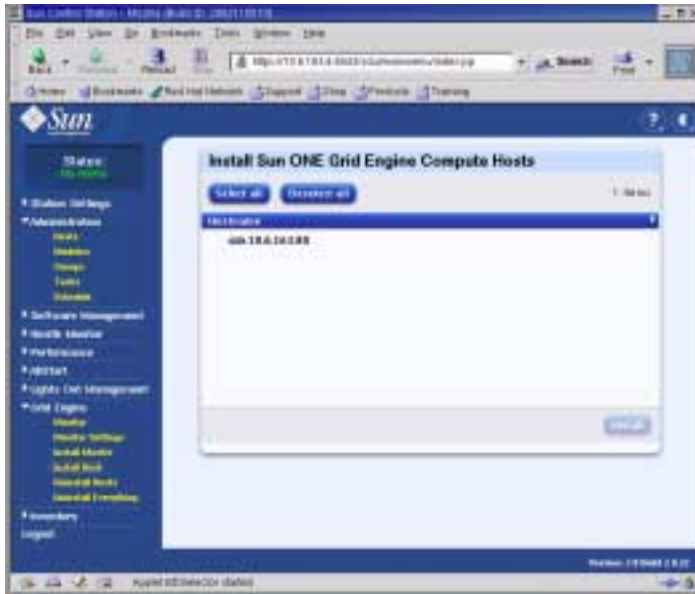


FIGURE 2-29 Install Sun ONE Grid Engine Compute Hosts Window

4. Click on Install.

The S1GEEE software is deployed to each selected node in sequence and a progress bar indicates the progress of the software deployment.

5. When the progress bar indicates 100%, click Done.

When you are finished with installing, your browser is redirected to the Grid Engine Monitor page (see “Monitoring Compute Grid Tasks” on page 57).

If, at a later point, you wish to add more nodes to the S1GEEE grid, you can return to the Install Compute Hosts page by clicking on the Grid Engine > Install Compute Hosts menu item in the left-side panel.

Monitoring Compute Grid Tasks

When you are finished with installation procedure, your browser is redirected to the Monitor page. From this page, you can view various S1GEEE statistics on your Sun Fire V60x Compute Grid. These include:

- The number of pending, running, and suspended jobs
- The load on each execution host
- The current statistics for each queue that has been configured
- The average load across all compute nodes in the grid, and the used and total memory across all nodes in the grid

The Monitor page is automatically refreshed every two minutes. The information on the page is drawn from a database that is updated every two minutes. For every statistic, a time stamp is given to indicate when the statistic was last updated.

You can always return to the Monitor page by clicking the Grid Engine > Monitor menu item in the left-side panel. See FIGURE 2-2 for a sample Monitor window.



FIGURE 2-30 Grid Engine Monitor Window

Uninstalling Sun ONE Grid Engine Software

You can uninstall Sun ONE Grid Engine software, either from individual S1GEEE execution hosts, or from all hosts in the S1GEEE grid, including the S1GEEE master host.

Note – You cannot uninstall only the S1GEEE master host, since it is not possible to operate S1GEEE execution hosts without an S1GEEE master host.

After you have uninstalled an S1GEEE execution host, Sun Fire V60x Compute Grid tasks are no longer sent to that node for execution. However, the other installed modules, such as Inventory, Health, and Performance, continue to operate as before. Any other software that has been installed on that system should also continue to operate normally.

Uninstalling One or More Sun ONE Grid Engine Execution Hosts

1. **In the Cluster Grid Manager main window, click on the Grid Engine module menu item in the left-hand menu.**

A drop-down menu of choices for the Grid Engine module appears.

2. **Click on Uninstall Nodes.**
3. **Select one or more nodes from which to uninstall S1GEEE software.**
4. **Ensure that no jobs are running on the systems to be uninstalled.**

Refer to *Sun Grid Engine, Enterprise Edition 5.3 Administration and User's Guide* (816-4739) for instructions on managing queues.

Note – Any jobs that are currently running on the nodes that you have selected for uninstall are terminated. If the jobs are marked as “re-runnable”, they are automatically resubmitted to the S1GEEE grid for execution elsewhere. However, if they are marked as “not re-runnable,” then they are *not* rescheduled and are not automatically run elsewhere. For more information, S1GEEE documentation can be accessed with the Cluster Grid Manager help button.

5. **Click on Uninstall.**

The S1GEEE software is shutdown and removed from the selected systems, and the S1GEEE master host is instructed to remove those execution hosts from the S1GEEE system.

Uninstalling the Entire Sun ONE Grid Engine

1. **In the Cluster Grid Manager main window, click on the Grid Engine module menu item in the left-hand menu.**

A drop-down menu of choices for the Grid Engine module appears.

2. **Click on Uninstall Everything.**

Note – Do not go to the next step until you are certain that you want to terminate all running jobs and remove all record of previous jobs.

3. **Click on Uninstall.**

This immediately terminates all running jobs, removes all S1GEEE software from all nodes in the S1GEEE, and removes all record of previously run jobs and all record of S1GEEE utilization.

Product Specifications

This appendix contains product specifications, organized into the following sections:

- “Power Specifications” on page 61
- “Physical Dimensions” on page 62
- “Environmental Requirements” on page 63

Power Specifications

The following table lists the system power specifications.

TABLE A-1 Sun Fire V60x Compute Grid Power Specifications

| Parameter | Value |
|-------------------|---|
| Nominal voltage | 200, 208, 220, 230, or 240 VAC |
| Operating voltage | Single-phase 180 to 240 VAC |
| Frequency | 47 to 63 Hz |
| Current | Maximum 64Amps (4 x 16Amps) Nominal 40Amps(4 x 10Amps), fully populated rack |
| AC plug | NEMA L6-20P Domestic U.S.A. IEC 309 16A 3-position International |
| AC plugs required | Four AC plugs required per rack |

Physical Dimensions

The following table lists the physical dimensions of the system.

TABLE A-2 Sun Fire V60x Compute Grid Physical Dimensions

| Parameter | value |
|-------------------------------|--|
| Dimensions | 74 inches height x 23.5 in. width x 35.4 in. depth (188 centimeters height x 60 cm width x 90 cm depth) |
| Weight (fully populated rack) | 1600 pounds (727 kilograms) |
| Rack units | 38 |
| Single rack unit dimensions | 1.75 inches height x 19 in. width x 23.6 in. depth (4.45 centimeters height x 48.26 cm width x 60 cm depth) |

Environmental Requirements

This section contains the environmental requirements for a fully-populated, single-rack Sun Fire V60x Compute Grid rack system. The requirements are described in two separate tables for the 2.8-GHz CPU Compute Grid rack system and the 3.06-GHz CPU Compute Grid rack system. Refer to either of the following two tables:

- TABLE A-3, 2.8-GHz CPU Compute Grid Environmental Specifications
- TABLE A-4, 3.06-GHz CPU Compute Grid Environmental Specifications

TABLE A-3 2.8 GHz CPU Sun Fire V60x Compute Grid Environmental Specifications

| Parameter | Operating | Non-Operating |
|-------------|--|--|
| Temperature | 86°F maximum ambient temperature at 0 feet elevation (30°C maximum ambient temperature at 0 meters elevation) | -40°F to 158°F (-40°C to 65°C) |
| Altitude | Up to 9000 feet, maximum ambient temperature derated by 1.8°F per 1500 feet rise in elevation above 0 feet. (Up to 3000 meters, maximum ambient temperature derated by 1°C per 500 meter rise in elevation above 0 meters.) | Up to 35000 feet (Up to 12000 meters) |
| Humidity | 10% to 90% relative humidity at 80°F maximum wet bulb, non-condensing. (10% to 90% relative humidity at 27°C maximum wet bulb, non-condensing.) | 10% to 90% relative humidity |
| Vibration | .25 g's 5Hz to 500Hz to 5Hz, 1.0 octaves per minute, swept-sine 5 sweeps in X, Y, and Z. | n/a |

TABLE A-4 3.06 GHz CPU Sun Fire V60x Compute Grid Environmental Specifications

| Parameter | Operating | Non-Operating |
|------------------|--|--|
| Temperature | 77°F maximum ambient temperature at 0 feet elevation (25°C maximum ambient temperature at 0 meters elevation) | -40°F to 158°F (-40°C to 65°C) |
| Altitude | Up to 4500 feet, maximum ambient temperature derated by 1.8°F per 1000 feet rise in elevation above 0 feet. (Up to 1500 meters, maximum ambient temperature derated by 1°C per 300 meter rise in elevation above 0 meters.) | Up to 35000 feet (Up to 12000 meters) |
| Humidity | 10% to 90% relative humidity at 80°F maximum wet bulb, non-condensing. (10% to 90% relative humidity at 27°C maximum wet bulb, non-condensing.) | 10% to 90% relative humidity |
| Vibration | .25 g's 5Hz to 500Hz to 5Hz, 1.0 octaves per minute, swept-sine 5 sweeps in X, Y, and Z. | n/a |

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