Sun N1 System Manager 1.2 Introduction

Sun Microsystems, Inc.
4150 Network Circle
Santa Clara, CA 95054
U.S.A.

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051102@13215

Contents

Preface

The *Sun N1 System Manager 1.2 Introduction* provides an overview of the N1 System Manager features and components, and a walkthrough describing the sequence of tasks required to implement N1 System Manager on your site.

Who Should Use This Book

This guide is intended for those who will install, upgrade, or use the N1 System Manager software and hardware.

Related Documentation

This guide is part of a six-volume implementation reference set. The set should be read in the following order:

- *Sun N1 System Manager 1.2 Release Notes*
- *Sun N1 System Manager 1.2 Site Preparation Guide*
- *Sun N1 System Manager 1.2 Installation and Configuration Guide*
- *Sun N1 System Manager 1.2 Administration Guide*
- *Sun N1 System Manager 1.2 Command Line Reference Manual*

How This Book Is Organized

- Chapter 1 provides an overview of the N1 System Manager.
- Chapter 2 provides an overview of the steps required to install and configure the N1 System Manager and then to use the N1 System Manager to discover and provision servers.
- The Glossary provides definitions of the terms used in the N1 System Manager environment.

Documentation, Support, and Training

The Sun web site provides information about the following additional resources:

- Documentation (`http://www.sun.com/documentation/`)
- Support (`http://www.sun.com/support/`)
- Training (`http://www.sun.com/training/`)

Typographic Conventions

The following table describes the typographic conventions that are used in this book.

TABLE P–1 Typographic Conventions

Typeface	Meaning	Example
`AaBbCc123`	The names of commands, files, and directories, and onscreen computer output	Edit your `.login` file. Use `ls -a` to list all files. `machine_name% you have mail.`
`AaBbCc123`	What you type, contrasted with onscreen computer output	`machine_name%` **`su`** `Password:`
aabbcc123	Placeholder: replace with a real name or value	The command to remove a file is `rm` *filename*.

TABLE P–1 Typographic Conventions *(Continued)*

Typeface	Meaning	Example
AaBbCc123	Book titles, new terms, and terms to be emphasized	Read Chapter 6 in the *User's Guide*. A *cache* is a copy that is stored locally. Do *not* save the file. **Note:** Some emphasized items appear bold online.

Shell Prompts in Command Examples

The following table shows the default UNIX® system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

TABLE P–2 Shell Prompts

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

CHAPTER 1

Sun N1 System Manager Overview

This chapter provides a summary of Sun N1 System Manager 1.2 functions and components.

Sun N1 System Manager Features

The Sun N1 System Manager is a system management tool that enables you to manage racks or other groupings of horizontally scaled servers using a single browser user interface. The Sun N1 System Manager browser interface provides an integrated command line interface. You can also run the same command line interface from a UNIX shell on the management server.

The Sun N1 System Manager system or *N1 System Manager* enables you to do the following tasks:

- Discover servers on the network that can be provisioned by the N1 System Manager
- Manage provisionable servers
- Provision operating systems on the provisionable servers
- Manage provisionable server firmware and patches
- Monitor provisionable server health
- Automate provisionable server configuration, recovery, and replacement
- Maximize server utilization
- Minimize user-visible hardware downtime
- Log N1 System Manager and provisionable server events

Sun N1 System Manager Components

The following figure provides a high-level overview of the hardware components of the N1 System Manager.

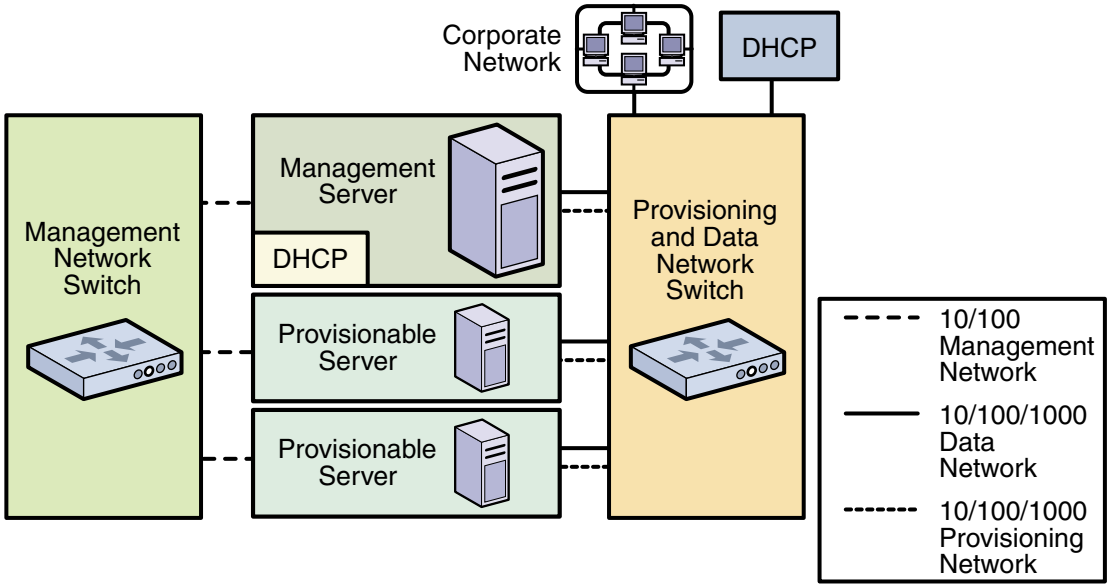


FIGURE 1–1 N1 System Manager Components

The above diagram represents one of the possible N1 System Manager configurations. For further information, see "Reference Configurations" in *Sun N1 System Manager 1.2 Site Preparation Guide*.

The following list describes each of the components.

- Management server and provisionable servers
  - The management server is the Solaris or Linux based server on which the N1 System Manager software is installed and run.

    The management server DHCP service allocates IP addresses to the provisionable servers for use by the provisioning network. The management server uses the provisioning network to load operating systems and updates to provisionable servers.

    For a list of the supported provisionable servers, see "Management Server Requirements" in *Sun N1 System Manager 1.2 Site Preparation Guide*.

– A provisionable server is one that has been successfully discovered by the N1 System Manager. A single rack can include up to 32 provisionable servers. The N1 System Manager can manage hundreds of provisionable servers.

For a list of the supported provisionable servers, see "Provisionable Server Requirements" in *Sun N1 System Manager 1.2 Site Preparation Guide*.

- The Corporate Network connection to the provisioning and data network switch enables corporate users to access provisioned servers over the data network.

  An Ethernet connection of 100 megabits per second is the minimum requirement. A 1,000 megabits (1 Gbit) connection is advised.

- The Management Network provides the path to and from the management server and the provisionable server's management processor port. The management server uses the management network for server discovery, provisionable server firmware updates, and for provisionable server hardware management and monitoring.

  The management network should be a private network that is accessible by the management server, and not accessible by the data network. An Ethernet connection of 100 megabits per second is the required minimum.

- The management network switch provides connectivity to a management port on each provisionable server, and should be a VLAN- programmable switch

- The data and provisioning switch provides provisioning network and data network connectivity to and from the management server and the provisionable servers. The provisioning and data switch should be a VLAN- programmable switch

  The provisioning and data network requirements are as follows.

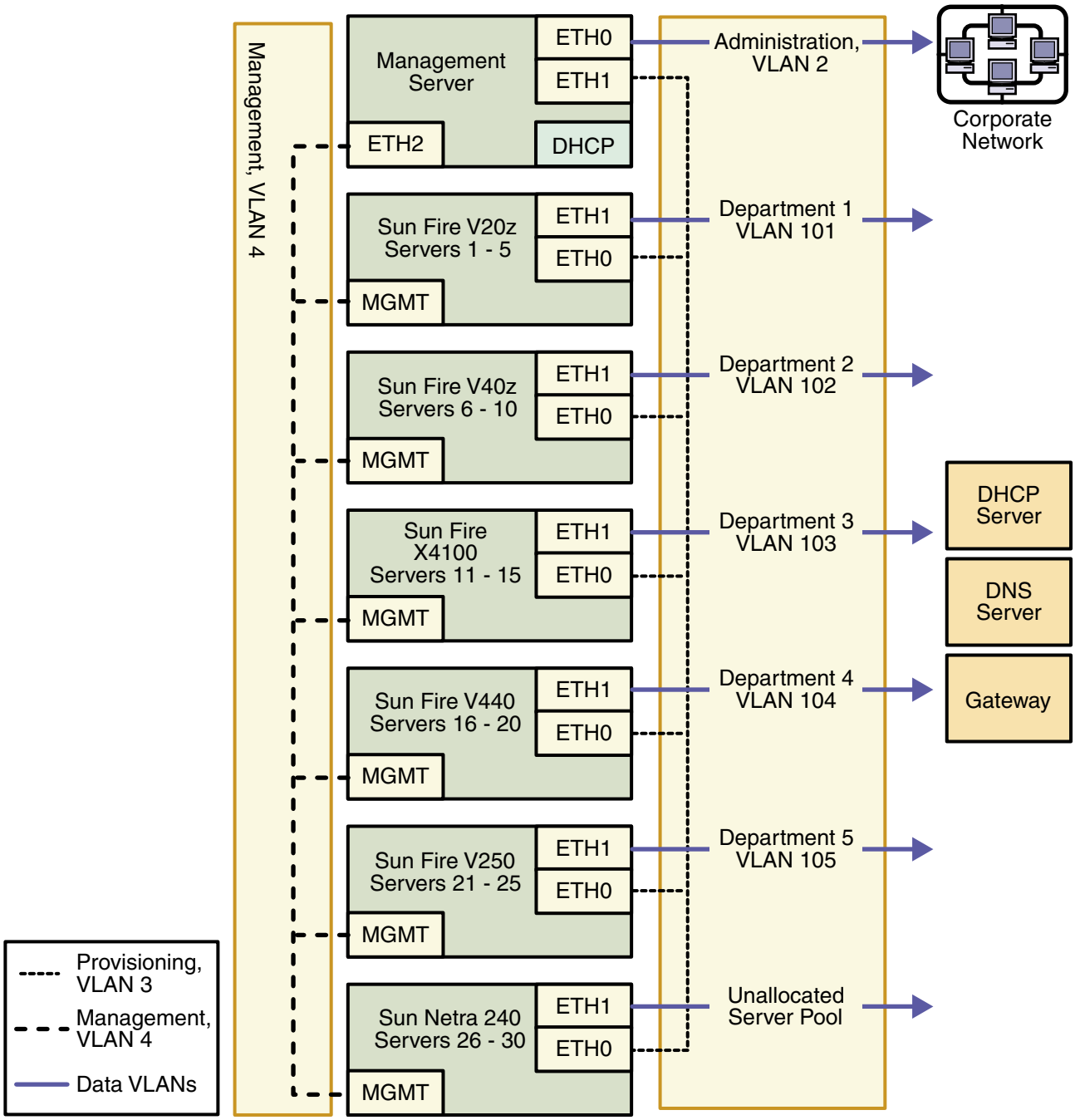
  – The provisioning network is used by the management server to configure and provision the operating and application environments on the provisionable servers, to monitor provisionable server OS resources, and to apply OS updates to provisionable servers. Ethernet connections of 1 Gbit per second are the required minimum.

    Due to the use of the DHCP protocol and the bandwidth requirements for OS provisioning, the provisioning network should be isolated from the data network.

  – The data network provides the connections from the provisionable servers to the corporate network through the management server for the end user. The corporate DHCP service allocates IP addresses to the provisionable servers to provide end user access to the provisionable server.

    The data network should not have access to any of the N1 System Manager networks.

The following diagram illustrates a sample production environment in which the data and provisioning network are on separate VLANs, and in which multiple VLAN assignments have been used to configure the data network for end user access.


Management, VLAN 4
Management Server
ETH0
ETH1
ETH2
DHCP
Sun Fire V20z Servers 1 - 5
Sun Fire V40z Servers 6 - 10
Sun Fire X4100 Servers 11 - 15
Sun Fire V440 Servers 16 - 20
Sun Fire V250 Servers 21 - 25
Sun Netra 240 Servers 26 - 30
MGMT
Administration, VLAN 2
Department 1 VLAN 101
Department 2 VLAN 102
Department 3 VLAN 103
Department 4 VLAN 104
Department 5 VLAN 105
Unallocated Server Pool
Corporate Network
DHCP Server
DNS Server
Gateway
Provisioning, VLAN 3
Management, VLAN 4
Data VLANs

CHAPTER 2

Installing, Configuring, and Using the Sun N1 System Manager

This chapter provides summaries of the high-level steps that you will perform as part of the N1 System Manager preparation, installation, configuration, and run time processes. Although this chapter presents a serial-based set of steps, many of these steps can be done in parallel or in a different sequence.

The high-level steps described in this chapter are:

N1 System Manager Installation and Configuration

This section provides a task flow diagram of the high-level tasks for site planning, installation and configuration of the Sun N1 System Manager software, and summaries of each of the tasks, including links to the applicable manuals and procedures.

The following topics are discussed:

N1 System Manager Site Preparation Task Flow

The following diagram illustrates the sequence of the high-level tasks for site planning, installation and configuration of the Sun N1 System Manager software.

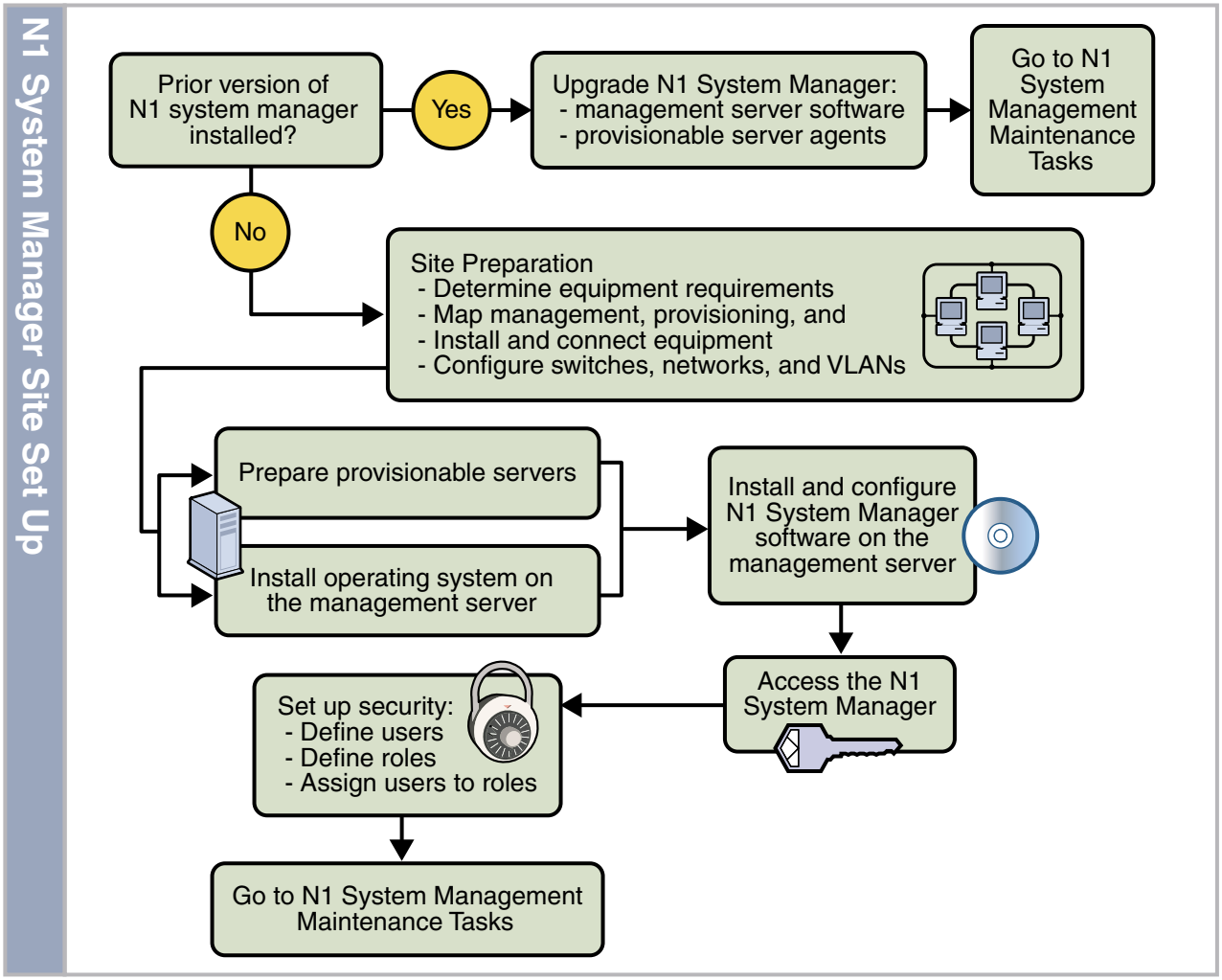


FIGURE 2–1 N1 System Manager Site Preparation Task Flow

If you have not installed the N1 System Manager software on your management server, read the following sections. Each section summarizes each site preparation task in sequence, and includes links to the applicable manuals and procedures for each.

If a previous version of N1 System Manager is installed, upgrade the existing version of N1 System Manager to the latest version as described in Chapter 2, "Upgrading the Sun N1 System Manager Software and Provisionable Server Management Agents," in *Sun N1 System Manager 1.2 Installation and Configuration Guide*. The upgrade process preserves your N1 System Manager configuration, and provides tools to upgrade your provisionable server management agents to the latest release.

Determine System Requirements and Map Your Network

Before you can prepare your equipment for the N1 System Manager, you need to determine your site architecture and system requirements as follows:

- Map your network and determine the subnet addresses that you will use for the management, provisioning, and data networks.
- Take inventory of the equipment you want to use with the N1 System Manager, and compare the inventory to the system requirements in "Sun N1 System Manager Hardware and OS Requirements" in *Sun N1 System Manager 1.2 Site Preparation Guide*.
- To assist you in determining whether you will use one switch or two switches, review "Reference Configurations" in *Sun N1 System Manager 1.2 Site Preparation Guide*.
- Based on the number of provisionable servers to be managed, determine the management server and switch requirements.

  For management server sizing guidelines, see "Management Server Considerations" in *Sun N1 System Manager 1.2 Site Preparation Guide*.

  For switch sizing guidelines and worksheets, see "Switch Considerations" in *Sun N1 System Manager 1.2 Site Preparation Guide*.

Based on the above information, decide:

- Which server will be used as the management server
- Which operating system will be installed on the management server
- Whether the N1 System Manager network will use a single switch or dual switch configuration

When you have completed your site planning, connect your equipment.

The next task is to prepare the provisionable servers and management server.

Prepare the Provisionable Servers

Before you can use the N1 System Manager N1 System Manager to discover provisionable servers, each provisionable server must be set up as follows:

- An IP address must be assigned to each provisionable server's management port
- A minimum set of management processor credentials must be configured on each provisionable server. The type of credential to be configured depends on the provisionable server management processor architecture and the whether the provisionable server has been configured with factory default credentials.

For further information, see "Setting Up Provisionable Servers" in *Sun N1 System Manager 1.2 Site Preparation Guide*.

Tip – Install an OS and the N1 System Manager software on your management server at the same time you set up your provisionable servers.

Install an Operating System on the Management Server

Installation of the operating system on the management server can be completed using various methods: manual installation, JumpStart for Solaris, and Kickstart for Linux.

- For Solaris installation procedures, see "Installing the Solaris OS on the Management Server" in *Sun N1 System Manager 1.2 Site Preparation Guide*
- For Linux installation procedures, see "Installing the RedHat Enterprise Linux OS on the Management Server" in *Sun N1 System Manager 1.2 Site Preparation Guide*

Each section provides disk drive considerations for the chosen operating system, sample scripts for JumpStart or Kickstart, procedures for script configuration, and a procedure for manual installation of the chosen operating system.

When you have completed operating system installation on the management server, install the N1 System Manager software as described in the next section.

Install and Configure the N1 System Manager Software on the Management Server

When you have completed installing the operating system on the management server, the next step is to install and configure the N1 System Manager software on the management server. Once the N1 System Manager software has been successfully installed, you then configure the N1 System Manager for your operations environment.

The installation process probes your operating system installation to ensure all required software has been installed. If required software is not installed, the installation process notifies you and gives you the opportunity to resolve the error and

then continue with installation. The installation process is automatic, and unless required software is not installed, does not require manual input. For further information, see Chapter 1, “Installing and Configuring the Sun N1 System Manager Software,” in *Sun N1 System Manager 1.2 Installation and Configuration Guide*

The configuration process prompts you for the management server port that is to be used for the provisioning network. The configuration process then prompts you for the range of addresses that the management server DHCP service is to use to assign IP addresses to each provisionable server for the provisioning network.

You are then asked to configure the search domains, SMTP service, event logging, and mail service. For further information, see “Configuring the N1 System Manager System” in *Sun N1 System Manager 1.2 Installation and Configuration Guide*.

When you have completed configuring the N1 System Manager, you should tune the N1 System Manager performance based on the number of provisionable servers that are to be managed. For further information, see “N1 System Manager Performance Tuning” in *Sun N1 System Manager 1.2 Installation and Configuration Guide*.

When you have completed tuning the N1 System Manager, the final tasks are to prepare the N1 System Manager for production as described in the following sections. You will log in to the N1 System Manager, set up user accounts and roles, discover and provision the provisionable servers, set up maintenance, and maintain the N1 System Manager.

Access the N1 System Manager

Once you finish installing the N1 System Manager software, you can access the N1 System Manager as described in “Introduction to Accessing the N1 System Manager” in *Sun N1 System Manager 1.2 Administration Guide*. Both a command line and browser interface are provided. The browser interface also has an integrated command line.

The following figure provides a quick reference overview of the browser interface.

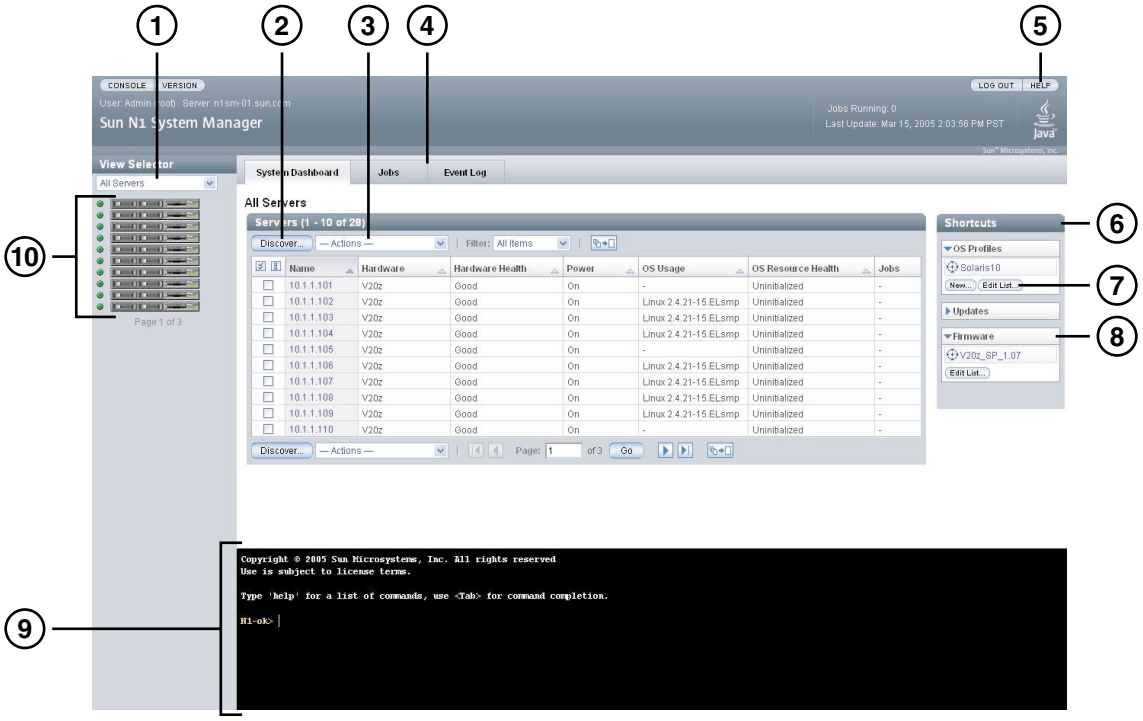


FIGURE 2–2 Sun N1 System Manager Browser Interface Highlights

1. Use the View Selector menu to change between viewing all of the servers, the servers by health state, or the servers by group in the N1 System Manager.
2. Click the Discover button to launch a wizard that enables you to add servers to the N1 System Manager. Click the System Dashboard tab to view all discovered servers in the All Servers table.
3. Use the Actions menu to perform operations on servers selected in the table, such as loading (installing) software, enabling monitoring, and managing power.
4. Click the Jobs or Event Log tabs to see a listing of jobs or events in the N1 System Manager, respectively. The Jobs tab enables you to track the status of the operations and commands being performed on the system.
5. Click the Help button to launch a searchable help system that includes instructions for browser interface tasks and corresponding command line examples.
6. Drag-and-drop the software icons onto a server or server group in the table to begin the installation.
7. Click the Edit List button to change the list of software icons that appear in the Shortcuts pane.
8. Click the arrows to expand or collapse the Shortcut lists.

9. Use the command line pane to issue commands provided by the `n1sh` shell. Use this integrated shell to issue commands or to view the command output of operations initiated from the Actions menu or wizards.
   - To display help for a command in the command line pane, type **`help`** *topic* where *topic* is the command for which you want more information.
   - To display completion information for a command, type the command in the command line pane and press the Tab key. For example:

```
N1-ok> create os [press the Tab key]
Potential matches (create os):
    os         Create (copy) an OS distribution
    osprofile  Create or copy an OS profile
N1-ok>
```

10. Use the server icons to view power status and running jobs. Click a server icon to view the Server Details page.

See "Access the N1 System Manager" on page 17 for more details on accessing the N1 System Manager.

Set Up N1 System Manager Users and Roles

The management server's superuser (`root`) account is automatically set up to access the N1 System Manager. This step is required if you want other users to manage your provisional servers. You can set up new users at any time. The N1 System Manager provides role-based security to enable you to limit users' access to the system.

See "Managing Users" in *Sun N1 System Manager 1.2 Administration Guide* and "Managing Roles" in *Sun N1 System Manager 1.2 Administration Guide* for details on creating new users and the roles that enable them to use the N1 System Manager features.

N1 System Manager Administration

This section provides a task flow diagram of the high-level tasks for administration of theN1 System Manager and summaries of each of the tasks, including links to the applicable manuals and procedures.

The following topics are discussed:

N1 System Manager Administration Task Flow

The following diagram illustrates the sequence of the high-level tasks for administration of the Sun N1 System Manager software, including discovering, provisioning, and managing provisionable servers.

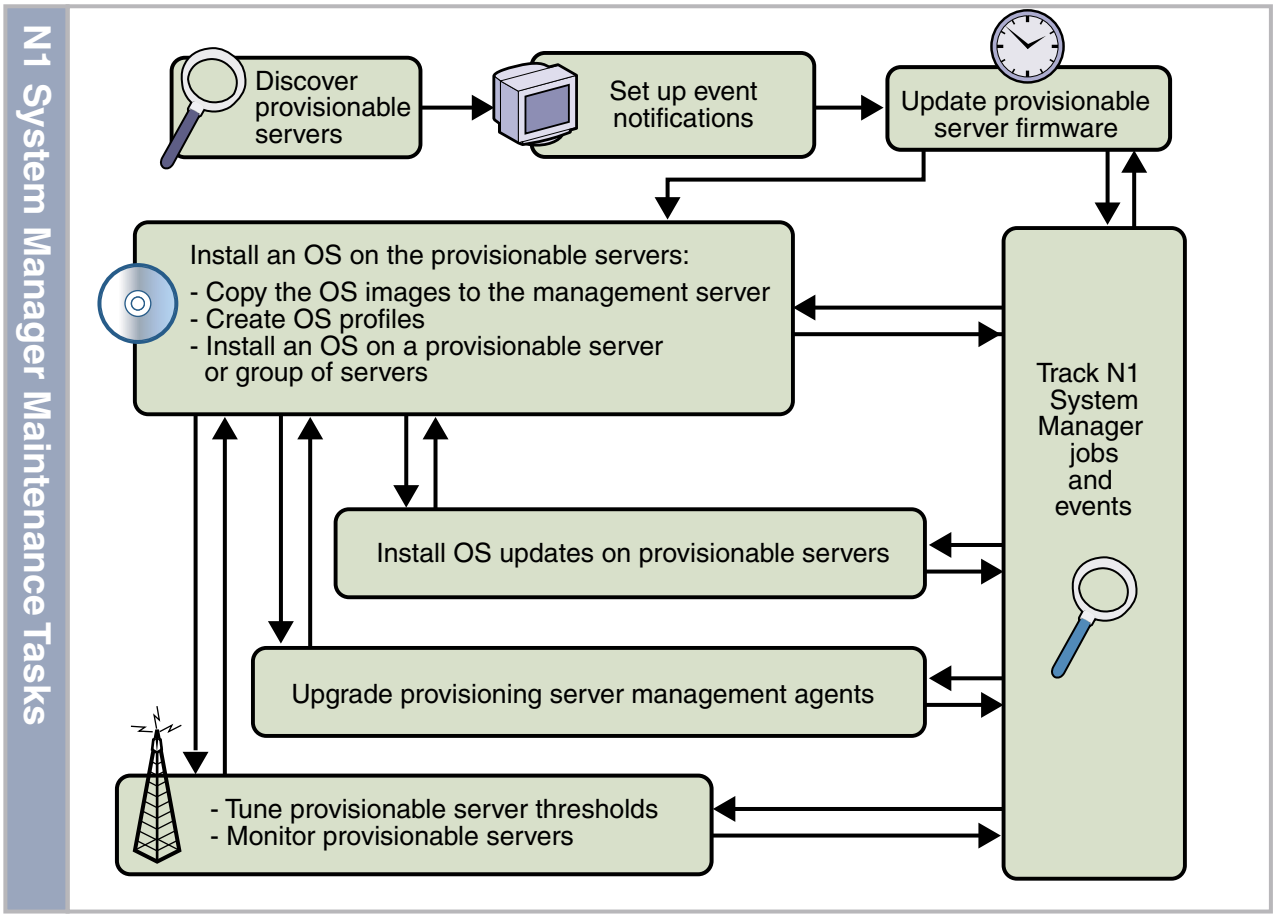


FIGURE 2–3 N1 System Manager Administration Task Flow

The following sections summarize each of the above N1 System Manager administration tasks, and include links to the applicable manuals and procedures for each.

Discover Provisionable Servers to Manage

Before you can manage the provisionable servers, the N1 System Manager must locate the servers and be able to access them. The discovery process is used to locate, identify, and set up network access to the provisionable servers. You can run the discovery process by clicking the Discover button in the browser interface) or by running the `discover` command in the command line pane.

Once discovered, the provisionable servers are displayed in the System Dashboard tab in the browser interface. You can also list all discovered provisionable servers by typing the command `show server all` in the command line pane. After all provisionable servers have been discovered, you can then group the servers based on your business or organizational needs if desired.

You can then perform the following management tasks on the provisionable servers from the N1 System Manager browser interface or command line:

- Power management (booting, power on, power off)
- Event notification
- Monitoring: setting thresholds
- OS installations
- Firmware update installations
- OS update installations (Solaris packages and patches and Linux RPMs)

See "Discovering Servers" in *Sun N1 System Manager 1.2 Administration Guide* for more details.

When you have completed provisionable server discovery and notification setup, you can perform the repetitive administrative tasks described in the following sections.

Set Up Event Notification

The N1 System Manager provides the ability to set up email or SNMP notifications when events occur either within the N1 System Manager itself or on the provisionable servers. You can set up customized notification rules for as many different scenarios as you need. Setting up notifications can be done only through the command line.

See "Setting Up Event Notifications" in *Sun N1 System Manager 1.2 Administration Guide* for details on setting up notifications.

Install Firmware Updates on Servers

Updating the firmware on the provisionable servers is a primary administrative task. Installing a firmware update on a provisionable server for the first time is a two-step process:

1. Copy the firmware update into the N1 System Manager. The N1 System Manager must have system access to the firmware update before the update can be installed on the provisionable servers.

The `create firmware` command enables you to copy a firmware update from a web site or an accessible file system on the management server. Once a firmware update is copied to the management server, you can display it in the browser interface under Shortcuts, or you can use the `show firmware` command.

2. Install the firmware update on the appropriate provisionable servers by using the browser interface or the `load server` or `load group` commands.

See "Managing Firmware SP, BIOS, and ALOM Updates" in *Sun N1 System Manager 1.2 Administration Guide* for details.

Install an OS on the Provisionable Servers

The capability of installing an OS on multiple provisionable servers from a single interface is one of the core features of the N1 System Manager. Installing an OS on a provisionable server for the first time is a three-step process:

1. The N1 System Manager must have system access to an OS distribution before it can be installed on the provisionable servers. Use the `create os` command to copy an OS binary or OS distribution into the N1 System Manager. Use the `show os` command to view the available OS distributions on the N1 System Manager.

   See "Managing OS Distributions" in *Sun N1 System Manager 1.2 Administration Guide* for details.

2. An OS profile specifies which operating system components to install, which additional files and programs to install with the operating system, and configuration information such as the root password and the disk partitioning specifications. OS profiles enable you to install and configure a group of servers consistently. You can create one or more OS profiles depending on how many different ways the servers need to be installed.

   Note – A default OS profile is automatically created for each newly created OS distribution, with the same name as the OS distribution.

   The browser interface provides a step-by-step wizard to help you create an OS profile. You can also create an OS profile using the command line. In both instances, once an OS profile is created, you can display it in the browser interface under Shortcuts or by using the `show osprofile` command.

   See "To Create an OS Profile" in *Sun N1 System Manager 1.2 Administration Guide* for details.

3. The browser interface provides a wizard to help you install an OS distribution on a single provisionable server or group of provisionable servers. You can also use the command line `load server` or `load group` commands.

   See "Installing OS Distributions by Deploying OS Profiles" in *Sun N1 System Manager 1.2 Administration Guide* for details.

After you perform step 1 for an particular OS and create the appropriate OS profiles mentioned in step 2, installing an OS becomes a single step, even on multiple servers.

Install OS Updates on Provisionable Servers

Once you have an OS installed on a provisionable server, the N1 System Manager enables you to install OS updates, which consist of either Solaris packages and patches or Linux RPMs depending on the OS on the provisionable server. Installing OS updates on servers for the first time is a two-step process:

1. The N1 System Manager must have system access to the OS update before the update can be installed on the provisionable servers. You can copy the required OS update into the N1 System Managerusing the `create update` command .

   The `create update` command is used to import an OS update from a web site or from an accessible file system on the management server. Once an OS update has been copied to the management server, you can display the OS update in the browser interface under Shortcuts or you can use the `show update` command.
2. Install the OS update on the appropriate provisionable servers by using the browser interface. or by using the command line `load server` or `load group` commands.

See "Managing Packages, Patches, and RPMs" in *Sun N1 System Manager 1.2 Administration Guide* for details.

Upgrade Provisionable Server Management Agents

If you have upgraded your N1 System Manager system from an older version, you must also upgrade the provisionable server management agents to the most recent version using either of the two following methods:

- Run the management agent upgrade script `agentupgrade` to upgrade the management agent for all powered-on and healthy provisionable servers. See "Upgrading the Provisionable Server OS Monitoring Agents" in *Sun N1 System Manager 1.2 Installation and Configuration Guide*.
- Use the `add osmonitor` command with the *upgrade* parameter to update the management agent on a provisionable server. See "To Upgrade the OS Monitoring Feature on a Server" in *Sun N1 System Manager 1.2 Administration Guide*.

Track N1 System Manager Jobs

Each major action you take in the N1 System Manager starts a job. You can use the job log to track status on a currently running action or to verify whether a job has finished. Monitoring jobs is especially useful for N1 System Manager actions that might take a long time to finish, such as installing an OS distribution on one or more provisionable servers.

You can track jobs through the Jobs tab in the browser interface or the `show job` command. If your are using the browser interface, the number of running jobs is displayed in the Masthead at the top of the page.

See "Managing Jobs" in *Sun N1 System Manager 1.2 Administration Guide* for details on managing and tracking jobs.

Monitor the Provisionable Servers

The N1 System Manager provides monitoring of hardware health attributes, OS resource health attributes, file systems, and network connectivity. Threshold values can be modified for monitored OS resource health attributes. Monitoring enables you to track the status of all your provisionable servers from a single access point.

Note – By default, hardware health is monitored on a discovered provisionable server. You must add the OS monitoring feature to a provisionable server in order to view the server's OS resource health.

For more information on monitoring, see Chapter 5, "Monitoring Your Servers," in *Sun N1 System Manager 1.2 Administration Guide*.

Glossary

admin file — An ASCII administration file that defines default installation actions for Solaris packages.

boot — To load the system software into memory and start it. In the N1 System Manager, you can use the `start` command to power on and boot a server if needed. See also Reset.

bootip — Also known as the provisioning IP. IP addresses that are used during the installation process for Linux based provisionable servers. This IP address may be temporary just for the duration of the installation process. Some sites may reuse the same range of bootip addresses for subsequent provisioning operations.

browser interface — A web-based user interface for the N1 System Manager that provides a subset of the command line features.

command line — The Sun N1 System Manager `n1sh` shell that enables you to run N1 System Manager commands. The `n1sh` shell is available from the browser interface or through the `n1sh` command on the management server. The `n1sh` shell run time environment is signified by the `N1-ok>` prompt.

data network — The network that is used to access provisionable servers from other machines in the data center or enterprise. This network might not be visible to the management node.

data network interface — This interface provides access from the provisionable server to the data center network. Multiple data network interfaces might exist.

data network switch — One or more switches used for data transfers outside the horizontally scaled system (HSS). Both GigE and Infiniband switches are supported.

distribution group — A collection of software clusters and packages that is to be installed on a provisionable server.

event	A change in the N1 System Manager system or a provisionable server, which is tracked in the Sun N1 System Manager event log and may initiate a notification message to external systems.
fault	An identified problem with a component, usually at the field replaceable unit (FRU) level.
firmware	Software stored in read-only memory (ROM) or programmable ROM (PROM). Firmware is usually used to help with the initial booting stage.
FRU	Field Replaceable Unit. An assembly that a manufacturer replaces on failure of an assembly component.
job	A user-defined task to be completed by a computer system. In the N1 System Manager, an asynchronous action initiated and tracked by a user to perform a task.
in use profile	An OS profile that is currently being installed on a provisionable server. An in-use profile cannot be deleted.
installation script	A script used to provide a customized installation of Solaris packages or patches.
IP	IP addresses that are used after the installation process. This is intended to be a more permanent address for the interface.
IPMI	Intelligent Platform Management Interface. A common management interface used by the N1 System Manager to discover servers. IPMI credentials can be used to authenticate servers and accounts during discovery.
load	Installing software to a provisionable server, such as the operating system, firmware updates, and software updates.
log	A single logical location of events in the N1 System Manager network.
management agents	Management software that must be added to a provisionable server to provide remote command functionality, OS resource monitoring, package deployment, and inventory management. Also known as management features. The N1 System Manager provides two management features: base management and OS monitoring.
management feature	See management agents.
management IP address	The IP address of a provisionable server that the N1 System Manager uses to manage the server.
management name	A unique name used to denote a provisionable server within the N1 System Manager environment. By default, the name is set to the server's management IP address determined during discovery. However, a user-defined name can be assigned.

management network interface	This interface provides access to the management information and functions primarily for the provisionable server's hardware and firmware. This interface is the interface to the provisionable server's service processor or ALOM processor.
management network switch	An Ethernet switch used for sending management signal data within the horizontally scaled system (HSS).
management server	The server on which the N1 System Manager software is installed.
N1 System Manager	Software running on the management server that acts as the entry and control point for provisioning and managing servers. A browser interface and a command-line interface are provided.
notification message	A message sent using email or SNMP traps to notify an external entity of server events.
notification rule	A user-specified configuration for when, where, and how to send a class of notification messages.
operating system	A collection of programs that monitor the use of the system and supervise the other programs executed by the operating system. The N1 System Manager enables you to install a operating system such as RedHat Linux and Solaris x86 to a provisionable server or server group.
OS	See operating system.
OS distribution	A installable image of an operating system. In the N1 System Manager, you must copy an OS distribution from a CD/DVD or ISO file before it can be installed on a provisionable server or group of provisionable servers. See also OS profile.
OS profile	Specifies how to install an operating distribution, including which operating system components to install, which additional files and programs to install with the operating system, and configuration information such as root password and disk partitioning specifications. See also OS distribution.
physical server	A FRU server such as a Sun Fire V20z machine.
privilege	A predefined set of permissions enabling a user to perform certain operations within the N1 System Manager. A privilege is granted to a user by assigning to a role and then assigning the role to the user.
provision	The process of using the N1 System Manager to install a preconfigured operating system on a server managed by the N1 System Manager.
provisioning network	The network used to provision the server from the N1 System Manager management server. This network must be visible to the management node.

provisioning network interface	This interface provides access to the provisionable server's OS management functions. This interface is used to provision an operating system and OS updates to a provisionable server, monitor provisionable serverOS resources, and for remote command execution on theprovisionable server. Typically only one provisionable network interface exists.
provisionable server	A physical server that has been successfully discovered and is subsequently managed by the N1 System Manager.
reboot	See reset.
reset	Power off and power on a hardware device. In the N1 System Manager, you can use the reset command to reboot a server (power off, power on, and boot a server).
response file	A file that provides the interaction responses that would be requested during a Solaris package installation in interactive mode onto a provisionable server. A response file enables a package to be installed without user intervention.
role	A set of permissions and privileges regarding what a user may do to the system.
server	See provisionable server.
server group	A user-defined group of servers for the purpose of creating a logical target for management operations. For example, server groups enable operations such as reboot and OS install to be performed on multiple servers with a single command.
shutdown	The process of taking a system from a multiuser OS state to a single user state and a complete halt and power down. In the N1 System Manager, you can use the `stop` command to shut down and power off a server.
SNMP	Simple Network Management Protocol. A preferred network management protocol for TCP/IP-based networks.
SSH	Secure shell. An encrypted remote login protocol that provides strong authentication and secure communications over insecure channels.
start	See boot.
terminal server	A network device that provides a serial connection to the switches, management server, and servers.
update	A software update for an OS. In the N1 System Manager, a RedHat Linux RPM or a Solaris package or patch.
user	A person who is authorized to log in to and use the N1 System Manager.

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